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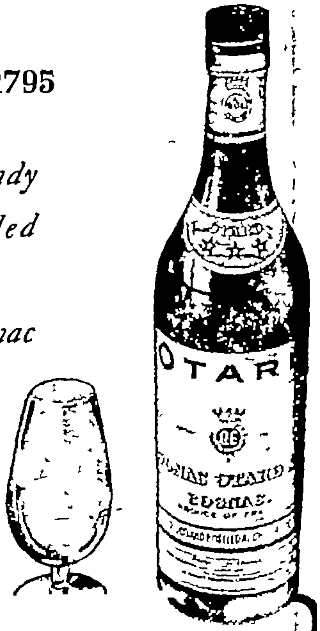

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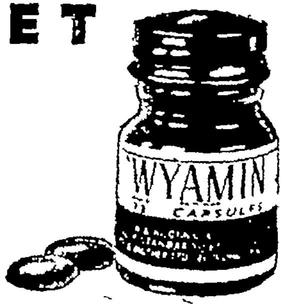

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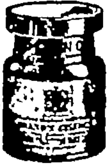

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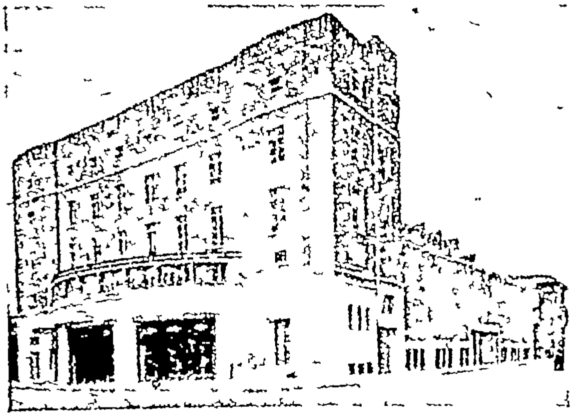

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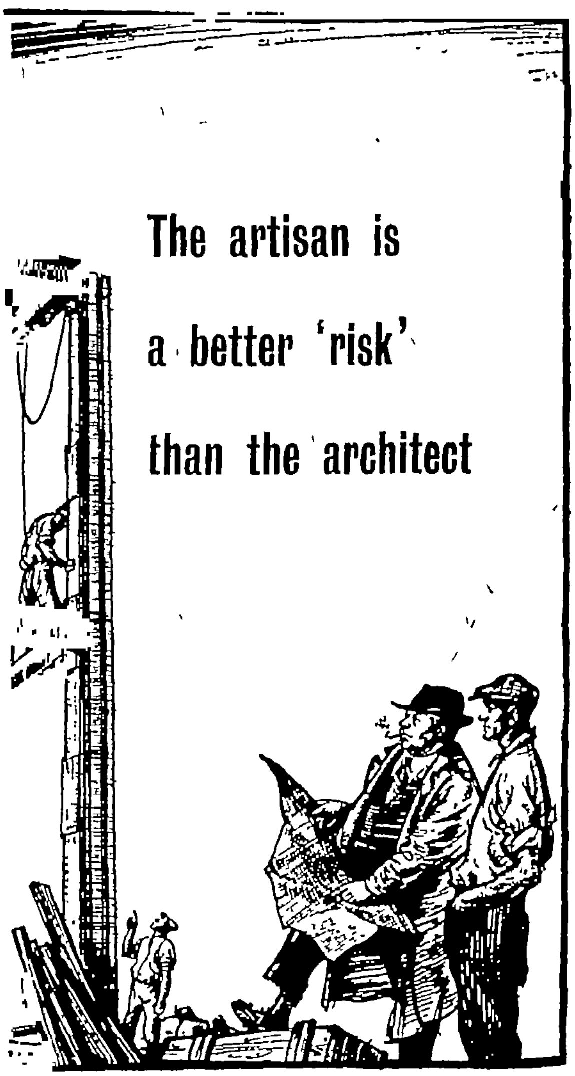

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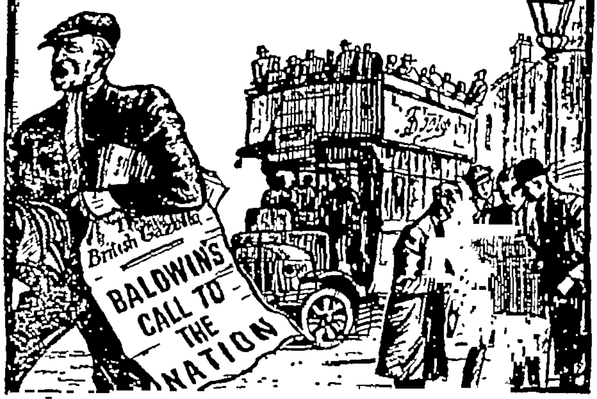
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QUARANTINE, INCUBATION, AND ISOLATION AT SCHOOL

R. E. SMITH
M.B. Camb., F.R.C.P.
MEDICAL OFFICER, RUGBY SCHOOL; PRESIDENT, MEDICAL OFFICERS OF SCHOOLS ASSOCIATION

HISTORY is full of references to isolation and quarantine. The earliest is in the 13th, 14th, and 15th chapters of Leviticus, recording how Moses and Aaron with divine inspiration gave the children of Israel most precise instructions for isolation, quarantine, and observation of him who "shall have in the skin of his flesh a rising, a scab, or bright spot," "like the plague of leprosy," and for "any man who hath a running issue of his flesh." Other public-health measures described are the disposal of fomites and the disinfection of the patient and of the house. We can only speculate what these diseases were; but when we remember it was not until the end of the seventeenth century that Sydenham separated measles from scarlet fever, we can better understand Moses's failure to be more clinically accurate.

War has always presented epidemiological problems. The returning Crusaders spread leprosy far and wide, and history records fewer more pathetic stories than the perpetual isolation of lepers. In the sixth and seventh centuries France and Lombardy had established leper houses, where the miserable victims of this dire disease were condemned to exile. Richard the First's glorious failure was followed by an increase of leprosy, and cruelly applied, if well-meant, measures of isolation added horror to those who already felt themselves branded by a curse from heaven. Inhuman laws invariably provoke reaction, and in 1346 the proclamation that "all lepers must within fifteen days betake themselves to places in the country, solitary and notably distant from the said city and suburbs, and take up their dwelling there" shows the law was being circumvented.

Soon a greater menace, plague, relegated leprosy to a minor rôle. Ragusa, on the Adriatic, first enforced quarantine for plague in 1377. Ships arriving from the Levant and from Egypt were isolated at special ports, and passengers were detained at the port for thirty (later forty) days. Inland cities also imposed quarantine, and Milan attributed its freedom from the Black Death until 1350 to the extreme strictness of her communications. England did not impose quarantine until 1663, when it was decreed that vessels "coming from infected ports should not be permitted to come nearer than Gravesend." Pepys recorded in his diary (Nov. 26, 1663) that the Admiralty instituted quarantine for the first time—"All ships arriving from Amsterdam or other infected places being made to perform their quarantine of thirty days," as Sir Richard Browne expressed it in the Order in Council. Pepys recognised that this was "contrary to the import of the word, though in the general acceptation it signifies now the thing, not the time spent in doing it." Within two years of the enforcing of these laws the Great Plague showed how vain were the efforts to exclude infection. In the next two hundred years several attempts were made to abolish quarantine. The agitations had important repercussions, the chief of which were general health measures to relieve "the epidemic atmosphere."

The first scientific paper read to the Medical Officers of Schools Association was by J. Andrew in 1884 on "Infectious Diseases in School," and in the subsequent discussion many members expressed the view that certificates stating that a child had not been exposed to infection were useless. Nevertheless, that generation revered isolation and quarantine, as may be instanced by their requiring fourteen days' quarantine for scarlet fever, while some thought three months necessary for its isolation. The next year the first edition of our code of rules was published, and comparison between it and the tenth edition shows that, though scientific knowledge alters our views, bacteriological researches are second in importance to a study of the biological aspect of disease.

EFFECT OF ABOLISHING QUARANTINE

The lessons of the past are surely that we have neglected the natural history of the common infectious diseases and have been guided far too much by prejudice and safety-first measures. My predecessor at Rugby School, Dr. A. I. Simey, felt that there was no justice in schools sending boys home after they had been exposed to infectious diseases at school if the school did not take them back in similar circumstances, and therefore before I came to Rugby quarantine had been abolished. It was an act of faith based on impressions, but statistics later vindicated the policy. Table I shows our experience. From 1933 to 1947, of 203 boys exposed to infection, about half had had no previous attack. If quarantine had been strictly observed, 4224 days would have been lost, not all at school, but the child in quarantine in the holidays is often treated as an unwanted playmate. Those school authorities which still impose quarantine make little allowance for a previous attack. If only those not considered immune were excluded, 2123 days would have been lost. Only 3 boys developed the disease, 2 at the end of the holiday and 1 at school got mumps, but this last boy was isolated on the first day and no secondary cases appeared. In sixteen years we had 75 outbreaks of infectious diseases, and not one of the originators had the slightest idea he had been exposed to infection.

The figures show that quarantine is extremely wasteful, and that epidemics come like thieves in the night. Even supposing, for the sake of argument, that we had three epidemics of measles, whooping-cough, mumps, rubella, and chickenpox attributable to abolishing quarantine, the question still arises whether our policy has failed.

Table II shows the expectation of infectious disease among 513 boys leaving the school. It demonstrates that measles and whooping-cough are what one may call inevitable diseases. The 20 who did not get measles were probably immune, for nearly all of them had been through several epidemics. The way this immunity is gained in the majority is still doubtful. It is probable that many of those who escaped chickenpox were similarly immune. We know the whoop is not a necessary part of pertussis, so much so that Gardner (1936) would like to abolish the term "whooping-cough" altogether. Besides the 382 who were known to have had pertussis, many were said by their parents to have had doubtful attacks. These doubtful attacks appear to give immunity and must therefore be considered as attacks.

These 513 boys, except a few who were superannuated, spent five years at Rugby, where quarantine was not enforced, provided those exposed to infection were kept away from the source as soon as it was recognised. My submission is that, if by mischance we had been unfortunate enough to introduce infection into the school, the figures would not have been radically altered.

A study of disease by age-groups reveals additional reasons for modifying quarantine. The case-mortality from measles is 8% in the first two years of life, falling to 2% in the third, and thereafter to only a fraction of 1%. Whooping-cough has the same high case-mortality in the early years, and children are specially liable to be attacked by whooping-cough as distinct from measles in the first two years of life. Among the 513 boys investigated none had had measles in the first year and 15 in the second, whereas 14 had had whooping-cough in the first year and 15 in the second. It is our duty to postpone measles and whooping-cough until after the age of three years, which includes the first year of nursery

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TABLE IV—CONTACTS AFTER MUMPS

of disease en swelling subsided	Day of disease when boy went home	Relations with whom he came in intimate contact	Result
7	10	2 sisters	Escaped
7	10	1 sister	,,
12	15	Father, mother, sister	,,
7	10	1 sister	,,
7	10	1 sister	,,
10	14	1 sister	,,
7	10	1 sister	,,
9	12	1 sister, 1 brother	,,
10	14	3 sisters	,,
7	11	1 sister, 2 brothers	,,
8	10	1 sister	,,
7	10	2 sisters	,,
8	11	1 cousin	,,
7	11	3 brothers	,,

r example, unmerited attention was given to the case ported at the Clinical Society of London in 1893, when boy spent an evening at a friend's house, leaving at ast four days before he developed mumps, but his friend t mumps 23 days after the visit. This is the only record here infectivity appeared more than 24 hours before e appearance of the swelling. Our chief concern is e duration of infectivity after the parotitis has appeared.

umps

Table IV gives details of 14 boys who went home between e tenth and fifteenth day after the appearance of mumps, d shows that, though most of them went home on the ird or fourth day after the swelling had subsided, none the 25 relations with whom they came in intimate ntact developed mumps. Mumps appears to be not fectious after the swelling subsides, and I submit that is the enforced isolation of the extra three or four days sually recommended which is so tedious for a healthy oy. These figures mean no more than that mumps is ot infectious three days after the swelling subsides. t may well be shorter, and a well-planned experiment ased on cultivation of the virus in the chick embryo hould decide the length of time the virus is present in he mouth.

Measles

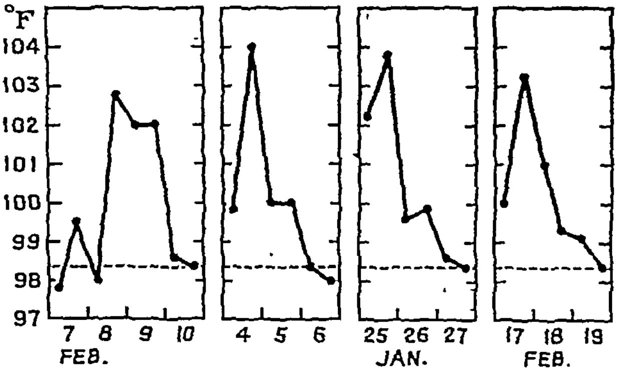
We are equally ignorant about the length of infectivity f measles. In reviewing school measles in 1944 I nade a special point that catarrh in healthy schooloys was conspicuous by its absence, and this may ffect the length of infectivity of a disease which ssentially attacks the respiratory mucosa. Similarly, ttenuated measles, or the mild attacks so common at resent, may be infectious for a shorter time than are nore virulent attacks. The accompanying four charts how how mild measles may be, and indeed, if the emperature had not risen for a very short time to 103°F, ne could dismiss these infections as trivial.

ABLE V—CLEARANCE OF INFECTIVITY IN WHOOPING-COUGH

ase no.	Day of bacteriological diagnosis	Negative release cough tests	Day of discharge	Contact with susceptibles after release	Resulting infections
1	−4 −9	22, 23, 24	28	+ +	−
2	+5	29, 30, 31	30	+ +	−
3	−12 −15	21, 29, 30, 31	34	+	−
4	+6	22, 23, 24	27	+ +	−
5	+16	21, 23, 30	35	+	−
6	−3	22, 23, 24	28	+	−
7	−5	16, 17, 18	22	+	−
8	+5	24, 25, 26	30	+	−
9	+7	22, 23, 24	30	+	−
10	+3	27, 28, 29*	32	+	−
11	+3	18, 19, 20	25	+	−
12	+4	21, 22, 23	23	+	−
13	+12	30, 31, 32	38	+	−
14	+7	22, 23, 24	35	+	−
16	+4	29, 30, 31	34	+	−
20	+5	24, 25, 26	27	+	−
21	−3 +7 +10	17, 18, 19	20	+	−
25	+5	14, 15, 16	23	+	−

* 21, 22, 23 weakly positive

I have recently discharged boys with uncomplicated measles when I have considered them clinically free from infection, provided they have had four or five days' convalescence after their temperature has become normal. This may be from the tenth to the twelfth day. In the past boys have been discharged on the fourteenth day after the appearance of the rash, and many of these have gone home into households with non-immunes and not given rise to infection. A well-planned experiment, *once again using the chick embryo* as the cultivating medium, should determine the length of infectivity of measles. If this shows that measles is only infectious for a short time it will assist convalescence. Many parents are anxious that their children after measles should go to the seaside or other health resort for a change of air, &c., but their efforts are usually of no avail because the child is still considered infectious. Many schools, though they have accommodation for the sick, have no adequate accommodation for convalescents; but, if the patients recovering from measles could mix freely with those with accidents, &c., much time, labour, and fuel would be saved. I have never seen any harm come of sending boys back into school in the times I have specified.



Temperature charts in four cases of measles, showing transitory fever.

Rubella

Biological studies of viruses suggest that they change, probably by mutations, at a far greater speed than would be expected from the study of evolution on Darwinian lines, and the congenital deformities in the children of women with rubella, and the recent descriptions of the disease causing a somewhat more severe illness than in the past, may be new phenomena and not something which the older clinicians missed. Therefore we must be constantly prepared for change. What one says about rubella today may have to be modified later. In 1932 we isolated german-measles patients for the minimal time instead of the usual ten days. I was fortified by the knowledge that my predecessor had pursued the same policy in 1916 when he estimated the saving at 900 days. A comparison between long and short isolation shows it has little effect on the spread of the disease. Out of 340 in 1932 who had not had the disease, 84 (*24·7%*) were attacked despite a full isolation period of ten days, whereas in 1931, when boys were allowed to return to school after four or five days only, out of 442 who had not had the disease 116 (*26·2%*) were affected. This supports the belief that infectivity is short and raises the question of the site of incubation.

Chickenpox

Chickenpox is undoubtedly an airborne infection, but the virus may be present in the skin eruptions, and the clinical practice of allowing boys to return to school as soon as the scabs have healed is fully justified. This is common practice, and positive steps should be taken to make the skin healthy, capable of throwing off the infection as quickly as possible. Usually boys who have

nursed by the bed isolation method in multiple-bed wards. By setting aside small wards it might be possible to keep together patients who are all infected by the same serological type of streptococcus. The number of such wards would tally with the number (usually three or four) of epidemic types current at the time." This was written ten years ago and still generally remains a pious hope, but schools could adopt the principle of this recommendation by nursing their own patients, so preventing cross-infection, with the sequelæ of relapsing and return cases. If it is reasonably certain that the original infection has not been superimposed by a second or third serologically different type, a month seems ample time for isolation. In the only epidemic I have had of a streptococcal sore throat isolation for three weeks was enforced, with beneficial results.

For bacterial infection the length of isolation varies with many factors, all of which must be taken into account, but the two most important factors appear to be the health of the patient and the site of the lesion.

CONCLUSIONS

We must be realists over quarantine and base our policy on present knowledge and biological evidence.

It is our duty to persuade lay authorities that quarantine of exposed persons is wasteful, and that observation should succeed it.

Boys should be healthy, so that they resist disease with maximal efficiency.

When they fall ill with infection, it is our duty to isolate them for as short a time as possible but to provide ideal convalescence.

Our experiments in the first instance will be based on impressions and are justified only if we make observations to prove or disprove our theories. We will have to face occasional failures.

As I reread the writings of Dukes and Simey I realise my debt to them, especially to their having created an atmosphere with successive headmasters so that they, and the governing body, turn to their medical officers for guidance.

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FURTHER OBSERVATIONS ON AN INHIBITORY SUBSTANCE (NISIN) FROM LACTIC STREPTOCOCCI

A. T. R. MATTICK
B.Sc., Ph.D. Lond.

A. HIRSCH
B.Sc. Reading

With a note by N. J. BERRIDGE, B.Sc., Ph.D. Birm.

From the National Institute for Research in Dairying, University of Reading

WE have already given some account (Mattick and Hirsch 1944, 1946) of the action *in vivo* of an inhibitory substance,* isolated from lactic streptococci, against streptococcal infections of the mouse. Later it was found that the substance was active in vitro against tubercle bacilli (Mattick 1946). We now describe the results of in-vivo trials with this and other pathogenic organisms, the method of large-scale preparation, and the toxicity of the inhibitory substance.

The earlier literature contains scattered references—some vague, some well supported—to the inhibitory action of lactic streptococci on other similar organisms, and Whitehead (1933) noted the inhibitory action of some milk streptococci on the "starters" used in cheese-making. He isolated and described the responsible substance as protein or polypeptide; but, though he noted that coliform organisms and spore-formers were unaffected, he did not determine its action against pathogenic organisms.

While our first note recording the action in vivo of the impure substance against pathogenic streptococci was in the press, Oxford (1944) published a paper describing some of the properties of a substance which he called diplococcin, isolated as a protein picrate from cultures of *Strep. cremoris*. This work was simultaneous with, but independent of, ours, and on conferring with Dr. Oxford we at first thought that the substances might be identical; but it now seems that they are different, inasmuch as our substance is prepared from the cell-free medium in which *Strep. lactis* has grown. It is stable towards ethyl alcohol and active against a wide range of micro-organisms. In contrast, diplococcin is prepared from *Strep. cremoris* and is partially inactivated by ethyl alcohol. In our experience more organisms are inhibited in vitro by the substances prepared from *Strep. lactis* strains than by those from *Strep. cremoris* strains.

It is clear that the lactic streptococci of group N (Shattock and Mattick 1943) and apparently those of other groups may produce several inhibitory substances (Thompson and Shibuya 1946). In this work we have observed that some organisms may inhibit others which are so closely related biochemically as to be virtually indistinguishable. For example, strains of *Strep. lactis*, *Strep. cremoris*, and organisms intermediate between these species may inhibit each other (table I).

STRAIN SELECTION

Several strains of inhibitory streptococci were investigated and found to give various yields. A strain was eventually found which gave good yields in broth and which has retained this property for two years at least. As adaptation to broth proceeds, yields of the inhibitory substances from growth in milk decline.

The strains used for large-scale production are kept in bullock's heart medium and usually need 3–5 transfers before the yield of antibiotic substance reaches its maximum. Strain to strain variation is well marked. Vacuum drying appears to be unsatisfactory, since the property of producing the inhibitory substance is lost. Freeze-drying has not yet been tried.

METHOD OF ASSAY

The Oxford cup method of Heatley (1944) could not be used for assay, because nisin does not diffuse through agar at about pH 7. A method of titration has therefore been devised. The test organism is a hæmolytic strain of *Strep. agalactiæ* grown in dextrose (1%)-'Lemco' (0·3%)-peptone (Evans 0·5%) broth, containing 0·5% NaCl.

Sterile portions of this broth are inoculated with 0·001% of a 24-hour culture of the test organism, giving 2000–10,000 viable organisms per ml. This bulk-inoculated broth is used to prepare serial dilutions of the substance under test, the dilutions usually being in powers of 2. Growth controls containing no inhibitory substance, and sterility controls containing inhibitory substance but no test organism, are incubated together with the test dilutions.

When the growth control shows visible growth at 37°C (usually 16–20 hours) the results are read, and the titre of the substance is taken as the dilution of the last tube in which growth is not visible.

UNITS

The results are now expressed as units, based on a standard partially purified preparation. One unit is taken as that amount of the preparation under test dissolved in N/20 HCl which gives the same inhibition as the standard preparation, also dissolved in N/20 HCl.

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* Group N Inhibitory Substance: (G) Nisin.

chickenpox in the holidays are sent back three or four weeks after the rash has appeared, instead of about half the time in properly nursed boys. On one occasion I have had a boy (a doctor's son) sent back to school with some spots not healed. As it was over a fortnight since the rash had appeared, he was allowed to stop; but cases of chickenpox appeared in his house after the usual incubation period.

Poliomyelitis

The length of infectivity of poliomyelitis must be short, as cases admitted to general hospitals almost never give rise to other cases. This has little effect on policy, because the length of treatment far outstretches the length of infectivity.

LENGTH OF INFECTIVITY OF SOME BACTERIAL DISEASES

Scarlet fever, whooping-cough, and Sonne dysentery are three examples of bacterial infections which are common in schools. In estimating the length of infectivity bacteriology can guide, but our conclusions must rest on a study of the natural history. Climatic conditions and the health of the tissue attacked will influence the length of infectivity. Healthy respiratory mucosa and intestines will recover more quickly than those which have been abused by constant irritation either from dust or from purgatives.

Sonne Dysentery

Sonne dysentery usually follows the ingestion of infected food and was comparatively poorly recognised until 1930, though Sonne first described his organism in 1915 and Paterson and Nabarro (1922) recognised that some of the infectious diarrhœa in very young children was due to an organism closely resembling Sonne's bacillus which they called *B. coli anaerogenes*.

In an epidemic in 1931, 21 boys were attacked. Stool culture proved positive only in those who had subsequent diarrhœa, and not in those who only vomited. One boy, who could not accurately date the onset of his symptoms but certainly had nausea on July 15 and diarrhœa on July 16, had on an average two diarrhœic motions a day until July 23, when he first reported sick. Sonne organisms were cultivated from a stool passed on the 23rd, but as soon as he was put to bed he recovered uneventfully. There were no subsequent cases from these boys who went home at the end of term—i.e., fourteen days after the start of the epidemic, but in some instances only ten days from the onset of diarrhœa.

In February, 1936, 7 boys were attacked with typical Sonne dysentery from whom the organisms were cultivated in 6 cases. Specimens obtained after a saline purge were examined a fortnight later and all were negative, except in the case of one boy who became a temporary carrier, whose stools were negative a fortnight later, as they were again three months later when he had an unexplained attack of diarrhœa.

Since then I have had other epidemics and taken similar precautions to find out bacteriologically if the stools are still infectious; but I always send boys back to school when they are clinically free from symptoms, making them realise that they have had an intestinal infection, and that it is necessary for them to give their hands a thorough scrub after having been to stool. They have never given rise to return cases.

It is possible that people may become true Sonne carriers, but the only suspicious person who would fall into this class was a boy of 15½ who, on Feb. 18, 1934, was admitted with diarrhœa four times and a temperature of 102°F. Next evening he passed a stool containing blood and mucus from which *B. dysenteriæ* was obtained. He had had three similar previous attacks but has had none since. There have never been any other cases of Sonne dysentery in this boy's house. Purgatives or even regular aperients are never taken at Rugby and it may be because these boys have healthy intestines that they throw off the infection very quickly.

The management of Sonne dysentery in England can be summed up thus: early diagnosis, rest and warmth in bed on a generous diet, early discharge after the cessation of symptoms, and hygienic disinfection of hands after possible contamination.

Whooping-cough

In our only large epidemic of whooping-cough, in July, 1935, catarrhal symptoms were absent, and vomiting and whooping were infrequent. Table v indicates the length of infectivity of whooping-cough. The days are counted from the very earliest cough, before it would give rise to the suspicion of whooping-cough except in an epidemic.

Whooping-cough is infectious from an early stage but quickly loses its infectivity, and by the time the whoop arrives the child is probably free from infection though he may still be ill. Convalescence is often sorely needed, but usually nobody will have the child because of the symptoms.

Scarlet Fever

A streptococcus has now been proved to be the cause of scarlet fever. Streptococcal sore throat without rash demands the same management as scarlet fever. In schools the problem is different from that in fever hospitals, but all of us must have read the article by Allison and Brown (1937) with real interest. They showed as clearly as possible that relapses in scarlet fever during stay in hospital was due to a reinfection by a streptococcus of a serologically different type from that producing the primary infection. The diminution of the number of return cases by early discharge was due to the fact that the longer children stayed in a fever hospital the more liable they were to be reinfected by a streptococcus of a different serological type.

My experience of scarlet fever includes 13 outbreaks. Two of these were single cases of surgical scarlet fever isolated for seven and fifteen days. In the remaining eleven outbreaks, 35 boys were attacked. The shortest isolation was twenty-one days (2 cases); 14 other patients were isolated for less than four weeks, 8 others for less than five weeks, and 11 others for less than six weeks. The types of streptococcus differed on only one occasion, when two boys affected shared a four-bed ward and were both advised for their own sakes not to cough at one another. They were discharged on the twenty-sixth and twenty-seventh days without any untoward results. There were no relapses.

Bacteriological examination of the nasopharynx of children with scarlet fever must be correlated with clinical findings. The diagnosis should, if possible, be confirmed by finding a streptococcus and by determining its type. If the types are different, patients should be separated; but how long should one continue swabbing the throats? On one occasion, at the request of anxious parents, I did this at weekly intervals, but on the thirty-fifth day the swab was still positive. Nevertheless, the parents decided to take the boy home, and on the thirty-seventh day his mother fell sick with scarlet fever. Apart from this I have had no return cases, though the isolation has been shorter.

The lessons to be learnt are two: (1) to remember that the throat is a habitat of the streptococcus, and that the child should be trained not to cough over people, and fond parents should equally realise that they are liable to contract infection from their children; and (2) to realise that scarlet fever in *schools* is usually caused by the same type of streptococcus, and that the patients should therefore be segregated in the school sanatorium and not sent to fever hospitals. Allison and Brown (1937) suggested that scarlet-fever patients should be cubicle-nursed if possible: "failing this they should be

The impure preparations used in the in-vivo experiments with streptococci and tubercle bacilli reported here caused, on repeated subcutaneous injection, local œdema and necrosis. The much purer preparations (10^7 units per g.) used recently caused no visible lesions at the site of inoculation. No systemic effects were apparent.

IN-VIVO EFFECT AGAINST BACTERIAL INFECTIONS

Streptococci

It has been found that antibiotic substances from natural sources may be active in vitro but not in vivo. We considered it wise, therefore, to attempt to assess the probable value of nisin by using impure preparations for in-vivo experiments before embarking on fairly large-scale purification.

A very impure preparation was therefore used in a small experiment against a mouse-pathogenic streptococcus in vivo. A single dose of 2 mg. had well-marked curative effects.

A larger experiment with 20 control and 20 treated mice (each received 10,000 lethal doses) was then carried out. A total weight of 10 mg. given in doses three-hourly over 45 hours protected all the treated mice (all controls died within 24 hours), of which 40% survived after seven days, when the experiment was discontinued. In a further experiment, still using an impure preparation, the interval between doses was extended from 3 to 12 hours. It was found that similar protection was conferred.

When these experiments had been completed, it was found that cultures of streptococci in broth appeared to be sterilised within a few minutes of adding the substance.

Another experiment with mice was therefore carried out. The mice received 1000 lethal doses of a mouse-pathogenic streptococcus. After an interval of 12 hours the animals were moribund. They were then given a single dose of 50 mg. (100,000 units) of the impure substance.

TABLE II—CONCENTRATIONS OF NISIN REQUIRED TO INHIBIT IN VITRO SOME OF THE MORE IMPORTANT SUSCEPTIBLE ORGANISMS

Organisms susceptible	No. of strains or species	Units required to inhibit
Streptococci groups A–M except C, D, L	17	0·25–4
Pneumococcus, type I	2	0·25
" type II	2	100
Staph. pyogenes	6	100
Neisseria	3	2–50
Bacillus	6	2–4
Clostridium	8	0·25–80
Corynebacterium	12	4–120
Actinomyces	6	1–10
Mycobact. tuberculosis	6	100–500
Erysipelothrix monocytogenes	3	2

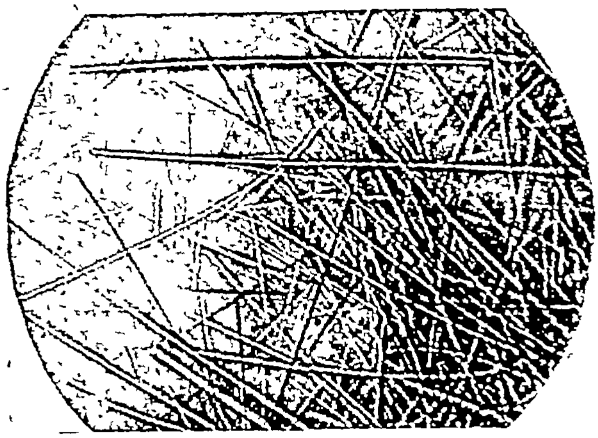
All the treated animals were alive after ten days, when observations ceased. Some of the control animals died within 16 hours, and all were dead within 30 hours.

Clostridium septicum

In a similar experiment with single doses of the substance against *Cl. septicum* there was also well-marked protection, and 40% of the animals which were moribund survived for at least ten days.

Strep. pneumoniæ

Encouraging results were also obtained in the same way with *Strep. pneumoniæ* (type II).



Photomicrograph of nisin crystals. (× 500.)

Mycobact. tuberculosis (human)

From the results of experiments in vitro it appears that the acid-fast organisms are considerably less susceptible than, for example, the streptococci. This, coupled with the nature of the lesions and the general chronicity of experimental tuberculosis, makes it difficult to decide, in the first instance, how doses should be administered and spaced. Conclusions can at present be only tentative.

In a four-a-side experiment with guineapigs using a virulent strain of the tubercle bacillus (C Weybridge) it was found that there was significant limitation, but not prevention, of infection by the impure material. The spleens of animals treated with six-hourly injections of 100 mg. for four weeks were found at necropsy, six weeks after infection, to be completely free from macroscopic lesions, whereas all the controls were obviously severely infected.

SUMMARY

An antibiotic substance, nisin, isolated from liquid cultures of *Strep. lactis*, is active in vitro against many types of pathogenic and other organisms.

A method of semi-large-scale preparation of the substance is described.

Even in the impure state, nisin is effective in vivo against infections with *Strep. pyogenes*, *Cl. septicum*, and type II pneumococcus.

Limitation of spread in experimental tuberculosis in the guineapig has also been observed.

We wish to acknowledge our debt to Miss E. M. Barnes, of Messrs. Benger's, for some of the data in table II, to Dr. H. C. Collumbine, of Messrs. Benger's, for observations on toxicity, and to Mr. L. J. Meanwell, of United Dairies, for strains of inhibitory streptococci.

Further Purification of Nisin

N. J. BERRIDGE

Experiments with active material prepared by a method similar to that described above showed that it could be further purified by precipitation at pH 6·1 from molar phosphate buffer. The requisite amount of potassium dihydrogen phosphate was added to a 5% solution of nisin in dilute hydrochloric acid at pH 1·8, and the pH was then raised to 6·1 with concentrated potassium hydroxide. The resulting precipitate had an activity of about 8,000,000 units per g. of organic dry weight. This precipitate, dissolved in dilute hydrochloric acid at pH 1·9, was fractionated by partial precipitation with sodium chloride, the portion of intermediate solubility having an activity of about 20,000,000 units per g. of organic dry weight. By repeated fractionation this figure was increased to 30,000,000.

Many attempts at crystallisation by the slow addition of sodium chloride to a solution of this material gave

(A 0·1% solution of the present standard preparation contains 10,000 units per ml. and has a titre of 1/10,000 by the *dilution method.*)

ORGANISMS SUSCEPTIBLE

The more important of these are shown in table II. The following pathogenic organisms have been found to be susceptible in vitro: streptococci of groups A, B, E, F, G, H, K, M, and N, staphylococci, *Micrococcus lysodeikticus*, pneumococcus, neisseria, some types of bacillus, clostridium, corynebacterium, mycobacterium, lactobacillus, actinomyces, and erysipelothrix. The activity of nisin against these organisms is fully maintained in media containing serum, blood, or milk. None of the gram-negative organisms so far tested is susceptible.

The relative sensitivities in vitro vary; as shown in table II, the mycobacteria are about 25–100 times less sensitive than the streptococci. It should be stated specifically, however, that, for example, cultures of tubercle bacilli in Long's medium are killed or rendered incapable of growth.

Similarly a growing culture of the streptococcus producing the antibiotic has been shown to kill or render avirulent the tubercle bacilli in milk (Mattick and Hirsch 1946). (The concentration of inhibitory substance reached in the milk was about 80 units per ml.)

MEDIUM FOR GROWTH

For semi-large-scale preparation of the substance the following medium is used:

Glucose	15 g.	KH_2PO_4	10 g.
'Yeastrel' ..	7 g.	$MgSO_4$	0·2 g.
Na citrate ..	6 g.	NaCl	3 g.
K_2HPO_4	10 g.	Tap water to	1000 ml.

pH 7·2

Before use the yeastrel is freed from an acid-soluble component by adjusting its solution to pH 8. This avoids an unnecessary contaminant in the later stages of preparation. No improvement in growth or yield of inhibitory substance is obtained by increases in yeastrel content beyond 0·7%.

This medium is inoculated (in large bulk) with about 1% by volume of a 24-hour growth of *Strep. lactis 354* in broth of the same composition and incubated at the optimal temperature of 30°C. The most favourable pH and the most favourable proportion of salts and of the nutrient components of the medium were determined by experiment. This medium was found to be unsuitable for the preparation of the substance associated with *Strep. cremoris*. Niven's (1944) synthetic medium was also tried and found to be satisfactory for *Strep. lactis*, but was considered to be impracticable on the large scale because of its cost.

METHOD OF PREPARATION

After incubation for 48 hours at 30°C of 150-litre quantities of the medium described, the acidity changed from pH 7·2 to about 4·4, with an activity of about 80 units per ml. At this stage much of the active substance accompanies the bacterial cells, but on acidification to below pH 3 it virtually all passes into the broth, from which it may be recovered as follows:

(1) Centrifuge, using a cream separator, after acidifying with 10 *N*.HCl to pH 2, discarding the bacterial cells.

(2) Adjust the centrifugate to pH 4·2–4·5 with 10 *N*.NaOH.

(3) Add 5% v/v of chloroform and 0·1% secondary octyl alcohol and stir the 150-litre bulk with a centrifugal pump to emulsify the chloroform in the medium (Sevag et al. 1938). Allow to settle and siphon off the supernatant inactive broth.

(4) Centrifuge the stable chloroform gel remaining (usually about 10 litres) at about 1500 r.p.m. for 10 min. to remove the residual broth and unemulsified chloroform. The volume is now about 5 litres.

TABLE I—INHIBITORY EFFECTS OF DIFFERENT STREPTOC[illegible] ON ONE ANOTHER

—			Test organisms *						
			Strep. lactis		Intermediate		*Strep. cremoris*		
			A	B	C	D	E	F	[illegible]
Nisin producers	*Strep. lactis*	A	..	0	0	0	320	320	[illegible]
		B	0	..	0	0	320	320	[illegible]
	Intermediate	C	0	0	..	0	320	320	[illegible]
		D	0	0	0	..	100	160	[illegible]
Diplococcin producers	*Strep. cremoris*	E	80	0	80	0	..	0	[illegible]
		F	160	0	160	0	0	..	[illegible]
		G	320	10	160	20	0	0	..

* Figures are dilutions at which inhibition just observable at [illegible] hours.

(5) Cool to about 4°C and add cold absolute alcohol. This dissolves the chloroform and precipitates the active substance. Alcohol is added until the precipitate sinks readily for removal by centrifugation.

(6) Dissolve the precipitate so recovered in *N*/20 HCl at 50°C. Remove the residual chloroform by blowing in hot air, with stirring. The volume is now about 15 litres with an activity of 500–1000 units per ml., the solids' content being reduced by 90–97%.

(7) Raise the pH of the acid solution to 2·5–3 with *N*.NaOH, add an equal volume of cold alcohol, and keep the bulk in the cold for 24 hours.

(8) Remove the inactive precipitate by centrifuging, and concentrate the alcoholic solution in vacuo at about 10°C to half its volume, maintaining the pH by additions of *N*.NaOH. Finally bring the pH to about 4 and keep the solution in the cold for a further 24 hours.

(9) Remove the active precipitate, wash it with neutral distilled water, dissolve in the smallest volume of *N*/100 HCl, and freeze-dry the solution.

This preparation contains no ash (except NaCl), has an activity of 1–2 million units per g., and is stable to boiling in acid solution. The dry powder is stable for months at least and is not hygroscopic. The yield is about 16–20 mg./l. of culture medium—i.e., about 20% of the possible.

EFFECT ON LEUCOCYTES AND RED CELLS

With the technique of Abraham et al. (1941) even the very impure preparations, with a nisin concentration of about 1/250, had no observable effect on leucocyte mobility and caused no hæmolysis of red cells.

RATE OF EXCRETION

It has not yet been possible to determine rates of excretion with the highly purified substance. With impure preparations it has been found that in the rabbit (2–3 kg.), after the intramuscular injection of 200,000 units, significant concentrations—i.e., 4 units per ml. —remain in the serum after six hours.

After intravenous injection of similar quantities the concentration declines more rapidly. After subcutaneous injection significant concentrations were maintained longer than when injections were made intramuscularly or intravenously, but the peaks were lower. Repeated subcutaneous injections led apparently to a build-up in the serum. In these experiments the concentration of inhibitory substance in the serum was determined by means of *Strep. pyogenes* (*Richards*). Active material was excreted in the urine of rabbits and guineapigs.

TOXICITY

With the impure substance the LD/50 observed in mice is very high—about 3·5 g./kg. of body-weight.

A total dose, spread over four weeks, of about 9 g./kg. of body-weight caused no observable macroscopic systemic effect in guineapigs.

Clinically the cases were divided into four groups as follows:

	Cases
Congenital syphilis	25
Early latent syphilis (known to have acquired primary or secondary syphilis within the previous five years)	33
Latent syphilis (duration unknown)	34
Late symptomatic syphilis	28

Of these 120 cases, 3 congenital, 5 early latent, 3 latent of unknown duration, and 3 late symptomatic cases had abnormal positive signs in the C.S.F. and were therefore regarded as having asymptomatic neurosyphilis also; 4 others with symptomatic neurosyphilis had abnormal cerebrospinal fluids.

Of 80 patients who had received previous treatment with arsenic and bismuth the subsequent administration of penicillin was followed by a favourable blood response in 45. The total dosage of penicillin was 2,400,000 units in 61 cases, and 4,000,000–4,800,000 units in 59 cases. There was no significant difference in the number of successes obtained in these two groups. Only 34 patients received consolidation treatment with arsenic and bismuth after the penicillin; 18 of these had received no treatment before penicillin, and 16 fell in the late symptomatic group and were selected on the basis of clinical severity; 12 of them were regarded as successes, while in 22 the serology was unchanged. A high serological titre was found in 28 of them when the penicillin was given, and only 8 of these showed serological improvement in spite of the combined treatment.

CONGENITAL SYPHILIS

The 25 patients in this group had a mean age of 26·5 years, and previous treatment had already been given to 21 of them to an average of 3·18 courses of arsenic and bismuth. At some time 7 had had interstitial keratitis, 4 Clutton's joints, 3 gummata, 2 neurological signs, and 8 no signs other than facial or other stigmata; 1 was referred on the grounds of family history.

As a result of previous treatment 7 had low titres when penicillin was begun, and 5 of these reached seronegativity in six months, though 2 later relapsed. One of them had a clinical relapse of interstitial keratitis at six months while the serum was still negative, though it later became weakly positive. In 2 instances the improvement was aided by adjuvant treatment.

One other patient, who had received previous treatment but was strongly positive when the penicillin was administered, had previously had a fluctuating titre, and seronegativity was reached here without other measures. Of the remaining 17, 13 had had persistent high titres, and none showed any further improvement with penicillin. The remaining 4, who had had no previous treatment and had high titres, were not improved.

Only 6 of the 25 received any treatment after the penicillin and 2 of these were successes. Total improvement for the group: 6 out of 25 (24%).

EARLY LATENT SYPHILIS

The 33 patients with early latent syphilis had a mean age of 28·3 years, and *all* had had previous treatment to an average of 3·35 courses of arsenic and bismuth for primary or secondary syphilis known to have been contracted on an average thirty months previously (extremes: nine months and five years). In all cases the serology was positive when penicillin was given; so they were in effect cases of either sero-relapse or sero-resistance to an early infection. However, 11 had low titres as the result of previous treatment, and 22 had high titres, but 15 of these had at some time reached seronegativity and were therefore now serological relapses, and 7 had been persistently seropositive throughout.

Of the 11 with low titres, 9 had reached seronegativity at six months, but at nine months 2 had relapsed, and at twelve months 3 more. None had after-treatment before the relapse. Of the 7 with fixed titres only 3 had improved at six months, but of the 15 who had at one time been seronegative no less than 14 became seronegative again by six months after the penicillin, and there were no later relapses. Of the 26 cases showing improvement only 3 received additional treatment after the penicillin.

The duration of the syphilitic infection being much lower for this group than for the others, the improvement-rate is considerably higher. It is particularly notable that the known existence of a fluctuating titre is a good prognostic sign of the expected response to penicillin, though it is probable that further metallotherapy would have produced a similar result. Total improvement for the group: 26 out of 33 (78·8%).

LATENT SYPHILIS OF UNKNOWN DURATION

The group with latent syphilis of unknown duration comprised 34 patients with an average age of 30·6 years. All cases were asymptomatic, the positive serology being discovered in 10 at final tests of cure for gonorrhœa or urethritis; in 3 during attacks of epididymitis; in 3 during polyarthritis; in 2 in donors for blood-transfusion; in 4 during investigation for quasi-venereal complaints; in 4 during investigation of sore throat, enlarged glands, or headache; in 2 during investigation of indefinite skin complaints; and in 6 the reason for discovery was unknown.

Previous treatment had been given to 16 to an average of 3·1 courses of arsenic and bismuth. As a result of previous therapy 8 had an initially low titre; in these, 5 successes were obtained at six months, but 2 of them relapsed at nine months. Of 26 with initially high titres 2 had previously shown fluctuating titres, and both of these responded, whereas of 6 showing known fixed titres only one responded. The remaining 18 were previously untreated, and 8 had reached or approximated to seronegativity by six months. In the whole group after-treatment was given only to 9, and 4 of them were among the successes. Total improvement for the group: 16 out of 34 (47%).

LATE SYMPTOMATIC SYPHILIS

The 28 patients with late symptomatic syphilis had an average age of 35 years; 15 had gummata or late cutaneous syphilis, 3 leukoplakia, 3 cardiovascular syphilis, 2 ocular syphilis, and 5 symptomatic neurosyphilis. Of the gummata 4 were testicular: 1 diagnosed by biopsy, and 3 only after removal of the affected testicle before the patient was sent to the venereal-diseases clinic.

Previous treatment had been given to 10 patients, to an average of 3·6 courses, and as a result 5 had initially a low titre, and there was improvement to seronegativity at six months in 4 (1 of whom had received after-treatment). Of the 23 with high titres, 5 had had previous treatment without response, and only 1 showed further improvement with penicillin at six months and 1 at nine. Of the remaining 18 untreated cases, only 3 improved at six months, but 2 more had improved by nine months. After-treatment was given to 16, with only 3 successes. Total improvement for the group at six months: 8 out of 28 (28·6%).

ABNORMAL CEREBROSPINAL FLUID

In 18 cases the C.S.F. was abnormal before treatment; 15 of these had a further check after six months, of which 9 were much improved, 1 was slightly improved, 4 were unchanged, and 1 was worse.

Of the 18 cases, 3 were congenital syphilis, 1 being associated with an ocular palsy and 2 with interstitial keratitis. All had after-treatment, and previous treatment had been given to 2. In 2 the blood titres were initially low, and in 1 high. The high titre remained occasional microscopic needles in a mass of amorphous matter; but, when the wet amorphous precipitate obtained in this way was dissolved in an equal volume of absolute ethanol and precipitated therefrom by slow cooling, the nisin appeared in the form of long filaments. Subsequent preparations gave slightly larger crystalline needles, of which an example is shown in the accompanying photomicrograph. This particular preparation, when dissolved in N/20 hydrochloric acid, gave a solution containing 800,000–1,600,000 units per ml. and an organic dry weight of 16 mg. per ml., giving for the dry material an activity of 50–100 million units per g.

Thanks are due to Messrs. Benger's Ltd. for invaluable help in the preparation of crude active material, and to Mr. N. J. Gruber for photomicrography.

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EFFECT OF PENICILLIN ON SEROLOGY OF LATE AND LATENT SYPHILIS

A STUDY OF 120 CASES FOLLOWED FOR SIX MONTHS OR MORE

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IT is well recognised that in late and latent syphilis serological reversal is not tantamount to a cure, and that, when such reversal has been achieved, the later complications of syphilis may still ensue.

Jordon and Dolce (1946), who described 169 cases of latent syphilis treated with various degrees of completeness with arsenic and bismuth and followed up ten years or more, had 2 patients both of whom developed syphilitic aortitis three and nine years after they had become seronegative. In the present series, where the period of observation was very much shorter, there was one instance of a relapse of active interstitial keratitis after seronegativity had been reached. However, the serological titre is a yardstick, and sometimes the only yardstick, by which progress may be measured, and a change to seronegativity is one of the results to be desired as an outcome of successful treatment. In the large series described by Jordon and Dolce *permanent* seronegativity was reached in about 40% of cases of latent syphilis, and it was suggested that, so far as the development of complications was concerned, a consistently strong titre was a bad, and a fluctuating one a good, prognostic sign.

In preliminary reports on the action of penicillin in late and latent syphilis Stokes et al. (1944) suggested that the serological principles applicable to arsenic and bismuth were applicable to penicillin also, and that some reduction in serological titre was usually obtained with penicillin, which reduction was greater in cases showing a higher titre than in cases showing a low one, and that such a decline in titre took place in 50–60% of cases treated.

Later, presenting an interim report of two years' work at a National Research Council meeting in Washington on Feb. 6, 1946, Stokes described 197 cases of neurosyphilis followed up 120 days or more, and noted that the good effects of penicillin on the findings in the cerebrospinal fluid (C.S.F.) were not always accompanied by a similar improvement in the blood—in only 31% was there similar improvement in both. It almost seemed, he added, as if a different mechanism was involved in the responses of the blood and C.S.F., and that, within the limits of the period of observation, the blood findings had little relation to symptoms and C.S.F. findings. Little information was forthcoming at this conference about the effect of penicillin in either latent or cardiovascular syphilis, though it was resolved to make a widespread investigation into its effects in latent syphilis.

Dexter and Tucker (1946) described the effects of penicillin in 19 cases of gummatous syphilis with a strongly positive serological titre. There was a general fall up to three months, which gradually came to a level at a year, though no case became seronegative.

PRESENT INVESTIGATION

The present cases were all military personnel with late syphilis, both symptomatic and latent, treated with penicillin at an Army military hospital. Most had received previous treatment with arsenic and bismuth, which, though it confuses the analysis, makes it possible to compare the results obtained with these drugs and those obtained with penicillin later. All cases were seropositive when penicillin was given. Commercial penicillin was used in total dosage schedules of 2·4, 4·0, and 4·8 million units in aqueous solution in three-hourly round-the-clock injections of 40,000 units. About two-thirds received American brands, and a third British penicillins. Some of these penicillins may have contained up to 30–40% of penicillin K, but their exact contents are unknown. After-treatment with arsenic and bismuth was given to some patients, usually those who had received no previous treatment; and, though this is a confusing factor in the few successes achieved with the combined treatment, it is assumed that a failure with penicillin plus arsenic and bismuth may be safely regarded as a failure with penicillin alone.

About 150 cases of late and latent syphilis were treated with penicillin before April, 1946, and these formed the subject of a brief announcement in a discussion at the Medical Society for the Study of Venereal Diseases in July, 1946. Of these cases, 120 were followed up six months or more and are selected for this study, 81 of them were followed up nine months, and 56 a year or more. The longest time that any patient was under observation was two years, the average being eleven months. A better follow-up was impossible, because this investigation was carried out in the teeth of demobilisation. A concerted effort was made to trace the patients into civilian life; but, judged on the relation of work done to results achieved, this was not very profitable. However, in consequence of some 350 letters, about 60 patients were traced to other treatment centres.

Before penicillin was administered, all patients had a complete clinical and C.S.F. examination. The penicillin schedules have been described; but, where there were clinical signs of late symptomatic syphilis or a positive C.S.F., the initial dose of penicillin was only 10,000 units, which was increased to the maximum of 40,000 units within thirty-six hours. No serious complications developed during treatment, apart from a few cases of urticaria. The subsequent régime of surveillance consisted of serological tests once a month for six months, when the C.S.F. was again examined. After this, bloods were examined quarterly for a year, and then six-monthly for a further year, at the end of which time the C.S.F. was due to be examined again (none of the 120 patients has yet reached this final stage). The serological tests consisted of a qualitative Wassermann and a quantitative Kahn; but, when seronegativity had already been reached, a standard Kahn was substituted for the quantitative test.

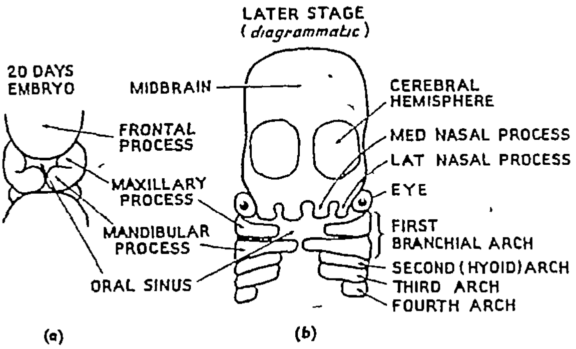

Fig. 1—Embryological development of jaws: (*a*) at 20 days; (*b*) later. (After Keibel and Mall 1910.)

weight of the body on the vertex, the pressure of the sternal region in contact with the mandible might force the jaws together; and, if the lower is united and the upper is not, the lower jaw might prevent union of the horizontal plates, causing cleft palate but allowing normal union of the alveolar ridge. This hypothesis explains the backward displacement of the tongue and its small size, though only one of the two cases described below showed these characters, and not all cases show cleft palate (Lapage 1937).

At 8–10 weeks of fœtal life the two lips project about equally, but at 10–12 weeks the upper lip and upper jaw grow more rapidly, with the result that at 4–5 months there is a considerable projection of the upper jaw (fig. 2). This difference is gradually overcome between 6 and 9 months by a stronger growth of the lower lip and mandible, and Keibel and Mall (1910) have suggested that the early fœtal arrangement may persist by a kind of inhibition of the latter process. Lanstrup (1925) declared that the process was most likely one of simple arrest of development, and an impressive series of 50 cases collected by Pfaff (1913) clearly showed that there was often some hereditary element, which in one case he traced through several generations. In the case reported by Lapage (1937) there was a family history of two previous babies dying because their lungs were never expanded, perhaps because of micrognathia and glossoptosis.

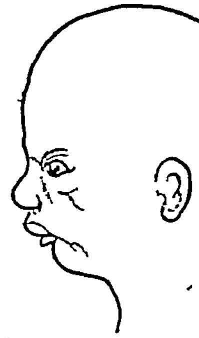

Fig. 2—Projecting upper lip and receding chin in fœtus at about 4th month.

Experiments on amniota have shown that bands or a deficiency in amniotic fluid can cause many deformities, and similar maldevelopment can be seen in the brachygnathia of the pekinese and pug-dog, while the "hog jaw" of sheep is another common example.

It appears reasonable to suppose that all these factors can operate to cause deformity; perhaps those cases with cleft palate are due to backward and upward pressure on tongue and lower jaw in the early stages, whereas pressure at 4–5 months could explain the micrognathia in cases without cleft palate.

CASE-RECORDS

Case 1.—No hereditary factor was found; both parents were normal, and the child was the first born after eight years of marriage. Birth weight was 6 lb. 11 oz., and the child was admitted at 22 days, weighing 5 lb. $15^{1}/_{2}$ oz., with a history of difficulty in feeding, with frequent dyspnœa and cyanosis due to respiratory obstruction.

She was small and greyish, going blue at times; the mandible was very poorly developed, but the most striking feature was the respiratory obstruction. On inspiration there was regression of the lower jaw, with indrawing of the suprasternal region and intercostal spaces. No breath was taken with several such efforts, until at the sixth or seventh attempt a noisy grunting inspiration was heard. A midline cleft in the soft palate and a large tongue could be seen, the latter closing off the airway completely when the child was lying on its back. When the angles of the jaw were held forward, respiration was normal.

The baby sucked heartily but with little effect, and was fed by pipette for several days. Respiration was fairly satisfactory when she lay on her side or face, with the foot of the cot raised, but she was often found distressed and cyanosed, because she had contrived to move to the supine position.

A padded wire splint was fixed with tapes so that there was a constant pressure holding the mandible forwards (fig. 3). There was no soreness of jaw and head from the pressure of pads and tapes. On the tenth day after admission weight had risen to 6 lb. $4^{3}/_{4}$ oz., but the soldered splint was broken; the respiratory rate rose from 32 to 48 per min. over the next two days, and signs of bronchopneumonia developed. A second splint was made from one piece of tempered steel wire, and slow recovery ensued on sulphathiazole therapy.

A month after admission the profile had already made some improvement, but there was still a noticeable difference when the splint was worn (compare figs. 3 and 4). Progress was slow but maintained, and 14 weeks after admission the child could breathe and feed without any help from the splint. She began to speak at one year, when she weighed 23 lb. 14 oz., the defect in the palate was closed by operation, and she now appears normal.

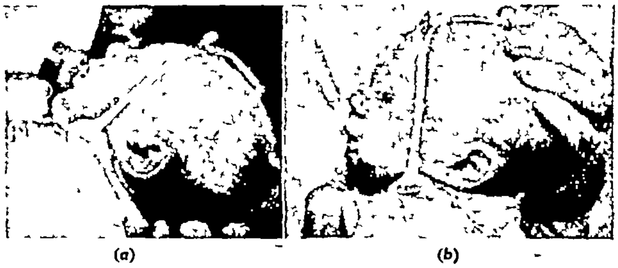
(*a*) (*b*)

Fig. 3—Case 1, with padded wire splint in position: (*a*) feeding (*b*) at rest.

Case 2.—No hereditary factor was found. There was one sibling, reported normal. Birth weight was 7 lb. 10 oz., and the child was admitted at 10 days, weighing 7 lb. 6 oz., with a history of an abnormal mouth, an odd cry, and not taking feeds except by œsophageal tube.

He was hypotonic, cyanosed, and thin. The mandible was very poorly developed. The tongue was very small and fell back into the cleft in the soft palate.

When the baby was in the supine position the respiratory excursions were astonishing. The sternum was raised like the keel of a ship, and there was marked recession of the lower ribs. Five of these respiratory efforts failed to draw air into the lungs, but at the sixth attempt the air entry was moderately good. If the baby was placed on his side or nursed upright the respiration was much improved; dyspnœa was also relieved by pressing forward the angles of the jaw.

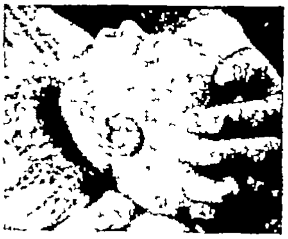

Fig. 4—Case 1 with splint removed. Compare fig. 3.

A splint was more difficult to adjust than in case 1, partly because of pressure sores at the angles of the jaw. Eventually the splint used for case 1 was applied for increasingly long periods of the day.

All food taken by normal bottle or spoon was regurgitated through the nose. The baby appeared to suck well, but really took very little. Four-hourly œsophageal feeds were therefore given. His stools always consisted of undigested food, containing much mucus and fatty curds. Lactic-acid milk, though digested best, would not pass through the unchanged though the C.S.F. became worse; 1 of the 2 low titres improved in both blood and C.S.F., though the blood later relapsed: and in the other there was a pronounced change for the better in the blood but only slight improvement in the C.S.F.

There were 5 cases of latent syphilis of known recent duration; 3 with high and 2 with low blood titres. All had had previous treatment, and after-treatment was given to 2. Improvement in blood titre was noted in all 5; and of the 4 whose C.S.F. was examined at six months, 2 were much improved and 2 showed no change.

There were 3 cases of latent syphilis of unknown duration, and none had had previous treatment, but 1 had after-therapy. In 2 cases the C.S.F. was examined after six months, 1 showing much improvement and 1 no change: but both still showed a high titre in the blood.

There were 7 *cases of late symptomatic syphilis*: 4 were pure neurosyphilis, whereas 2 with gummata and 1 with aortitis had asymptomatic neurosyphilis. The blood titre was low in 1 but high in the rest. Of 6 cases in which the C.S.F. was re-examined at six months, 5 showed much improvement and 1 was unchanged. In only 1 was there improvement in the blood in the same time. One patient had had previous treatment, and all had further therapy after the penicillin.

Thus, in the 18 patients with a positive C.S.F., 13 had a high and 5 a low serological titre when the penicillin was given. Previous treatment had been given to 8 and after-treatment to 13. There was improvement in both blood and C.S.F. in 5 cases; improvement in the C.S.F. but not in the blood in 5; improvement in the blood but not in the C.S.F. in 2; no change in blood and C.S.F. in 2; and in 1 the blood titre remained stationary while the C.S.F. became worse. In 3 cases the C.S.F. was not re-examined during the period of this study.

Thus the findings in the blood and in the C.S.F. were not concomitant. Of the 9 cases showing much improvement of C.S.F. only 3 showed similar improvement of the blood.

SEROLOGICAL STABILITY

The serological results can be arranged in four groups:

(1) Low declining titre (due to previous treatment).

(2) High fluctuating titre (known to have reached seronegativity during previous treatment).

(3) High fixed titre (completely resistant to previous treatment).

(4) High titre, stability unknown (cases not treated previously).

This arrangement discloses wide differences in the response of the blood serology to penicillin. In the following tables improvement is regarded as a reversal from a low titre to seronegativity, or from a high titre to seronegativity or near-seronegativity, which means that either the Wassermann or the Kahn was negative, or that both were only plus-minus reactions.

	No. of cases	*Improvement*
(1) *Low declining titre:*		
Congenital	7	5
Early latent	11	9
Unknown latent	8	5
Symptomatic	5	4
	31	23 (*74·2%*)

(5 later relapsed at nine months, and 4 at a year)

	No. of cases	*Improvement*
(2) *High fluctuating titre:*		
Congenital	1	1
Early latent	15	14
Unknown latent	2	2
Symptomatic	0	0
	18	17 (*94·4%*)

(No relapses)

	No. of cases	*Improvement*
(3) *High fixed titre:*		
Congenital	13	0
Early latent	7	3
Unknown latent	6	1
Symptomatic	5	1
	31	5 (*16·1%*)

No relapses; 2 did not show any improvement until the ninth month)

	No. of cases	*Improvement*
(4) *High titre, stability unknown:*		
Congenital	4	0
Early latent	0	0
Unknown latent	18	8
Symptomatic	18	3
	40	11 (*27·5%*)

(No relapses; 2 later improved at nine months)

It is readily seen that groups 1 and 2, both of which had known fluctuating titres, brought a large measure of success, whereas group 3, which had previously failed, did not show much evidence of further improvement. Group 4, containing a potential mixture of all the previous groups, had a mean of successes.

SUMMARY

The effects of penicillin on the serology of 120 patients with late or latent syphilis followed up for six months or more are described.

Only 34 received any after-treatment and these accounted for only 12 of the 56 successes obtained. Previous treatment with arsenic and bismuth had been given to 80 patients and served as a gauge of the likely response to further antisyphilitic measures.

Improvement was greatest in latent syphilis of known recent origin and least in late symptomatic and congenital syphilis.

Cases with an initially low titre did much better at six months than those where the titre was high. However, later observation showed no further improvement but an appreciable number of relapses in those with a low titre, whereas some of those with initially a high titre began to improve up to nine months, or continued to improve up to a year, with no such incidence of relapse.

Those cases where the titre was fixed to arsenic and bismuth did much worse than those where the titre was known to have been fluctuating.

Previously untreated cases fell midway between these two groups.

There was no concomitance between the response in the C.S.F. and the serological titre.

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MICROGNATHIA

REPORT OF TWO CASES

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MARGARET KEMSLEY M.B. Lond.

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POOR development of the mandible, with regression of the lower jaw, is a relatively common congenital abnormality, is often associated with cleft palate, and leads to difficulties in respiration and feeding and death from athrepsia.

In the third week of intra-uterine life the basic design of the face consists of a median frontal process and of separate paired maxillary and mandibular processes formed from the first branchial arch (fig. 1). Later development is more complex, but the median and lateral nasal processes develop and fuse together, and with the maxillary processes form nose, palate, and upper jaw, the two mandibular processes fusing to form the lower jaw. Formation of the face thus involves the orderly conduct of several pairs of primordia growing normally and fusing regularly and precisely. (See Keibel and Mall 1910.)

Davis and Dunn (1933) suggest the following explanation of micrognathia. The mandible is formed earlier than the upper jaw, and acts as the matrix on which the upper jaw is formed. In the fœtus in utero, with the

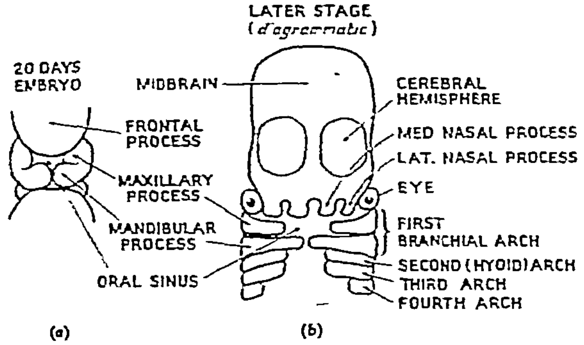

Fig. 1—Embryological development of jaws: (a) at 20 days; (b) later. (After Keibel and Mall 1910.)

weight of the body on the vertex, the pressure of the sternal region in contact with the mandible might force the jaws together; and, if the lower is united and the upper is not, the lower jaw might prevent union of the horizontal plates, causing cleft palate but allowing normal union of the alveolar ridge. This hypothesis explains the backward displacement of the tongue and its small size, though only one of the two cases described below showed these characters, and not all cases show cleft palate (Lapage 1937).

At 8–10 weeks of fœtal life the two lips project about equally, but at 10–12 weeks the upper lip and upper jaw grow more rapidly, with the result that at 4–5 months there is a considerable projection of the upper jaw (fig. 2). This difference is gradually overcome between 6 and 9 months by a stronger growth of the lower lip and mandible, and Keibel and Mall (1910) have suggested that the early fœtal arrangement may persist by a kind of inhibition of the latter process. Lanstrup (1925) declared that the process was most likely one of simple arrest of development, and an impressive series of 50 cases collected by Pfaff (1913) clearly showed that there was often some hereditary element, which in one case he traced through several generations. In the case reported by Lapage (1937) there was a family history of two previous babies dying because their lungs were never expanded, perhaps because of micrognathia and glossoptosis.

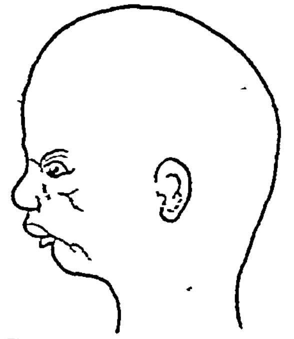

Fig. 2—Projecting upper lip and receding chin in fœtus at about 4th month.

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CASE-RECORDS

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She was small and greyish, going blue at times; the mandible was very poorly developed, but the most striking feature was the respiratory obstruction. On inspiration there was regression of the lower jaw, with indrawing of the suprasternal region and intercostal spaces. No breath was taken with several such efforts, until at the sixth or seventh attempt a noisy grunting inspiration was heard. A midline cleft in the soft palate and a large tongue could be seen, the latter closing off the airway completely when the child was lying on its back. When the angles of the jaw were held forward, respiration was normal.

The baby sucked heartily but with little effect, and was fed by pipette for several days. Respiration was fairly satisfactory when she lay on her side or face, with the foot of the cot raised, but she was often found distressed and cyanosed, because she had contrived to move to the supine position.

A padded wire splint was fixed with tapes so that there was a constant pressure holding the mandible forwards (fig. 3). There was no soreness of jaw and head from the pressure of pads and tapes. On the tenth day after admission weight had risen to 6 lb. 4¾ oz., but the soldered splint was broken; the respiratory rate rose from 32 to 48 per min. over the next two days, and signs of bronchopneumonia developed. A second splint was made from one piece of tempered steel wire, and slow recovery ensued on sulphathiazole therapy.

A month after admission the profile had already made some improvement, but there was still a noticeable difference when the splint was worn (compare figs. 3 and 4). Progress was slow but maintained, and 14 weeks after admission the child could breathe and feed without any help from the splint. She began to speak at one year, when she weighed 23 lb. 14 oz., the defect in the palate was closed by operation, and she now appears normal.

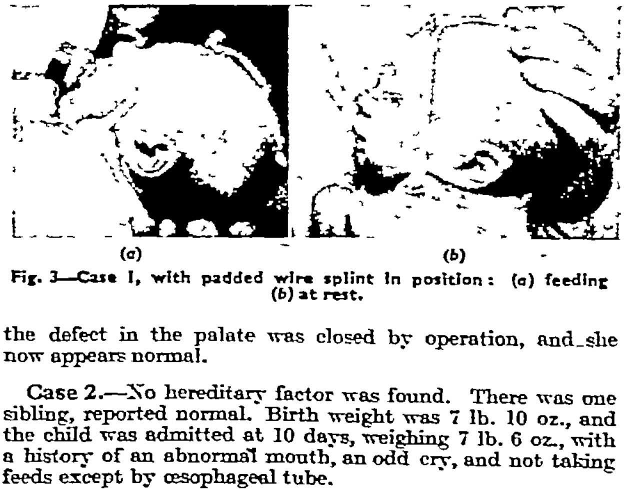

Fig. 3—Case 1, with padded wire splint in position: (a) feeding (b) at rest.

Case 2.—No hereditary factor was found. There was one sibling, reported normal. Birth weight was 7 lb. 10 oz., and the child was admitted at 10 days, weighing 7 lb. 6 oz., with a history of an abnormal mouth, an odd cry, and not taking feeds except by œsophageal tube.

He was hypotonic, cyanosed, and thin. The mandible was very poorly developed. The tongue was very small and fell back into the cleft in the soft palate.

When the baby was in the supine position the respiratory excursions were astonishing. The sternum was raised like the keel of a ship, and there was marked recession of the lower ribs. Five of these respiratory efforts failed to draw air into the lungs, but at the sixth attempt the air entry was moderately good. If the baby was placed on his side or nursed upright the respiration was much improved; dyspnœa was also relieved by pressing forward the angles of the jaw.

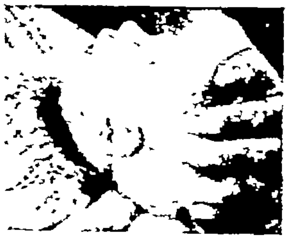

Fig. 4—Case 1 with splint removed. Compare fig. 3.

A splint was more difficult to adjust than in case 1, partly because of pressure sores at the angles of the jaw. Eventually the splint used for case 1 was applied for increasingly long periods of the day.

All food taken by normal bottle or spoon was regurgitated through the nose. The baby appeared to suck well, but really took very little. Four-hourly œsophageal feeds were therefore given. His stools always consisted of undigested food, containing much mucus and fatty curds. Lactic-acid milk, though digested best, would not pass through the œsophageal tube without curdling. The only food the baby could digest was Nestlé's milk. He became dehydrated and had to have subcutaneous saline by drip and injection.

When he was nearly 4 weeks old a special teat was devised. A fine rubber catheter was passed through a feeding-bottle and protruded $^3/_4$ in. beyond the end of the teat (fig. 5) and so projected the food over the backwardly displaced tongue and beyond the cleft in the palate.

As the baby's powers of sucking developed, his digestion and the tone of the masseter, temporal, and pterygoid muscles improved. At 9 weeks he could suck from an ordinary teat. At 6 $^1/_2$ weeks he had a strangulated inguinal hernia, which was reduced, under local anæsthesia, by Mr. E. Moloney at the Radcliffe Infirmary. The progress of the baby was in no way disturbed:

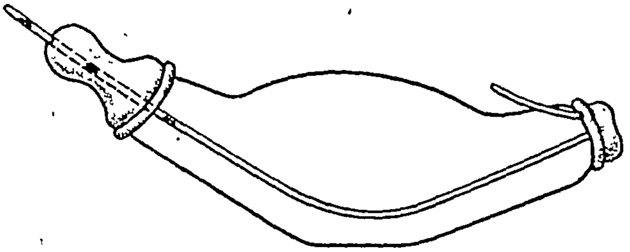

Fig. 5—Feeding-bottle, with rubber catheter projecting through teat, devised for feeding case 2.

Age		*Weight*
4 weeks	..	7 lb. 2 oz. (before using special teat).
8 $^1/_2$,,	..	8 lb. 4 oz. (after using special teat).
12 ,,	..	8 lb. 15 oz. (discharged).

Progress since has been well maintained.

DISCUSSION

Case 1 differs in several respects from the usual micrognathia; the tongue was large, whereas usually it is much smaller than normal according to Davis and Dunn (1933), who describe how in their case the cleft palate alleviated the dyspnœa to some extent; but in case 1 reported here the tongue dropped backwards and upwards and caused complete respiratory obstruction if the child lay on her back.

At first sight it appears that, if the tongue could be anchored to the floor of the mouth, the respiration would be adequate, but such an operation always leads to bronchopneumonia. Postural feeding with the child lying on its side or upright has often been sufficient, and Dr. Chodak Gregory and Dr. Lilian Tracey (1943) nursed their cases in the prone position, the former allowing the head to project over a pillow, the latter using 'Elastoplast' to maintain position. Davis and Dunn (1933) used in their case an adjustable lip guard, so that the baby was forced to bring its lower jaw forward to feed, with gradual and permanent improvement in profile. Eley and Farber (1930) describe a splint which they used, but Lapage (1937) found the appliance unsuccessful in his case.

CONCLUSION

Micrognathia seems to be best treated by postural methods of feeding, using modified teats when cleft palate makes this necessary. If the tongue causes much respiratory obstruction the child should be kept prone or a light splint should be used to hold the mandible forward.

We should like to thank Dr. V. Smallpeice for her encouragement and advice, and Sister Bromwich and the nurses for their efficiency and skill.

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MANAGEMENT OF A PERMANENT COLOSTOMY

STUDY OF 100 PATIENTS AT HOME

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A PERSON with a permanent colostomy has to make many new adaptations to life. These can seldom be discussed fully when the necessity for the operation is first explained to a patient, because the whole outlook is dominated by the gravity of the urgent symptoms which make the colostomy necessary. It happens therefore very often that a patient "wakes up," so to speak, to find himself with a colostomy and turns to his doctor later for advice about its management.

One of the first points which have to be settled is whether the colostomy patient should adopt the plan of a daily washout or should be trained in natural colostomy evacuations. On this question widely different views were expressed at a discussion of the section of proctology of the Royal Society of Medicine (1945), when some surgeons advocated regular daily washouts whereas others condemned them as unnecessary or even dangerous. There was a difference of opinion also on the degree of incapacity and inconvenience caused by a colostomy, and the nature of the work ex-patients might undertake. A few weeks earlier a leading article in THE LANCET (1945) very properly observed: "The surgeon who gives a patient an artificial anus should always find time to teach him how to manage it. Often such patients are sent home with but little preliminary practice and instruction, and the misery in the household while experience is being gained may then be intense."

I thought some of the points in dispute might be settled by visiting experienced colostomy patients in their own homes, so set out to visit 100 old patients from St. Mark's Hospital, all of whom had undergone excision of the rectum for cancer, being left with a permanent colostomy. The visits were made between September, 1945, and April, 1946. Most of the homes visited were in the east and north-east of London, though some visits were also paid in south London and some in the Home Counties and the Midlands. Nearly all the patients visited belonged to the hospital class and were either insured persons or in receipt of public assistance. They formed a fair sample of the outpatient class, but the conclusion to be drawn from this survey would not apply without qualification to other social classes.

General information was collected about state of health, capacity for work, social conditions, diet, mental and emotional effect of colostomy, &c., but the main object of the visits was to find out whether regular daily washouts were undertaken, the frequency of action of the colostomy, and the manner of carrying out dressings. About three-quarters of the patients were seen personally; in the other cases interviews with relations or friends supplied the information required.

GENERAL HEALTH

Nearly all the patients visited were in good health. Only 2 were bedridden, and 8 or 9 were semi-invalids. Most of the patients were over sixty years of age, and their general health seemed as good as one would expect to find in any similar group of the same age and social class. Several of the patients had been living a colostomy life for many years. About half had had the colostomy performed more than five years previously. Of the 100 patients, 10 had had their colostomy more than twenty years previously, and 2 of them more than thirty years, the longest being thirty-five years.

As examples of the way in which patients can adapt themselves to a colostomy life, brief reference may be made to a man who had had a colostomy for thirty-five years and a woman who had one for thirty-two years.

Case 1.—A man, now sixty-eight, had a colostomy and perineal excision done by the late Mr. Swinford Edwards in 1911, when the patient was only thirty-three years old. He has remained in good health since the operation, and for more than thirty years continued to work in a boot shop, only retiring when his business premises were demolished by a flying-bomb. He gave up daily washouts when the air-raids began in the first world war, about 1915. Therefore it is about thirty years since he ceased regular washouts; yet he has no trouble with evacuations, which take place naturally twice a day and sometimes at night.

Case 2.—The oldest woman patient visited was aged eighty-three. She was operated on by Mr. Lockhart Mummery more than thirty years ago, and for the greater part of this time has been living alone in a single room attending to all her own requirements. She was taught to give herself a washout when in hospital and has continued to do so regularly ever since without questioning its necessity.

These then are two examples, one of whom has followed the washout technique for thirty years while the other has dispensed with it for a similar time.

OCCUPATIONS

Nearly all the patients visited could do some sort of work, usually household duties, hobbies, or light work. Only 5 declared they could do nothing. Three-quarters of the men did something to earn their living. The following are some of the occupations recorded: musical instrument maker, wood-turner, tobacconist, optician, book-packet, taxi-driver, cabinet-maker, night-watchman, and clerical work of various kinds. Many also worked at gardening or allotments or repairing bomb damage. It may be an encouragement to other patients to mention a few details about some cases.

Case 3.—This man acted as caretaker at a council school. In spite of his colostomy he served as a local air-raid warden throughout the war and received a letter of commendation from the mayor and corporation. This is framed and hung on the wall above the enamel can from which he gives himself his daily washout.

Case 4 has kept an optician's shop for nine years. His colostomy works twice a day, night and morning, and is no trouble to him. He has never given himself a washout.

Case 5 acted as head postman in a country town for nine years until he retired at the age of sixty.

Case 6 worked as a district inspector on the railway for three years till he retired at the age of sixty-five. He then took up bowls, and now at sixty-eight is a local champion.

Case 7.—Perhaps the most remarkable story is that of a woman who was operated on eleven years ago for rectal cancer. During the war she wanted to work in a hospital as a nurse; but, thinking she would be rejected if it were known that she had a colostomy, she kept this a secret and did not confide it to anyone. She was accepted and served throughout the war at her local hospital. She often worked in wards where colostomy patients were being nursed and was able to give them useful advice. She found many were very despondent at the thought of the difficulties they would meet at home; so, when no-one was about, she sat down and gave these patients a little first-hand information. Her advice was much appreciated, and patients often remarked that they were surprised she knew so much about the subject. The fact of her own colostomy was never discovered.

IS A DAILY WASHOUT NECESSARY?

Until the last three or four years all patients at St. Mark's Hospital were taught to give themselves a daily washout and instructed to continue this at home, but more recently Gabriel (1945) has advised his patients not to wash themselves out, and some other surgeons have given similar advice.

About a third of the patients visited continued to give themselves a daily washout because they had been told to do so, and about two-thirds had either never washed out the colostomy or had given up the practice some years ago. There seemed to be no difference in the general health of those who did and those who did not wash out. Several patients who had been told to wash out the colostomy daily did so for some time after leaving hospital and abandoned the practice later without any deterioration in their health. Some of these said they resorted to a washout occasionally, but no patient who had been trained in natural colostomy evacuations adopted regular daily washouts after returning home.

The advantage of the daily washout is that if the patient has a satisfactory clearance in the morning there is less likelihood of accidents later in the day. Its disadvantages are that it takes a great deal of time and is apt to be messy, unless the patient has undisputed possession of the bathroom and lavatory for an hour or so each morning. Also the washout technique is not without risk, because the passage of the tube into the bowel has been known to cause perforation leading to fatal peritonitis.

Surgeons who recommend regular colostomy washouts should bear in mind that these are apt to be a nuisance to the patient, his family, and fellow residents. In many houses visited there was no bathroom, and often the single lavatory was used by more than one family. Some houses had no indoor sanitation at all. Conditions are of course different in the homes of patients of other social classes. Regular washouts may be necessary for special medical reasons in some cases, but for the ordinary hospital patient the abolition of the washout would be a merciful deliverance.

NATURAL COLOSTOMY EVACUATIONS

Patients trained to natural colostomy evacuations mostly find that the colostomy works of its own accord two or three times during the day and occasionally at night. Many learn to pass a motion through the colostomy each morning after breakfast and then are not troubled again for most of the day. There may be another smaller action in the afternoon or evening, but these secondary motions may also be made into regular habits.

The number of motions can largely be controlled by diet. As a rule fruit and vegetables have a laxative action and have to be restricted. The best diet for a colostomy patient is a moderately mixed one containing meat, fish, eggs, milk, bread, butter, and milk puddings, such as tapioca and semolina. Most vegetables and fruit have to be taken in moderation. Stewed fruit, such as apples, can usually be taken in small quantities. Raw apples should be very carefully chewed, oranges should be sucked, and all fruit with seeds or pips should be avoided.

It is easier to acquire a regular evacuation habit if the motion is solid, and a well-formed motion is certainly more easily dealt with than liquid material. The regular passage of a formed motion keeps the colostomy healthy and leads to better control of the evacuations. A tendency to constipation can generally be overcome by increasing the quantity of vegetables in the diet or by adding some stewed fruit. Laxative medicines should be avoided if possible; but, if they are really necessary, a small dose of emulsion of magnesia or of liquid paraffin will probably be most suitable. If the motions become too frequent, the effect of reducing vegetables and fruit should first be tried; if this does not cure the trouble, a teaspoonful of 'Normacol' or kaolin taken at night will help to form a bulky semi-solid stool.

BELTS

Colostomy patients need a belt during the day to support the abdomen and keep the dressings in position. Belts with a cup or a bag attached are unnecessary for most patients and may be harmful by encouraging prolapse. If more support is needed than is given by the belt alone, the best plan is to cut out a round piece of cardboard or celluloid about the size of a saucer and to wear this between the dressings and the colostomy belt. This may be a help to those who have heavy manual work to do or are troubled with a chronic cough. At night the colostomy belt may be discarded. All that need be worn at night is a wide crêpe binder or closely fitting wrapper which will keep the dressing in position.

COLOSTOMY DRESSINGS

The most suitable dressing is a pad of absorbent cellulose wadding about 6 inches square. Most patients find it best first to cover the colostomy opening with a small piece of linen or gauze smeared with soft paraffin or with a small piece of toilet paper, to prevent the cellulose wadding from sticking. The colostomy pads now used at St. Mark's Hospital are made of white absorbent cellulose wadding but have a backing of pink non-absorbent material which prevents any discharge absorbed by the wadding from staining the belt or clothing. Instead of this pink non-absorbent material a square piece of jaconet may be used, or simply a folded towel or a pad of cotton-wool. The advantage of cellulose wadding as a dressing is that it is very absorbent, relatively inexpensive, and can be disposed of in a lavatory if it is thoroughly broken up with a stick. Cotton-wool and gauze are more expensive and will block the drain if thrown into a water-closet. The cellulose wadding costs between *1s. 6d.* and *2s.* a pound, which should make between thirty and forty pads.

EMOTIONAL RESPONSE TO COLOSTOMY

It comes as a great shock to patients to realise that they must live with an artificial opening for the rest of their lives. The fact that this opening is in an unnatural place, and that they do not seem to have complete control over it, at first weighs heavily on their minds. Most patients have gloomy thoughts about it as they recover from the operation, and it would be a help to have a talk with someone of their own age and social class who has made a successful adaptation to colostomy life. Later they become reconciled to it. They find it is not so bad as they anticipated, and learn to make the best of what has to be.

On the whole, women manage their colostomies better than men do. Women also seem to become less "colostomy conscious." A man who has to go out and earn his living and mix with other people tends to become more apprehensive about the colostomy than does a woman whose duties are mostly in the house. Those trained to natural colostomy evacuations think less of the colostomy than those who give themselves a daily washout.

A patient who is to have a colostomy, whether a man or a woman, is best off if married and in possession of a home. It was very touching to hear how men with colostomies spoke of the help they had received from their wives, and wives from their husbands. Incidentally, a colostomy does not seem to be an inseparable barrier to sex life. Among the 100 colostomy patients visited, at least one man and one woman had married after their operations. Two women, married at the time of colostomy, subsequently became pregnant.

Though most hospital patients make a brave and successful adaptation to the disadvantages of a colostomy life, many are haunted by a secret anxiety about what will happen to them if they are taken ill. They wonder whether their relations and friends will be able to look after them, and are afraid lest the colostomy will be a barrier to their admission to a hospital or an almshouse. This survey has emphasised the special need for a convalescent home where patients can be initiated into the routine of a colostomy life, and for institutions willing to take bedridden colostomy patients during their last days.

SUMMARY

A survey of 100 colostomy patients of the hospital class, visited in their homes, has shown that many keep in good health, lead useful lives, and seem to be little handicapped by the colostomy.

Daily colostomy washouts are unnecessary for patients in good health.

Most patients of the hospital class are less inconvenienced by the colostomy if they are trained to natural colostomy evacuations and use the cellulose-wadding absorbent dressings recommended.

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BRONCHOMEDIASTINAL TUBERCULOSIS

PROGNOSIS AND TREATMENT*

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VASCULAR dissemination of tuberculosis, after the primary infection, is due to the fact that the disease remains active in mediastinal glands.

Of the children admitted to the sanatorium at Peppard in the last three years 25% exhibited fluctuant subcutaneous swellings of the neck, or dirty granulating scars, the result of incising similar lesions. All had well-defined primary complexes in the chest. Many tuberculous infections of cervical glands may be due to vascular dissemination; Pagel (1942) puts the proportion very high, minimising the tonsillar route. Vascular dissemination is often prolonged and massive. Krause (1924) said that tuberculosis was a conspicuous example of metastasising infection either from the lungs to the rest of the body, or vice versa.

Though tubercle bacilli introduced from without are conveyed to the lungs, the tracheobronchial glands may be regarded as the nidus of infection, and we live in danger from our own lymph-nodes.

A boy, aged 8 years, was admitted with extensive pulmonary tuberculosis, active caries of the left carpus, and scores of discrete cutaneous nodules, one of which showed typical giant-cell systems.

The bacilli, one imagines, came from a caseous tracheobronchial gland and eventually, reaching the skin capillaries, passed to the other tissues.

The proximity of mediastinal glands, through lymph channels, to the blood-stream and their very wide field of drainage make repeated bacillæmia from that source seem relatively easy and comprehensible. Girdlestone (1940) says:

> "Tuberculosis of a bone or joint is a metastatic focus and a proof of disease elsewhere which is active enough to give rise to a bacillæmia. In children it almost always comes from long-standing infection of the lymphatic glands, and this lymphatic infection, though often unsuspected, is the root of the disease. . . . The glandular disease was established long before its more disabling and evident metastasis brought the patient to diagnosis and treatment."

TUBERCULOUS ENDOBRONCHITIS

Sometimes tuberculosis of mediastinal glands declares itself as a frank cold abscess.

A young married woman first came under observation with a cough, husky voice, and copious purulent sputum containing tubercle bacilli. Radiograms of the chest were reported normal.

Nine months later, on her admission to hospital, radiography still did not show any pulmonary abnormality, but bronchoscopy revealed typical tuberculous granulation tissue obstructing the left main bronchus.

Tuberculous endobronchitis may be the necrotic superficial portion of a collar-stud abscess and, like a dirty scar in the neck exuding beads of pus, be maintained by fistulous track from a caseous gland. Terplan (1945), his studies of necropsy material, noted such fistulæ pening into the bronchi.

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* Adapted from a paper read at a meeting of the Tuberculosis Association.

The incidence of tuberculous endobronchitis is nknown, as the secondary bronchi, particularly those pplying the segments most commonly involved in arenchymatous disease, are not readily seen in the ving. Perez (1944) reported endobronchitis in about third of 100 consecutive necropsies on patients dying f pulmonary tuberculosis.

Regional lymph-nodes drain each pulmonary segment s well as each lobe, and any one of them may be the site f caseous tuberculosis capable of forming a collar-stud bscess and discharging into its adjacent air passage. ellular reaction about such glands leads to partial ronchial occlusion, lymph stasis, segmental exudate, nd collapse. It may also lead to pleural effusions and robably is the cause of many, particularly in childhood, without bacillary invasion of the interpleural space. With recent methods of searching gastric contents, ositive findings in cases of pleural effusion are increasngly frequent, even though bacilli are not recoverable rom the pleural fluid.

There are three types of pulmonary disease in which caseating bronchomediastinal gland, with possible racheobronchitis, is a prominent feature:

(1) In children, in whom epituberculous reactions are nore apparent. By refined methods tubercle bacilli an be recovered at some time from a considerable roportion. Occasionally, if the nurses are on the watch, hildren with a persisting epituberculosis or established ronchiectasis may have a coughing spasm and produce ninute amounts of caseous material swarming with tubercle bacilli, but more often inoculation of the gastric contents into guineapigs gives a positive result. The bronchiectasis is probably secondary to tuberculous tracheobronchial adenitis in a very high proportion of cases.

(2) Adults with minimal radiological evidence of parenchymatous infiltration but with a positive sputum. Artificial pneumothorax performed in such a case does not lead to the disappearance of tubercle bacilli from the sputum.

An airman, aged 22, after two years in the R.A.F., during which time he had three small hæmorrhages, reported sick and was found to have a positive sputum with a very little infiltration in the upper lobe of the right lung.

A right artificial pneumothorax gave concentric collapse, and no adhesions were present at a later thoracoscopy. But his sputum still contained tubercle bacilli, and bronchoscopy showed tuberculous granulation tissue in the right bronchus, confirmed by biopsy.

Sanatoria are providing long-term treatment for many such cases. The scepticism of a few years ago about positive sputum without definite or demonstrable parenchymatous ulceration has its logical and demonstrable answer in caseating tracheobronchial lymph-nodes.

(3) Cases with ballooning cavities of one or both lungs in which every conceivable form of collapse therapy may be tried in vain.

A girl, aged 18, was admitted early in 1941 with a history of hæmoptysis after bathing in August, 1940. She is still with us five years later. Many methods of splinting, with adhesion section giving free concentric collapse, have been used more than once. Her condition remains substantially unchanged. She has an obstructive wheeze and copious positive sputum. There are granulations in the right upper-lobe bronchus, and large cavities in each lung.

On the other hand, Terplan's (1945) studies led him to the view that primary complexes might heal completely. At Peppard 10% of children under the age of 9 years, admitted with radiological evidence of calcified hilar nodes, do not show any reaction to intradermal tuberculin. It is very difficult to avoid the corollary that, if a positive reaction is obtained, there is, or was recently, active tuberculosis in mediastinal glands due to an extension of a former primary focus.

I do not ignore the intestinal route of primary infection with a regional postmesenteric gland complex, but recent figures tend to minimise its importance, and extension to the mediastinal glands in these cases is usual, with calcification of the abdominal lesions; moreover, the human type of tubercle bacillus is commonly present.

COLLAR-STUD ABSCESS

The collar-stud abscess of tuberculosis is not confined to peripheral, cervical, and tracheobronchial adenitis. Tuberculous ulceration of the bowel is another example. Infection of the lymphoid tissue outside the lumen is either the result of lymphatic return after vascular dissemination from a central gland focus, or is achieved by phagocytic scavenging of the mucosa and conveyance of bacilli into the underlying tissues. There they set up a caseating process in lymph-nodes, which finally involves the mucosal surface. Circumrectal suppuration surely has a similar origin, the collar-stud in that case tracking caudally and pointing under the skin round the anus. Disease of bone often presents a collar-stud condition or cold abscess, of which the psoas abscess is a typical example.

PROGNOSIS

If some of the many glands grouped round bronchi and trachea may be the site of active tuberculosis over a long period and the source of hæmatogenous dissemination, we have a starting-point for considering both prognosis and treatment.

The outlook for peripheral lesions depends on (1) elimination of the superficial part of an abscess as a source of toxæmia; (2) the control of the deep end of the collar-stud either by general measures, local splinting, or excision; (3) the encapsulation and continued quiescence of any deep gland focus responsible for vascular dissemination; and (4) the sum of heredity, environment, and the ego, which make up the pattern of the individual life.

Uncomplicated by persistent and obstructive regional adenitis, cavity closure in the lungs and sputum conversion may be relatively simple, either by general treatment alone or by general treatment and local splinting. In the presence of such adenitis, with or without ulcerative tracheobronchitis, collapse therapy is relatively futile; moreover, a source of hæmatogenous dissemination, the deep gland, may continue to shower the bloodstream and produce metastatic foci. In twenty years of medicine I can recall several adult deaths from tuberculous meningitis unassociated with open lung disease but associated at necropsy with evidence of very definite mediastinal abscess. Therefore some of the two or three cases one sees annually of adult tuberculous meningitis and limited pulmonary disease may derive the meningeal infection by vascular dissemination from the mediastinum.

There does appear to be some variation in the prognostic significance of the individual bacillæmic metastasis. With the possible exception of lupus, cutaneous and superficial eye conditions heal. Cervical adenitis commonly subsides. Lesions of bone and joint, though often tedious, have a good outlook with modern treatment. Circumrectal suppuration, if adequately dealt with, is not comparable in the seriousness of its outlook with disease of the reproductive organs; and definite ulceration of the urinary tract is often of grave significance in spite of the numbers we all know going about the world with one kidney apiece. Young and Davis (1926) declared with little qualification that, when the urinary tract became involved in their patients, the prognosis was bad, and most of them died. Tuberculous *peritonitis, like tuberculous pleurisy, presents great* variations in its course, and the associated lesions have a direct bearing on the outcome. If it is combined with pericardial effusion and later constriction, not uncommon in the second decade, the cardiac symptoms become prominent. In two such recent cases occasional positive sputum reports were received, though no pulmonary cavities were evident, and fistulæ from caseous tracheobronchial glands into the bronchi were assumed. Multiple lesions, developing at intervals, indicating persistent bacillæmia, cause us almost to despair.

Pottenger (1944) wrote that his conception of clinical tuberculosis was that of a disease accompanied by repeated episodes of metastasis and body reaction, each of which, according to its relative severity, strengthened or weakened the host's resistance: "New infection is prevented or accomplished, and the patient cures or kills himself according to the sum total of the effects of the multiple invasions . . . an endogenous source of reinoculation requires above all other tuberculous lesions prolonged treatment, rehabilitation, and aftercare."

TREATMENT

In the recumbent treatment of bone and joint lesions it has many times been observed that associated pulmonary disease tends to improve, sometimes in a remarkable way, *so much so that one does not hesitate to adopt* a plaster bed in the deliberate treatment of lung lesions where other less tedious means are not applicable. Were the lesions skeletal, the surgeons might plan much longer periods in plaster beds than we have so far attempted. Though Peck and Willis (1945) enlarged on the dangers of rest in bed, among which they placed lack of adequate pulmonary drainage, they perhaps underestimated the motility of ciliated epithelium and the fact that arrangements for frequent tilting in any plane can be made.

It is remarkable how readily patients face the prospect of a long recumbency in a plaster bed when spine or hip is affected by tuberculosis. One hesitates to confess bluntly to a patient who has submitted to many things that the usual gamut of treatment for his pulmonary disease has been unsuccessful, and to offer the alternative of a plaster bed for the bronchomediastinal gland affection; but patients receive this verdict and sentence with the same fortitude and acquiescence as their orthopædic counterparts. They will as steadfastly and cheerfully endure the long succession of uneventful days untroubled by the weekly weighings or thoughts of liberty which tend to obsess patients once some exercise is permitted.

The average duration of treatment may be no less than for spinal caries; but, unless one is indifferent to the *production of tubercle bacilli and the very poor outlook* of such unresolved conditions, it should continue until complete encapsulation and apparent quiescence are achieved. Tuberculosis is an inflammatory process which, if it is to be arrested, demands rest until the viable bacilli therein are liquidated.

The first principle of treatment is adequate rest. Ambulant bilateral artificial pneumothorax as an initial measure in pulmonary disease may or may not provide rest but is as poor a thing to offer any patient for first choice as ambulant treatment of spinal caries. The constitutional improvement so often manifest with recumbency and splinting in the fresh air we accept today as a matter of course, but the aim of exposure should be tonic and reflex, to which end a cool breeze is more potent than heat.

Chronic inflammation of lungs leads to formation of fibrous tissue, with compensatory emphysema, and even normal lungs have but a brief period of maximal functional capacity, which varies somewhat between individuals owing to the inherited quality of their tissues. Inflammatory degenerative changes suggest that there is *more truth in the statement that* a man is as old as lungs than in the more often cited arteries or [illegible] The capacity to absorb oxygen is reduced, and in otherwise healthy person an increase of 10-15% above normal in the hæmoglobin content of the blood would be *anticipated as a compensatory* phenomenon. It follows that adequate transfusion of packed red cells to raise and maintain the hæmoglobin above 100% in patients with chronic tuberculosis whose hæmoglobin is deficient, and who rarely respond well to the exhibition of iron, may be expected to have a dramatically beneficial effect, reducing toxæmic symptoms, improving local disease, and increasing the tolerance of bilateral collapse measures in the chest. Psychological improvement is common, and the amount of optimism which can be injected with the red cells from three pints of blood must be seen to be appreciated.

A pulmonary cavity will not usually close and remain closed while the draining bronchus is the site of disease or is surrounded by diseased glands. Neither foreign-body occlusion nor complete bronchus stricture is surgically sound, and this mechanism of cavity closure, though it may work sometimes, is *less attractive* than a healthy bronchus giving free drainage and a free airway. It is a common experience, in suction drainage of a tuberculous cavity of the lung, that the secretions become serous, *tubercle bacilli* are *temporarily absent,* and partially occluded bronchi often become fully patent. It is doubtful if thoracoplasty should be performed for any considerable cavity before demonstrating that the draining bronchus is patent. Instead, suction drainage should be established *until the airway* is free, or else maintained during and after the major surgical procedure.

The occurrence of this chronic, progressive, and obstructive bronchomediastinal adenitis in pulmonary tuberculosis is sufficiently common to impress one with the need of its early diagnosis and subsequent modification of the plan of treatment. There is no more inaccessible disease process in the human body; but, in summary, treatment is regulated by the foregoing considerations, in which emphasis has been given to strict recumbency, open air, and a high hæmoglobin concentration, maintained, if necessary, by repeated blood-transfusion.

Local measures of splinting of parenchymatous disease may continue and are indeed required as urgently as when uncomplicated by obstructing lymph-nodes. *Some additional risk is associated with artificial* pneumothorax, and effusions are common. Particularly with excavation in the lower lobe, diaphragmatic paralysis and pneumoperitoneum may be nearly as effective and much less dangerous.

My general practice in bacillary positive pulmonary tuberculosis is *to* induce an artificial pneumothorax or, if necessary, bilateral collapse, divide intrapleural adhesions, and be prepared to get out at any time. If cavities balloon, persistent atelectasis develops, or effusions prove troublesome, I substitute interruption of the phrenic nerve and pneumoperitoneum.

After a trial of these measures, if the sputum or the gastric fluid still contains tubercle bacilli, bronchoscopy may be undertaken to inspect the air passages. Generally it is not a necessary adjunct of treatment before this time, and *even then* negative findings only exclude a fistula or a constriction of a bronchus from a limited field. Such lack of positive bronchoscopic evidence should not deter diagnosis of bronchomediastinal disease and the return of the patient to the most strict recumbency.

When major surgical collapse is carried out in *the* presence of bronchomediastinal disease, *the* persistence of bacilli in the sputum is to be expected. The criteria of quiescence following thoracoplasty tend to be somewhat lax compared with those measures with less finality about them, and the use of culture or of guineapig ioculation of centrifuged gastric contents to determine he bacillary state is less common than in pulmonary isease otherwise treated. The end-results of thoracolasty would be improved if the high incidence of central landular disease in cases requiring that operation were ccepted and treatment were prolonged until secretions rere free of tubercle bacilli by the most rigid tests.

SUMMARY

Regional tuberculosis is very often due to vascular lissemination from mediastinal adenitis.

Tuberculous mediastinal adenitis is likely to cause epeated bacillæmia.

Sometimes it causes endobronchitis, with collar-stud ibscess, and sometimes pleural effusion.

Bronchomediastinal tuberculosis is often found (1) in children; (2) in adults with minimal radiological evidence of pulmonary disease but with positive sputum; and (3) in patients with cavities in whom collapse therapy gives no benefit.

Prognosis of bronchomediastinal tuberculosis depends on (1) elimination of the superficial part of an abscess as a source of toxæmia; (2) control of the deep end of the collar-stud abscess by general measures, local splinting, or excision; (3) encapsulation or quiescence of the gland; and (4) constitutional factors.

Treatment is based mainly on strict recumbency, open air, and the maintenance, by blood-transfusions if necessary, of a high hæmoglobin concentration, combined with the usual local measures.

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CEREBRAL AMŒBIASIS TREATED WITH EMETINE

REPORT OF A CASE

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THERE seem to be no published examples of cerebral amœbiasis followed by recovery, so the case recorded here is of considerable interest.

A sergeant in the regular Army was admitted to the medical wards of the neurosurgical centre at Haywards Heath on August 4, 1943, from another hospital. Three weeks previously he had suddenly become ill, developing pain over the right lower ribs anteriorly and fever. From then onwards he continued to have fever, malaise, nausea, and chest pain which was aggravated by coughing and deep breathing.

He had served in the Middle East eight years, during which he had had numerous attacks of diarrhœa, but had never been diagnosed as having amœbic dysentery. He returned to this country a fortnight before he was taken ill.

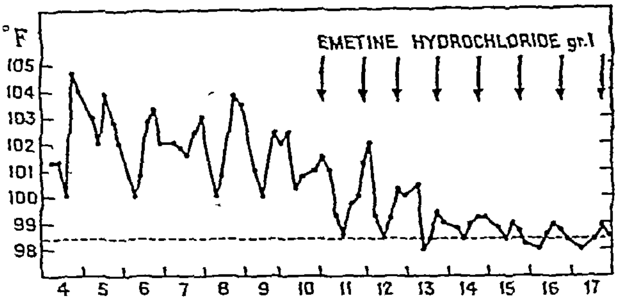
On admission he appeared cachectic, was sweating profusely, and had a very dirty mouth. Temperature 101·4°F, pulse-rate 84, respiration 20 per min. Abdomen not rigid or tender; liver and spleen not palpable.

Examination of the nervous system showed weakness of right external rectus muscle, moderate neck rigidity, and a bilateral positive Kernig's sign.

A few basal crepitations in chest. No abnormality discovered in cardiovascular system.

Investigations.—Lumbar puncture on August 5 gave clear colourless fluid under a pressure of 110 mm., no block, total protein 180 mg. per 100 c.cm., 10 lymphocytes per c.mm.

Blood agglutinations on August 5 negative to salmonella and brucella organisms. Radiogram of skull on August 6 normal. Blood-culture on August 10 sterile. Paul-Bunnell test negative.



Fall of temperature by lysis after emetine.

White-cell count 14,200 per c.mm. (polymorphs 83%, lymphocytes 15%, monocytes 2%).

Urine normal chemically and microscopically, culture sterile. No amœbæ or *Entamœba histolytica* cysts found in stools. Five stool specimens were examined by Dr. Joseph Bamforth and Dr. J. N. Cummings.

The patient continued to have a remittent fever up to 101°F in the evenings, and his general condition remained unchanged.

On August 10 lumbar puncture was repeated. The fluid was clear and colourless at a pressure of 90 mm. Total protein 60 mg. per 100 c.cm.; 17 lymphocytes per c.mm.

On August 11 the patient developed definite tenderness in the right upper quadrant of the abdomen. A friction rub was now audible over the 5th right intercostal space in the erect and supine positions. The rub disappeared on turning the patient on his left side and was therefore regarded as an indication of perihepatitis. The liver was tender and palpable an inch below the costal margin.

A course of emetine hydrochloride gr. 1 every night was begun, and within 48 hours improvement was evident. The temperature began to fall by lysis (see figure), the patient began to feel better, and the pain in the chest became less severe. After six days (August 16) the friction rub was no longer audible, and the right external weakness had recovered, but there was now some weakness on the right lower face.

By August 17 the fever had become intermittent, rising in the evening to 99°F, and the malaise had vanished, but there was still an aching pain in the right lower chest.

On August 24 a third lumbar puncture was done. The fluid was clear and colourless, under normal pressure, with total protein 70 mg. per 100 c.cm. and 1 lymphocyte per c.mm. The liver was still tender and just palpable.

On August 27 convalescence was interrupted by an acute right-sided lobar pneumonia, which responded satisfactorily to sulphathiazole, and by Sept. 15 the patient was afebrile, with no abnormal signs in the chest or nervous system, and the liver was no longer palpable.

On Oct. 22 the chest was examined by screening. This showed the right dome of the diaphragm to be raised and moving poorly on respiration. The patient was sent on leave, and on his return on Nov. 8 he was given a course of E.B.I. gr. 10, at the end of which he was feeling well and was free from abnormal signs in the central nervous system, abdomen, or chest.

Further radiography of his chest on Dec. 1 still showed the right dome of the diaphragm to be raised and deformed.

The patient was kept under observation as an outpatient, and when last seen on Feb. 26, 1944, he was symptom-free and no abnormal signs were elicited on physical examination. Sigmoidoscopy was performed once, but nothing abnormal was found.

COMMENTS

The diagnosis in this case was based on the history of diarrhœa in Africa, the appearance of a hepatic rub and tenderness, and the dramatic response to emetine. This combination was thought to be a sufficient basis for the diagnosis, in spite of the negative results of stool examinations.

Amœbic infection of the brain has been recognised for many years, having been described by Morehead in 1856. Amœbæ were first demonstrated in the abscess cavities by Kartulis (1904). Legrand (1912) described a case, and Armitage (1919) collected 48 cases from the literature. None of these workers, however, reported any recoveries. Neither craniotomy and evacuation of the abscess cavity nor treatment with emetine met with any success.

The patient reported on here was presumably treated much earlier in the development of his cerebral lesion than were those who died. It seems likely that he had only foci of amœbic encephalitis, which never proceeded to abscess formation. According to Armitage (1919) "the process originates from small areas of true amœbic meningitis, the infection reaches the depths of the nerve tissue." This concept may well be correlated with the clinical findings in our patient, who presumably was cured before any significant invasion of the brain tissue had taken place. The transitory cranial-nerve palsies must be regarded as an indication of a basal amœbic meningitis.

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Armitage, F. L. (1919) *J. trop. Med. Hyg.* **22**, 69.
Kartulis, S. (1904) *Zbl. Bakt.* **37**, 527.
Legrand, H. (1912) *Pr. méd. Egypt*, **4**, 309.
Morehead, C. (1856) Clinical Researches on Disease in India, London, vol. I, p. 606.

Reviews of Books

Forensic Medicine

Keith Simpson, M.D. Lond., lecturer in forensic medicine, Guy's Hospital, London. London: Edward Arnold. 1947. Pp. 335. 16*s*.

This short textbook, well printed on good paper, is intended primarily for the student, the general practitioner, and the barrister. Subject matter is well chosen, illustrative and vivid case-histories being briefly quoted in support of the text. The legal sections are concise and adequate. The 114 illustrations are mostly good and always instructive. This book is the work of an expert with a wealth of material at his disposal. The practising pathologist is bound to find something of interest in it, though he will doubtless hope to see at some later date a more exhaustive volume, complete with references, by the same author.

The Psychology of the Unwanted Child

Agatha Bowley, Ph.D., psychologist to the school psychological service, Leicester. Edinburgh: E. & S. Livingstone. 1947. Pp. 112. 6*s*.

This is a useful and timely book. Though well written, it demands only a modest degree of literacy in the reader, and can therefore be recommended to the kindly but ignorant who are venturing on the hard task of caring for the unwanted and unloved child. Miss Bowley teaches psychology through vivid and convincing examples. She goes on to give advice whose only defect is a certain excess of dogmatism. The art of upbringing is to treat the child rather than the behaviour, and this is perhaps obscured a little in her sensible lists of Do's and Don'ts. This does not detract from the value of the book as an introduction, especially for trainees who have experienced teachers to point out the subtleties that are here sacrificed to lucidity.

Handbook of Preventive Medicine

Air Ministry. Air Publication 1269B. London: H.M. Stationery Office. 1946. Pp. 312. 7*s*. 6*d*.

Responsibility for the health of a military unit rests ultimately with the commanding officer, but in the nature of things this duty will devolve for the most part on the medical officer. Ignorance of the practical aspects of preventive medicine is an almost invariable characteristic of the doctor newly joined from private or hospital practice, and if he is wise he will make full use of a textbook such as this. Among civil publications there is no equivalent to the Service manuals of hygiene. This short book, in a loose-leaf binding, includes chapters not only on water-supplies, conservancy, and communicable diseases but a detailed consideration of environmental hygiene. Indeed so much useful detail has been compressed into this chapter that one regrets that the chapter on water-supplies in the field does not supply all the information the harassed medical officer is asked to supply at a moment's notice; one might add that the advised quarterly testing of an established water-supply is hardly sufficient for safety. There is little unnecessary matter, though the make-up of the vitamin-B complex might have been abbreviated to less than half of the space devoted to diet; the illustrations are good and the index sets a standard higher than is usual in Service manuals. At the risk of adding a little more length it would be helpful if this book contained references to the Air Council Instructions and other regulations concerned; there are few more dreadful tasks than a search through volumes of official instructions—supplemented, amended, and cancelled—to find authority for some routine procedure.

Uterotubal Insufflation

I. C. Rubin, M.D., F.A.C.S., clinical professor of gynecology, College of Physicians and Surgeons, Columbia University, New York. London: H. Kimpton. 1947. Pp. 453. 50*s*.

This book, though not for the general reader, will be welcome to the specialist. As the originator of uterotubal insufflation, Professor Rubin writes with authority, and his book is one of the most comprehensive and thorough discussions of the method so far published. Illustrative cases, kymographic records, and X-ray plates have been skilfully chosen, and there are innumerable drawings (some of them rather fanciful) and tables. He deals in detail with the anatomy, physiology, and pathology of the fallopian tubes, and their relation to ovarian function. The technique of insufflation is minutely described, and its diagnostic and therapeutic value and its dangers are compared with those of uterosalpingography. He sent out questionaries to some 3000 workers using insufflation in all parts of the globe, and from replies received has constructed tables giving information about some 70,000 insufflations. A bibliography of nearly 1000 references also testifies to the care and thoroughness given to this work.

Asclepius

A Collection and Interpretation of the Testimonies. Emma J. Edelstein; Ludwig Edelstein. Baltimore: Johns Hopkins Press. London: Oxford University Press. In 2 vols. 1946. Pp. 470 and 477. 50*s*.

This fine work is for the student and connoisseur of ancient history rather than the ordinary reader. But whether one is dealing with the legendary Asclepius or the mortal physician of that name, later to be deified as a man-god, the story is one of absorbing interest. The first volume may be said to be explanatory, while the second is devoted to analysis and interpretation of the data. It seems clear that Asclepius practised his art, with an ever-increasing reputation, about the Homeric era. Of his actual birthplace, life, and death little or nothing is known; but his fame as a healer of wounds and disease spread all over Greece, and preventive medicine was a factor especially extolled and practised in the Asclepian cults. In spite of the advent of Christianity the worship of Asclepius at Epidaurus and elsewhere outlived that of all the other Greek gods. He was indeed regarded as the Greek Saviour; *for was he not* the God of Medicine who performed miracles, cured the sick, and showed charity to all? Much of his devotion to humanity finds a parallel in the life and teaching of Christ.

Essentials of Syphilology (2nd ed. Oxford: Blackwell. 1946. Pp. 465. 25*s*.).—The first edition of Dr. Rudolph H. Kampmeier's informative book appeared in 1944. Unfortunately the new edition bears no evidence of recent revision, references still being confined to papers published before that date, and the only note on penicillin is the hasty paragraph crowded in at the end of the first edition. The value and drawbacks of penicillin treatment of syphilis can now be more accurately assessed, and it should have taken its place beside classical methods in the long section on treatment. This remains a solid and instructive textbook, though not now fully contemporary.

Corrigendum.—The English publishers of *Early Ambulation* (reviewed on June 7) and of *Renal Hypertension* (reviewed on June 21) are Blackwell Scientific Publications, of Oxford, and not Messrs. Baillière.

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AGENTS THROUGHOUT THE BRITISH EMPIRE AND MOST OVERSEAS TERRITORIES

THE LANCET

LONDON: SATURDAY, JULY 5, 1947

Control of Epidemics in Public Schools

Everyone agrees that boys or girls in residential schools found to be suffering from an infectious disease should be isolated—preferably in the school sanatorium—at the earliest possible moment; but when we come to the length of their detention, which turns on the duration of infectivity, there is diversity of opinion and practice. Nor is there unanimity on the advisability and length of quarantine for those exposed to infection. Quarantine, a term with a long and chequered history, has been defined[1] as "the limitation of freedom of movement of such susceptible persons . . . as have been exposed to communicable disease equal to the longest incubation period of the disease to which they have been exposed." Its value as a measure of control can be assessed on its results in practice, but its duration for any particular infectious disease is difficult to decide until we possess more accurate knowledge of the length of incubation periods in terms of infectivity.

In his presidential address to the Medical Officers of Schools Association (p. 1 of this issue) Dr. R. E. Smith recalls that at Rugby School quarantine gave place many years ago to observation during the incubation periods of those deemed to have been exposed to infectious diseases. As the result of his own experience and that of his predecessor, A. I. Smiley, he is satisfied that quarantine is an extremely wasteful procedure—a conclusion which was reached by Scott[2] from his analysis of its results in the quarter of a million members of the Post Office staff. At Rugby from 1933 to 1947, of 203 boys exposed to one or other of the common fevers about half had had no previous attack, yet only 3 boys suffered clinical attacks, and in the sixteen years 1931–47, during which 75 outbreaks of infectious diseases occurred at the school, "not one of the originators had the slightest idea that he had been exposed to infection." A "susceptible" to an infectious disease is prima facie one who has not had a previous overt attack or who cannot be shown to possess immunity by specific tests where these exist; but, as Dr. Smith shows, besides those presumably immunised by previous attacks there are many boys who have had either doubtful attacks in earlier years or no recognised attack at all, and who yet pass unscathed through several epidemics. He thinks they are "probably" immune. It has long been known from the results of Schick and Dick tests that large numbers of children become immune to diphtheria and to scarlet fever—that complication of hæmolytic streptococcal infection, as Scholes,[3] of Melbourne, regards it—without suffering overt clinical attacks. The cultivation of viruses on chick embryos now includes the causal agents of mumps and measles. Complement-fixation tests carried out with mumps virus and blood-serum have enabled the members of the American Army commission on measles and mumps[4] to determine that whereas only 60% of the population of the U.S.A. gives a history of clinical mumps, 33% of young adults possess a high degree of immunity to the disease. Stokes,[5] discussing the use of gamma-globulin derived from large pools of adult blood plasma, concludes that "the presence of antibodies against infectious disease in human plasma appears to depend upon exposure to antigenic stimuli resulting from both subclinical or inapparent infections and from clinical infections." Thus Dr. Smith's "probably" becomes virtual certainty. But his conclusions are based on boys of public-school age exceptionally fortunate in their school environment, and one should bear in mind the cautionary note of the school epidemics committee of the Medical Research Council[6]:

> "Great differences," they say, "in house organisation are to be found especially in the boys' schools, while in standards of accommodation wide variations occur not only between different schools, but between different houses in the same school, and between different dormitories in the same house. All these variations complicate epidemiological questions to an extent which renders comparative deductions very difficult."

Abolition of quarantine might succeed in public schools where the basal immunity to the common fevers is relatively high, and the attack-rates consequently low, but be unsuited to preparatory schools receiving children of lower age-groups containing a large proportion of susceptibles. Nevertheless, epidemiologists on both sides of the Atlantic do not recommend quarantine as a measure of control of the common fevers except in one or two instances and then in modified form.[1] As to isolation, there is no doubt that the periods still imposed in some school sanatoria, and in some fever hospitals for that matter, are unduly long and result in unnecessary pressure on the accommodation, tedium for the patient, and dislocation of parental plans for the holidays. For this the various and varying "codes" are in part to blame; and it is to be hoped that a uniform procedure, such as that followed in the U.S.A. since the code of the American Public Health Association was officially adopted, will be possible here.

In such bacterial diseases as diphtheria (rarely encountered in public schools), scarlet fever, and whooping-cough, the bacteriologist can tell us, with varying degrees of certainty, whether the patient is yet free from infection, but in the virus diseases length of infectivity is still based on empiricism and experience. Yet, as Dr. Smith points out, the length of infectivity is influenced by such factors as climate and the health of the tissues attacked. Thus it is reasonable to conclude that healthy public-school boys are infectious for a shorter time than the average, and that earlier release from isolation is thereby justified. But if this is so, it will be impossible to determine by planned experiments a constant period of infectivity in individual virus diseases, which is what Dr. Smith desires. A duration of infectivity worked out in public-school boys would not necessarily be applicable to the child in the tenement. Dr.

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[1] Control of Communicable Diseases: Report of the American Public Health Association. New York. 1945.

[2] Scott, W. L. *Lancet*, 1941, ii, 739.

[3] Scholes, F. V. G. *Med. J. Aust.* 1946, ii, 617.

[4] *Bull. U.S. Army med. Dep.* 1947, 7, 237.

[5] Stokes, J. R. jun. *Ann. intern. Med.* 1947, 26, 353.

[6] Epidemics in Schools. *Spec. Rep. Ser. med. Res. Coun., Lond.* no. 227, 1938, p. 50.

SMITH believes, like the late J. D. ROLLESTON and most other epidemiologists, that in mumps swelling and infectivity disappear simultaneously. In measles, too, infectivity has certainly ceased by the time the rash has faded, and Dr. SMITH's criterion for freedom from infection—4 or 5 days' convalescence after the temperature is normal—is ample. As to scarlet fever, next to the progressive decline in the severity of the disease, nothing is more remarkable than the shortening of the period of isolation in fever hospitals, a change in practice initiated, or at least accelerated, by A. C. PARSONS's report [7] 20 years ago. The 6 weeks' detention for the uncomplicated case, which was then usual, became 4 and of recent years 3–4 and in a few hospitals not much over 2 weeks. Hence the month's detention that Dr. SMITH advocates is even a little generous. Incidentally, it has been shown [8] that the dangerous carrier of the hæmolytic streptococcus is not the pharyngeal but the nasal carrier; hence the importance, if terminal swabbing is resorted to, of including the nose. The experience with whooping-cough at Rugby School is unusual inasmuch as catarrhal symptoms were absent and vomiting and whooping were infrequent—another difference between patients of public-school age and younger children. The schoolboys probably possessed some degree of immunity which modified their attacks. Dr. SMITH believes that by the time the whoop arrives a schoolboy will be free from infection, but this is certainly not always true of younger children, whose postnasal swabs are sometimes positive for *H. pertussis* in the second or later week of the paroxysmal stage.

Dr. SMITH has given a valuable lead; his experiences should be extended and diversified by medical officers of other schools and the combined findings presented, perhaps, in a further report by the school epidemics committee of the M.R.C. It is only by such means that epidemiological problems can be viewed in their entirety and in correct perspective.

The New Zealand Scene

IT is now nine years since the New Zealand Social Security Act was passed, and for the last five of these years its principal medical provisions have been in operation. The developing pattern of the Dominion's health services is growing clearer, and a time has come when one should be able to assess gains, recognise mistakes and shortcomings, count the cost, and possibly suggest changes and extensions. All this is attempted in a short but instructive book [9] by Mr. DOUGLAS ROBB, of Auckland, and it is remarkable how many of the topics he deems of current and urgent importance in New Zealand are ones that also demand attention here in Britain. The great shortage of nurses, the unexpectedly high wastage of nursing students during their training, the scarcity and maldistribution of full-time consultants, and the lack of postgraduate instruction for general practitioners—these are our problems too. In addition ROBB touches on the need for more and larger medical schools in New Zealand, and makes interesting comments on reform of the medical curriculum, and on the relative importance of the subjects taught to students. But for readers here the most important sections of his book are those that survey the progress made so far in the State provision of general-practitioner, hospital, and consultant services in New Zealand.

Of the general practitioners a few, in sparsely populated areas, are paid by salary; a few are paid by capitation fee; but the large majority choose to be paid on an item-of-service basis, by direct claim or by one of the "refund" systems.[10 11] For each item of service given, the State gives the doctor 7*s.* 6*d.*, beyond which additional payment is often arranged with the patient. As was to be expected when fee-for-service claims were chargeable to a "bottomless" fund, a premium has been placed on quantity rather than quality of work, and ROBB is able to write:

> "The emphasis is placed . . . on the number of acts done rather than on quality. Indeed we find the doctor personally doing a number of trifling things in his practice that ought to be done by a nurse or secretary, but are not so done because it is worth 7*s.* 6*d.* a time to the doctor if he does them.
>
> "The distribution of doctors under present arrangements is interesting. The poor man's cough is now as profitable as the rich man's, and certain areas both urban and rural formerly poorly served have now medical men on the spot. So far so good, but a further effect is to concentrate medical men in the cities as against country districts where the travelling is greater, and where social amenities are fewer. Moreover, as between general practice on the one hand, and specialist, scientific, and teaching work on the other, there is a disproportionate attraction to the former.... The quality of service rendered under general practice suffers under the 'fee-per-service' structure, with its emphasis on quantity rather than quality. The tendency inevitably is towards quick superficial work, and the avoidance of difficult subjects, times, and places. The patient in genuine need of help at night or during a holiday is too often at a serious disadvantage."
>
> "Perhaps the worst feature of the present arrangements for general practice lies in their assumption that the style and scope of general practice as we knew it before 1940 was good and left nothing to be desired. Only make it universally available and all will be well! The truth is that many medical leaders had become more than doubtful of this proposition, and were trying to wean both people and doctors away from their addiction to the old style and methods with their inevitable bottle of medicine. Far from helping this endeavour, the Social Security Act has confirmed the old methods, and entrenched their already vested interests with richer rewards than ever."

The truth of these remarks is borne out by a study of the pharmaceutical costs. In the year 1942–43 these totalled £563,247. In the following year they exceeded £760,000, and we then commented[11]: "This sum represents a drug expenditure of 9*s.* per head of population, and as it excludes all medicines supplied to inpatients in hospitals, and takes no cognisance of any expenditure on patent or other remedies privately purchased, it seems unexpectedly large. One must conclude that the new service has not deterred, but rather encouraged, 'the bottle of medicine habit'." Now, two years later, the annual expenditure has risen to £1,133,366, or 13*s.* 6*d.* per head of population. The sum paid for drugs is nearly as much (78%) as the sum paid out for general edical care in the same year. But the costs to the tate of general medical care have been rising too, and OBB says:

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[7] Some Administrative Aspects of Scarlet Fever. *Rep. publ. Hlth med. Subj., Lond.* no. 35, 1927.

[8] Hamburger, M. jun., Green, M. J., Hamburger, V. G. *J. infect. Dis.* 1945, 77, 96; Hamburger, M., Lemon, H. M. *J. Amer. med. Ass.* 1946, 130, 836.

[9] Health Reform in New Zealand. By Douglas Robb, F.R.C.S., F.R.A.C.S. Christchurch: Whitcombe & Tombs. Pp. 103.

[10] See *Lancet*, 1944, ii, 731.

[11] *Ibid*, p. 762.

> "Under these schemes, the doctors have rapidly become extraordinarily prosperous. It is comparatively easy to work up a good income almost anywhere, except perhaps in rural districts where a lot of travelling is still necessary. Actual figures of doctors' incomes are not published, but some which are almost fantastic are commonly mentioned in Parliament."

nd yet it is difficult to understand how this comes bout, unless there are large undisclosed sources of ncome from private practice, for the amount being aid out by the State per year still only amounts to 6s. 10½d. N.Z. (or about 12s. 9d. English money) er head of population, a capitation fee that would ardly be regarded here as adequate, particularly s the ratio of practitioners to population in New Zealand makes it unlikely that the practitioner can on average care for more than about two thousand patients. True, there are also payments for maternity work and in some practices for mileage; but even if these extras are included in the general-practice budget the annual income from State sources does not exceed the equivalent of 15s. English per capita Moreover, among these payments are some that are being made to full-time or part-time specialists for consultant services, for as ROBB points out:

> "Under Social Security any patient may claim a refund of 7s. 6d. per attendance by a specialist, whether in hospital or consulting-room, on presenting the receipted account. This provision was made partly as a relief to those incurring specialists' bills, and is a considerable relief, particularly to patients whose hospital stay is a long one."

It must not be forgotten, too, that quite large numbers of the doctors working in general practice in New Zealand have taken higher qualifications, and could well claim to be regarded as part-time specialists. ROBB is aware of this but a little undecided about the desirability of encouraging the continuance or extension of the tendency. He remarks on the high proportion of New Zealand graduates who have travelled to Britain or the United States for special postgraduate experience and study, and says of them:

> "A large number returned to New Zealand—more than could be occupied as genuine medical or surgical consultants. The majority combined general practice with medicine or surgery in a main centre, country town, or even small town, perhaps in later years dropping the general work, and practising as consultants. A few have succeeded in consulting practice from the outset, but only in the main centres.
>
> "This system over the years has brought a large amount of good practical experience to the country. . . . It has produced the characteristic all-round man whose type is admired by many in New Zealand—the man who will do a large general practice, with obstetrics and anæsthetics, and also hold a visiting medical or surgical post at a large hospital. This type has certainly produced great labours, and for general competence and commonsense he would be hard to beat. He showed at his best in a country town with a small hospital. In a large town he was often very successful but tended in time to lose interest in his general work, and at the same time to be overshadowed in his special work by his colleagues who were in straight-out consulting practice. Some have in time become good consultants, but others, through years in general labours, and the unavoidable loss of the student and scientific attitude, have never attained a good level.
>
> "The few who have attempted consulting wo from the beginning have as a rule achieved more in medical sense, but have been hampered by the gener status of the hospitals, the arrangement of appoin ments in the hospitals, and the general scantiness laboratory, scientific, and library assistance. Moreove consultation has never been fully used in New Zealan largely owing to the circumstances referred to under t 'all-round man' where consultation often seeme superfluous to both doctor and patient."

It becomes obvious that ROBB is himself hoping f conditions which will favour a functional separatio of general practice and specialism, leaving the pr ventive, educational, and psychological approac particularly to the general practitioner, while th specialist concentrates on a higher technical skill an perhaps on a more critical mental attitude to ne developments in medicine. ROBB maintains tha "no man can serve his patient adequately as bot general practitioner and specialist—one branch o other, or both, will be done poorly." Rather h believes that "general practice should be planned i health centres, and that specialist practice shoul be based in the general and special hospitals, wit outpatient departments or polyclinics for consultation and investigation. The one arm should utilise th other freely for help whenever possible, but it onl perpetuates present confusion to have dissimila functions performed by the same man in the sam place." He holds that New Zealand is too small country to afford both public and private hospita and consultant services, and he therefore favours salaried specialist service based upon government provided hospitals. He believes that New Zealan should have tackled the problem of hospital provisio much more radically than it has. He commends th courage with which the new Act in Britain sets ou to weld all the hospitals in the country into one system New Zealand has been content to allow its hospital to continue under their former ownership and management, and has arranged for the payment of grants in-aid in respect of all patients using the hospitals These were at first 6s. per day, and are now 9s. pe day; they are payable in all hospitals, public an private alike, the difference being that whereas i public hospitals any cost beyond this grant is born by rates or taxation, in private hospitals the patien has to make up the deficit. And ROBB explains tha private-hospital costs and fees have risen so steepl of recent years that the benefit to the patient of thi grant-in-aid is hardly noticeable. The smaller privat hospitals—of the type we should call nursing-homes— find it hard to keep going.

> "The Government through the Health Department in an apparently laudable endeavour to raise standard in these smaller hospitals, have imposed condition that are impossible of fulfilment, and if possible woul be prohibitive in cost. The result is almost a wholesale closing down of smaller private hospitals, particularly maternity homes. For example, during th twenty-two months ending in September, 1946, th number of private maternity hospitals dropped from 172, representing 1059 beds, to 113, representing 700 beds."
>
> "No one would say these private hospitals are ideal but many do good work of an individual type which constitutes a real community service. At least they carry part of the burden of hospital services of the country, and until the public system is rationalized and made adequate to its task, we can ill afford to lose them —perhaps not even then."

The cost of the social services to New Zealand is very high. Even at this time of full employment, and among a population with a comparatively small proportion of elderly people, the cost represents a charge of over 10% of the gross income of the inhabitants. So far they seem uneasily conscious that they are getting less for this great expenditure than they have the right to expect:

> "The people as a whole want something better than they have got. Political power at the moment is fairly evenly divided in the country, and there is reason to believe that both parties have accepted the broad idea of the social organization of health services, and also are aware that what we have got under that guise at the present time is, for a variety of reasons, inefficient, wasteful, and altogether unworthy of the people and the country."
>
> "The Social Security scheme at present operating in New Zealand attempts to provide the benefits of modern medicine for everybody. But it offers a service far inferior to that which modern medicine *could* give us. At the huge price paid, it is dearly bought."

ROBB concludes that "it should be our aim—and more specifically the aim of the government and of the medical profession—to plan a service based on *function*: that is to say, on the real needs of the people, and the capacity of the medical profession, with all the resources of modern knowledge and organization, to meet those needs."

Mechanical Aids in Cardiology

SINCE the fashion was set up by WENCKEBACH and MACKENZIE cardiologists have been pioneers in applied physics. One might even trace this line of development from STEPHEN HALE and his measurements of blood-pressure in the horse. The cardiologists of today are keeping pace with the rapid advances in physics and ingeniously harnessing the latest discoveries to the service of the patient with cardiovascular disease.

The development of modern electrical amplifying systems has given a new impetus to electrical stethoscopes. OLSON[1] has introduced an acoustic stethoscope which transmits the heart sounds very much more truly than the orthodox stethoscope which accentuates certain frequencies at the expense of others, so that the listener hears a series of sounds which are quite different from those actually produced in the heart. From the clinical point of view this may not be important, since the doctor soon establishes his own normal and learns to detect and interpret variations from it; but the research-worker may get some useful information from these new stethoscopes. It is in phonocardiography that the greatest advances have taken place. There are two methods of registering the heart sounds graphically: the direct, in which an optical capsule system is used,[2] and the indirect, in which a series of electrical devices amplify and record the sounds. A further refinement is MANNHEIMER's[3] calibrated phonocardiograph, in which the heart sounds are split into six frequency bands. Another development, which should be invaluable for teaching, is the accurate amplification of the heart sounds so they can be heard by groups of students, either with headphones or a loudspeaker. For this purpose they can be recorded on a disk,[4] on cinema film, on wire tape, or on plastic or paper tape coated with a finely divided metallic powder.

In electrocardiography the string galvanometer is being replaced by electronic-valve amplifiers, robust mirror galvanometers being used for recording. Valve amplifiers, with mechanical recorders which trace the electrocardiogram on a miniature scale, have been devised, and cathode-ray tubes, especially those fitted with a long-persistence screen, are increasingly popular. Mirror galvanometers with ultraviolet light as the source of radiation and lag-belt viewing screens are also being used, and ink-writer recorders have been adapted for this work. As a result of these refinements it is now possible to register the electrocardiogram of the embryonic chick[5] and the human fœtus.[6] LIKOFF and his colleagues[7] have made an electrocardiograph capable of recording continuously for up to twenty-four hours. Œsophageal and even intracardiac leads are sometimes used. Another development is the recording of the vectorcardiogram on the screen of a cathode-ray tube,[8] this being a graphic representation of the magnitude and direction of the electromotive force produced by the heart at a given instant. Hitherto the vectorcardiogram has had to be deduced from leads 1 and 3 of the electrocardiogram, a laborious process.

Multiple recording apparatus is sometimes useful in clinical work as well as in research and teaching. In the phonoelectrocardioscope[9] a double-beam cathode-ray oscilloscope makes it possible to follow, on a single long-afterglow screen, the phonocardiogram and electrocardiogram, or the phonocardiogram and sphygmogram, while the heart sounds are heard simultaneously through an electrical amplifying stethoscope or loudspeaker. Of the many methods of plethysmography, two may be mentioned. In the photo-electric method[10] light is directed through a finger or toe, and the emergent beam strikes a photoelectric cell which changes variations in the intensity of light, due to changes in the blood-flow to the part, into corresponding variations in an electric circuit. The electrical variations are amplified by a valve amplifier and recorded with an oscillograph. The electrical impedance plethysmograph is based on the principle that rhythmical changes in electrical impedance occur with each heart-beat, when high-frequency currents are passed through the body.[11] This method is so accurate that it makes it easy to register pulse curves from animals as small as the frog in states of shock, or from a small body segment such as a finger. In the radiography of the heart the R wave of the electrocardiogram can be made to operate the X-ray exposure so that it occurs at any desired stage of the cardiac cycle. Cineradiography[12] has also been combined with electrocardiography, and even contrast

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3. Mannheimer, E. *Acta pædiatr., Stockh.*, 1940, 28, 1.
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5. Hoff, E. C., Kramer, T. C., Du Bois, D., Patten, B. H. *Amer. Heart J.* 1939, 17, 470.
6. Smith, A. L., Herrert, W. J. *Amer. J. Obstet. Gynec.* 1940, 40, 102.
7. Likoff, W. B., Rappaport, M. B., Levine, S. A. *Amer. Heart J.* 1944, 28, 98.
8. Wilson, F. N., Johnston, F. D. *Ibid*, 1938, 16, 14.
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10. Leibel, B. *Brit. Heart J.* 1940, 2, 141.
11. Nyboer, J. Medical Physics, Chicago, 1944, p. 340.
12. Reynolds, R. J. *J. Inst. elect. Eng.* 1936, 79, 478.

diography of the chambers of the heart is now a actical proposition. Perhaps most startling of all the orthodox clinician is the optical recording of tracardiac pressure pulses by means of intracardiac theterisation.[13]

Annotations

THE MEDICAL PROTECTION SOCIETY

THE London and Counties Medical Protection Society ves its name to the time, soon after its foundation in 391, when provincial committees were set up to suplement the central council. With a membership of ver 22,000, in all parts of the world except the United tates, the society has long needed a more apt title; nd at the general meeting on July 16 members will be sked to approve abbreviation to The Medical Protection ociety.

With accumulated funds of over £112,000 the society in a strong position. During the past year, reviewed in he annual report, 1894 new members were elected, ompared with 1087 in 1945. Of the 1410 applications r advice and assistance, many were concerned with he implications of the National Health Service Act. everal topical subjects are covered by the society's olicitors, Messrs. Le Brasseur & Oakley, in their section f the report. It is not always understood, Mr. Le rasseur says, that where a practitioner has retired or ied in the period between the passing of the Act and he appointed day, and the goodwill of his practice has ot been sold, that practitioner or his representatives an apply for compensation payable under the Act for he loss of the right to sell the practice. Discussing roceedings for alleged wrongful certification under the Lunacy Act, the solicitor comments: "It is surprising that even in the legal profession it is not fully appreciated that no such proceedings will lie except with the leave of the High Court." He also recalls that coroners have no power to impose an obligation to notify them of all deaths occurring within forty-eight hours of admission to hospital. Most cases undertaken by the society involve allegations of negligence. Even when unjustly charged, some doctors are disposed to avoid further worry by settlement out of court; but no settlement, says the report, is ever secret.

Almost any member of our profession could find profit as well as interest in the records of misfortune and error given in this report.[14] Thanks to the society, they mostly had happy endings—at least so far as its members were concerned.

SOUR MILK AND TUBERCULOSIS

THE search for an efficient therapeutic agent in human pulmonary tuberculosis goes on intensively, but progress is difficult. For a drug to succeed in this field it has to overcome three obstacles over and above those present in the chemotherapy of streptococcal infections. The first is the relative resistance of the bacterium to drugs, possibly owing to its fatty constitution. The second is the necrotic and non-vascular nature of the lesions, as compared with those in other infections and indeed with those in experimental tuberculosis in animals, making them inaccessible to the drug. Lastly, in this chronic disease many drugs which are quite safe for the treatment of streptococcal infections show disturbing evidences of latent toxicity. The sulphone compounds, such as 'Promin,' 'Diasone,' and 'Promizole,' will retard experimental tuberculosis and have been given clinical trials but they are too toxic for general use in man. The same seems to be true of helvolic acid. Streptomycin has given even more promising results in animals, and has produced some startling remissions in tuberculous meningitis and miliary tuberculosis, but so far it has not fulfilled the early hopes in pulmonary infections.

Now the humble domestic lactic streptococci which turn our milk sour in hot weather may be pressed into service. In 1933 H. R. Whitehead noted that some milk streptococci prevented the growth of the organisms used in cheese making. Following this up at the National Institute for Research in Dairying,[1] Mattick and Hirsch discovered a strain of group-N lactic streptococci that could kill, or render avirulent, a heavy inoculum of human tubercle bacilli in milk. In this issue they give details of the purification and properties of Nisin, the antibiotic concerned. It is highly active against gram-positive bacteria, much less so against the tubercle bacillus, and inactive against gram-negative organisms. In this it follows the common pattern for most antibiotics. It keeps its activity in the presence of blood—a prime necessity for a therapeutic agent—and it is of low toxicity against leucocytes and in the intact animal, though the injection of impure preparations causes some necrosis. Its chemotherapeutic activity in animals is very striking. A single dose of 50 mg. saved mice which were in a moribund state twelve hours after 1000 lethal doses of a streptococcus. Ten years ago this would have appeared miraculous, but we have grown used to substances which can kill streptococci at incredible dilutions. In a preliminary experiment with impure material, nisin was found to limit but not prevent tuberculous infection in animals.

Nisin is probably not the long-awaited answer to the tuberculosis problem, but it marks one more step forward in man's advance against this ever-present foe.

THE COST-OF-LIVING INDEX

WE have already noted[2] the projected changes in the cost-of-living index recently accepted in principle by the Minister of Labour and National Service. He now proposes to act on the proposals for an interim index based on the results of a sample survey of 10,000 working-class household budgets done in 1937–38. The interim nature of this index is emphasised in the explanatory note announcing this decision[3]: as every woman knows, the range of choice in her purchases is now severely limited compared with 1938; while, on the other hand, an index based on today's purchases would, we fervently hope, be out of date fairly soon. Despite these limitations, the interim index, including as it does the near-necessities of modern life such as cinema tickets, soap-flakes, and children's wellingtons, will be a much more realistic indicator of the present pattern of expenditure. The inclusion of so many new items raises the question of the relative importance to be assigned to them in the calculation of the interim index; where in 1914, 60% of the budget was being spent on food, in 1938 food accounted for only 35% of the family's expenditure. This does not mean that less food was bought in 1938; indeed, greater quantities of food were purchased, but the relative proportion of the family budget spent on food was much less. The new "weighting" for food in the interim index thus becomes 35 instead of 60. Similarly, 24% of the "weighting" is now accounted for by items not covered in the 1914 index.

Such considerations may seem a trifle academic at this stage; but cost-of-living indices could have an urgent personal importance to doctors in the new health service. If, for example, remuneration scales were tied to cost-of-living indices, a decrease in the cost of meeting the needs of a working-class household would be reflected in a reduction of professional salaries. In other words what might be gained on the present inflationary swing might well be lost on a future deflationary roundabout. That, some may say, is only just; but if justice is to be dealt out in this way, then we may plead that the cost-of-living index for a middle-class profession should be based on the purchases required to maintain at least some of the necessities, cultural as well as dietetic, of middle-class existence.

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[13] Bloomfield, R. A., Lauson, H. D., Cournand, A., Breed, E. S., Richards, D. W. *J. clin. Invest.* 1946, 25, 639.

[14] Obtainable from the secretary, Dr. R. W. Durand, at the society's office, V[illegible] House, Leicester Square, London, W.C.2.

[1] Mattick, A. T. R., Hirsch, A. *Lancet*, 1946, i, 417.

[2] *Lancet*, 1947, i, 455.

[3] Interim Index of Retail Prices. A short explanatory note. Ministry of Labour and National Service. H.M. Stationery Office. 1947. Pp. 7. 2*d*.

A STREPTOMYCIN BUREAU

THE following statement has been issued by the Medical Research Council in association with the Voluntary Hospitals Emergency Bed Service:

> Doctors in southern England, including the London area, wishing to propose cases of acute miliary tuberculosis or tuberculous meningitis for admission to a Medical Research Council trials centre for streptomycin treatment should, from July 4, make their request through the Emergency Bed Service, London (telephone: Monarch 8515—day and night service). The service will be kept fully informed of the number and type of cases which can be admitted to each centre, and where a bed is available will direct the inquiry to the appropriate medical officer. It should be emphasised that the number of cases which it will be possible to admit for treatment during the period of the present tests is still limited.
>
> Trials of streptomycin in tuberculous meningitis in children aged up to eight years are also being made, under the council's authority, at the Alder Hey Children's Hospital, Liverpool, and the Royal Hospital for Sick Children, Glasgow.

This is excellent news. It means that doctors in the south of England will no longer have to explore a variety of official and non-official sources of supply when they have a patient with tuberculous meningitis or miliary tuberculosis. Henceforward the telephonists of the Emergency Bed Service will quickly put the doctor in touch with a representative of the Medical Research Council, who control the distribution of all the streptomycin made in or officially imported into this country. An obvious and urgent need is for a similar arrangement to be devised for the rest of the British Isles.

BETHLEM

THE Priory of St. Mary of Bethlehem, founded and endowed in 1247 by Simon Fitz Mary, has made good use of the past 700 years, and can be counted on to keep up the tradition, as Sir Arthur Rucker implied when he wished Bethlem Royal Hospital godspeed in the 700 years of service to the community now to come. He was replying to the toast of The Guests, proposed by Sir George Wilkinson, at the luncheon given in honour of the hospital's birthday at Monks Orchard, Beckenham, on June 28. He pointed to the immense opportunities the new era of administration is bringing to hospitals and especially to mental hospitals. There must be, he said, much closer association between the treatment of mental and physical illness; and he recalled the two great obstacles now hindering our advance in this and other directions within the health services—lack of buildings, lack of nurses. In proposing the toast of the hospital, Mr. Ralph Assheton, M.P., mentioned its links with the real Bethlehem, where the Basilica of the Nativity was endowed in the year A.D. 330 by Constantine—the only Roman emperor both born and proclaimed in Britain. The ancient bond between the church and the hospital served as preface for his plea that psychiatrists and ministers of religion should endeavour to work together more closely for the care of patients. In his reply, Sir Bracewell Smith, lord mayor of London, spoke of the proposed amalgamation between Bethlem Royal and the Maudsley Hospital. This proposal was approved by the London County Council at its meeting last Tuesday.

Bethlem, which moved from its old buildings in Southwark 17 years ago, is a modern well-equipped hospital, built on the villa plan; and takes 250 patients. The villas include an admission block, treatment block and a convalescent block; and there are besides an administration block, a unit for treatment and research containing laboratories and an up-to-date theatre, and a separate occupational therapy unit where patients can learn weaving, pottery, needlework, painting, basket-work, and other handicrafts. The kitchens and stores are housed in a separate building, with the engine-house alongside. The chapel stands close to the main gate, opposite a well-built nurses' home. All these buildings are set in ample wooded grounds which give room for orchards, lawns, a cricket field, tennis courts, and gardens. The home farm, placed at one corner of the grounds, supplies many of the hospital's needs. Patients' rooms are simply but pleasantly furnished, and painted in light colours; and the common-rooms—light, airy, and charmingly decorated—are the proper sort of surroundings for mentally sick people. If all our mental hospitals would accept this principle, the change might well be reflected in a higher recovery-rate.

During the afternoon of the birthday celebrations, H.M. Queen Mary, president of the hospital, paid it a visit. With an unerring flair for fundamentals, she inspected the kitchens. At Bethlem the part played by good food in the recovery of patients is appreciated; but there are other hospitals in the country where it seems they will never learn—not in 700 years.

PROPHYLAXIS OF WAR

> ". . . pacifists have found the atomic bomb a positive godsend. Their line of argument runs as follows: However fallible the methods adopted to secure world peace, they simply *must* be successful: . . . either we secure world peace or we face extinction in a last cataclysm: war has finally outlawed itself by reason of its immeasurable destructiveness."

Dr. Edward Glover, in his further essays on group psychology and war,[1] has the accumulated impatience of fourteen years to explode on us. The causes of war, he says again, are in the unconscious; and the causes of pacifism are identical with the causes of war-mongering. His argument is telling if long; briefly, our attitude to war is engendered and moulded by our infantile loves and hates. Frustrated love for the mother and jealous hate of the father are primary motives for rivalry between men; for since, as he points out, both primitive loves and primitive hates are by their nature destined to frustration, the strong instinctive drives which lie behind them must be used in other ways. As the child develops a superego (old terminology, conscience) he finds opportunity to use them. Hopeless love gives the superego power to approve whenever the ego obeys accepted canons; hopeless hate gives it power to avenge misdeameanours. The stronger the hate the greater the frustration, and the greater the sense of guilt by which they are punished. The child thus carries in him not only the power to punish himself but the ability to feel that punishment is deserved. In this way the superego, mirroring the strong and vengeful father of the child's guilty imaginings, uses up much of his thwarted aggression. But when the child comes to manhood and is called to serve in a war an extraordinary situation develops for his unconscious mind: he is called on to kill "the enemy," the rival, the other man, as he has so often killed the rival father of his fancy; and he is allowed to do this with full parental sanction—with the blessing, in fact, not only of the superego but of the "fatherland." For once he may turn all his aggression outward, and do his worst; he is given a free dispensation from guilt. But his unconscious guilt is not to be assuaged by a mere licence to practise crime: the need for punishment remains, and in war is fully satisfied—he may be killed himself. Herein lies, Dr. Glover thinks, the great unconscious appeal of war: it frees men to kill or be killed, or to die vicariously in the person of a comrade. The unconscious asks no more: it delights in this chance to escape from a lifetime of anxiety, frustration, and guilt.

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[1] War, Sadism and Pacifism. London: Allen nwin. 1933 extended series 1947. Pp. 292. 9s. 6d.

Much of this is now common ground. Thus in an essay which has just been reprinted[2] Prof. J. C. Flugel writes more placidly of the same unconscious gratifications brought by war, together with others, such as pleasure in danger and adventure, in comradeship, and in the release from the daily round. Perhaps, indeed, Dr. Glover would find more open support for what he says if he did not say it so aggressively. Unfortunately, too, his anxiety to drive home the pathology has somewhat deflected him from prophylaxis. Here he has *little* to offer, for (as he himself says repeatedly) we really know next to nothing about the unconscious origins of war, and we spend very little time and money in finding out about them. In the first edition of this book he suggested a good plan of research; and it remains a good plan. Apart from this, "we ought," he says, "first of all to try bringing up children free from the avoidable anxieties, guilts and despairs that promote unconscious hostilities and so promote war-readiness." Exactly; but how is it done?

Meanwhile we are driven to think fast. However inept it may seem to Dr. Glover, the pacifist argument quoted above remains reasonable; and it is he who fails in realism. When chased by a tiger one does not pause to consider the unconscious motivation of big-game hunting. By all means let us try to discover the unconscious causes of war; if we live long enough the knowledge is sure to come in handy. In the meantime he must excuse us if we try to find a way out of our darkness by the dim glimmer of the conscious mind. It is just possible that we may blunder on some solution *acceptable* to our unconscious motives. If we can't be clever we must at least try to be quick.

NARCOTICS FOR THE FAMILY

ONE of the points raised by the case of Dr. Clements is how far a doctor may prescribe narcotic drugs for himself or for his wife or other near relation. If Dr. Clements had had no criminal intent, was there any reason why he should take precautions to conceal the fact that he was buying such drugs for his wife's use? The answer depends on whether the drugs come under the Pharmacy and Poisons Act or under the Dangerous Drugs Acts. The barbiturates are schedule-4 poisons, which means that they can be dispensed only on the prescription of a registered doctor, dentist, &c.; but, whatever the ethical objections, there is nothing in the law to prohibit any doctor on the Register, whether in practice or not, from prescribing one of these drugs for himself or his wife and family, and the chemist will normally dispense it without question, provided the dosage is reasonable. Narcotics of the morphine, cocaine, and heroin groups, on the other hand, come under the D.D.A. regulations, and though any doctor may prescribe these, he may have them in his possession only so far as is necessary for the practice of his profession. Any doctor on the Register may therefore prescribe morphine for himself or his wife if, for example, one of them has an attack of renal colic; and a doctor in practice may keep a supply of these drugs in stock. But a doctor who has retired from practice, or is engaged in some non-clinical branch of medicine, may not keep any dangerous drugs at all in stock, even though he is still a registered medical practitioner. If the doctor or his wife becomes an addict, the Home Office takes the view that to supply such a person with drugs is not in accordance with the doctor's authority, and if the doctor continues to order large quantities of drugs merely to maintain the addiction the Home Office will take action as soon as the matter comes to its notice.

TO ENCOURAGE MATERNITY

AMONG studies carried out for the Royal Commission on Population, a survey of childbearing in Britain, made by a joint committee of the Royal College of Obstetricians and Gynæcologists and the Population Investigation Committee, has just appeared.[1] The health visitors of 424 maternity and child-welfare authorities interviewed all mothers of babies born between March 3 and 9, 1946; and 13,687 of these mothers coöperated. Analysis of answers showed that childbearing is costly, the outlay ranging from £22 among wives of farm labourers to £47 for wives of professional and salaried workers. From two-thirds to three-quarters of the cost went on clothes and equipment, and only about a fifth on medical and institutional fees. For the lower-income groups the relative outlay in proportion to income is much higher than among the well-to-do, and they are also more likely to be confined at home, and to resume domestic duties and responsibilities earlier. In home confinements wives of professional and salaried men get relief of pain three times as often as the wives of manual workers. The committee conclude that there are still great inequalities in the care received by mothers of different degrees of prosperity. The high cost of childbearing can only be reduced by lowering the costs of baby clothing and equipment.

THE REGIONAL BOARDS

HAVING defined the 14 regions into which England and Wales will be divided for hospital purposes, the Minister of Health has now appointed the boards whose task it is to plan, coördinate, and provide hospital and specialist services in each area. The names which we print on another page will have general approval, and the new regulations, so far as they go, support the Ministry's claim that "the boards will enjoy the maximum measure of real freedom of action in exercising their responsibilities." Their first care will no doubt be to appoint officers, of whom the "administrative medical officers" are to be offered a salary of £2000–£2500 a year. They will then have to review their resources, consider how the hospitals should be grouped under management committees, and appoint the members of these committees. A formidable amount of work lies before them in the twelve months before the National Health Service comes into being.

AT the annual meeting last Tuesday, reported on another page, the Royal Society of Medicine's gold medal was conferred on Sir Alexander Fleming, F.R.S., and (in absentia) on Sir Howard Florey, F.R.S. The Hickman medal, awarded triennially for outstanding work in anæsthesia, was presented to Prof. R. R. Macintosh. The four new honorary fellows of the society are Prof. Naguib Mahfouz Pasha (Cairo), Prof. Einar Key (Stockholm), Sir Edward Mellanby, F.R.S., and Dr. C. M. Wenyon, F.R.S.

SIX leading pharmaceutical firms announce a reduction, from July 7, in the prices of coloured penicillin sodium salt and penicillin oil-wax suspensions. The prices of white penicillin are unchanged.

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[2] The Problem of War and Peace. Reprinted in the Year Book of Psychoanalysis, 1946. London: Imago Publishing Co. 1946. Pp.

[1] *Population Studies*, 1947, 1, 1.

Special Articles

REGIONAL HOSPITAL BOARDS

MEMBERS AND PROCEDURE

THE Minister of Health has now set up hospital boards for the 14 regions of England and Wales which were defined last December and which are shown in the accompanying map. These boards are to act as the agents of the Minister for organising and developing the hospital and specialist services of each of their areas, and they are to "enjoy the maximum measure of real freedom in exercising their responsibilities." In their hands lies the appointment of the hospital management committees which will undertake the day-to-day administration of all hospitals in the region, other than the teaching hospitals which will have their own boards of governors appointed by the Minister.

In selecting the members the Minister has consulted a very wide range of organisations interested in hospital services, and besides experienced members of local authorities and of the governing bodies of voluntary hospitals they contain doctors, dentists, nurses, university teachers, industrialists, and trade-unionists. The total number in each board varies from 22 to 32. All the appointments are honorary and unpaid.

Roughly a third of the members will retire each year (they will be eligible for reappointment), and the following list shows the names printed in three groups: (*a*) those retiring in March, 1949; (*b*) those retiring in March, 1950; and (*c*) those retiring in March, 1951. (The chairmen will hold office till March, 1950.) The names of members of the medical profession are shown in bold type.

NEWCASTLE REGION

Chairman: Sir Walter Thompson, J.P. (chairman, Newcastle health committee).

(*a*) **T. H. Bates**, M.D.; Thomas Benfold, C.B.E., J.P.; E. F. Collingwood, C.B.E., J.P.; Alderman Alfred Cooper; **D. C. Dickson**, F.R.C.S.E.; John Foster; **William Fraser**, M.B.; J. A. Hutchison; Robert Muckle; T. A. Wright.

(*b*) Miss D. R. Gibson, S.R.N.; Prof. **R. B. Green**, F.R.C.S.; Prof. **W. E. Hume**, C.M.G., F.R.C.P.; **J. R. Murray**, M.D.; Lord Eustace Percy, P.C.; Viscountess Ridley; T. C. Squance, O.B.E.; William Waddell; Lord Westwood, O.B.E.

(*c*) Alderman A. J. Best, J.P.; Leslie Bird, M.B.E.; G. D. Cochrane, J.P.; Alderman Jack Cohen, J.P.; Alderman P. S. Hancock, O.B.E.; T. B. Harston; **R. E. Jowett**, M.D.; **G. P. Milne**, M.B.; Prof. **F. J. Nattrass**, F.R.C.P.; James Oliver.

LEEDS REGION

Chairman: J. E. Fattorini (chairman, Bradford Infirmary).

(*a*) Alderman H. J. Bambridge, O.B.E., J.P.; Alderman Lewis Chambers; Lawrence Crowther, O.B.E., J.P.; Miss Mary F. Dykes, S.R.N.; Prof. **William MacAdam**, F.R.C.P.; **D. C. Muir**, F.R.C.P.; Prof. **Matthew Stewart**, F.R.C.P.; Alderman Arthur Sugden, J.P.

(*b*) Alderman David Beevers, J.P.; **G. W. Black**, F.R.C.S.; Prof. **Andrew Claye**, F.R.C.O.G.; Harry Denham; B. Hazell, M.B.E.; W. L. Lawton, C.B.E., J.P.; **J. I. Russell**, M.D.

(*c*) S. Clayton Fryers; J. C. Hunter; **W. S. Macdonald**, M.C., M.B., J.P.; Mrs. I. Barbara Shaw; Alderman R. E. Smith; Prof. **R. E. Tunbridge**, O.B.E., F.R.C.P.; Arnold Walker; **Donald Watson**, F.R.C.S.

SHEFFIELD REGION

Chairman: Sir Basil Gibson, J.P. (late town clerk, Sheffield).

(*a*) Alderman C. F. Bowmer, J.P.; **J. W. Brown**, F.R.C.P.; Alderman Henry Deer, J.P.; Mrs. F. Julia Everard; A. W. Harrison; C. M. Hobson; Lord Quibell; Alderman Edward Sheorien, J.P.; Prof. **E. J. Wayne**, F.R.C.P.; Miss A. Wetherell, S.R.N.

(*b*) Miss **Margaret G. Bott**, F.R.C.O.G.; R. E. Dewberry; **K. K. Drury**, M.C., M.D.; **J. P. W. Jamie**, M.C., M.D.; A. R. Martin; Theophilus Pearson; Prof. **G. L. Roberts**, M.B., B.D.S.; E. W. Scorer, O.B.E.; Alderman Robert Shaw, J.P.; Alderman W. E. Yorke, J.P.

(*c*) Alderman W. Bayliss, J.P.; Malcolm Brown; Mrs. Gladys Buxton, J.P.; Prof. **E. F. Finch**, F.R.C.S.; Harvey Ford; **J. L. A. Grout**, M.C., F.F.R.; W. B. Jarvis; Lieut.-Colonel N. G. Pearson, D.S.O., M.C.; G. H. Round, J.P.; **A. B. Slack**, M.C., M.B.

EAST ANGLIAN REGION

Chairman: Earl of Cranbrook (county councillor, East Suffolk).

(*a*) Mrs. Hester A. Adrian, J.P.; C. R. Caselton; P. F. Dennard; **Robert Ellis**, M.D.; **T. S. Hele**, O.B.E., F.R.C.P.; **J. V. Morris**, M.B.; Miss J. G. Thompson, S.R.N.; Alderman Mrs. Mary Whitmore.

(*b*) Alderman John Brooksbank, J.P.; Alderman William Brown; **M. W. B. Bulman**, F.R.C.S.; Rev. Canon J. D. Day; **R. B. Fawkes**, D.S.O., M.C., M.R.C.P.; James Grantham; Alderman Sam Peel, J.P.; E. W. Plumpton, J.P.

(*c*) Mrs. Ena Binfield; **R. W. Butler**, F.R.C.S.; Oswald Chivers; J. B. Coster, J.P.; **W. B. Gourlay**, M.C., M.B.; R. B. Keefe; Sir Cecil Oakes, O.B.E.; R. H. Parker, M.C.; W. H. York.

NORTH-WEST METROPOLITAN REGION

Chairman: Fred Messer, M.P., J.P. (chairman, Middlesex county council).

(*a*) Colonel the Hon. J. J. Astor, J.P.; Mrs. Flora Baker, O.B.E., J.P.; **H. E. A. Boldero**, F.R.C.P.; Miss Vera Dart; Henry Fletcher; **Horace Joules**, F.R.C.P.; Alderman Mrs. Martin-Smith, M.B.E.; **A. C. Morson**, O.B.E., F.R.C.S.

(*b*) Miss Elizabeth Cockayne, S.R.N.; Prof. **S. J. Cowell**, F.R.C.P.; **A. S. Gough**, F.R.C.S.; Henry Lesser, O.B.E.; Prof. **J. M. Mackintosh**, F.R.C.P.; Sir Owen Morshead, K.C.V.O., D.S.O., M.C.; **J. R. Rees**, C.B.E., F.R.C.P.; Miss **Esther Rickards**, F.R.C.S.; Mrs. F. M. Suggate, J.P.; **H. W. C. Vines**, M.D.

(*c*) F. J. Ballard; **D. H. Brinton**, F.R.C.P.; G. B. Jeffery; Miss **Katharine Lloyd-Williams**, M.D.; Sir Alexander Maxwell; Alderman H. R. Neate; **L. W. Plewes**, F.R.C.S.E.; A. G. de Rothschild; Reginald Stamp; **Stephen Taylor**, M.D., M.P.

NORTH-EAST METROPOLITAN REGION

Chairman: J. W. Bowen, O.B.E., J.P. (late chairman, L.C.C. mental hospitals committee).

(*a*) Alderman C. E. S. Blackmore; Mrs. Hilary Blair-Fish, S.R.N.; Captain H. Brierley, O.B.E., M.C.; C. C. Carus-Wilson, M.C.; **Somerville Hastings**, F.R.C.S., M.P.; Alderman S. F. Johnson, J.P.; E. T. Neathercoat, O.B.E., J.P.; C. S. B. Wentworth-Stanley.

(*b*) Prof. **S. P. Bedson**, F.R.C.P., F.R.S.; **Louis Comyns**, L.R.C.P.E., M.P.; Lieut.-Commander Horace Denton; Miss **Helen Mackay**, F.R.C.P.; **Rolf Ström-Olsen**, M.D.; Major R. P. Woodhouse.

(*c*) H. W. Butler, M.P.; **George Graham**, F.R.C.P.; Mrs. A. L. Hollingsworth, J.P.; **Robert Poots**, M.B.; **R. W. Reid**, F.R.C.S.; Alderman C. H. Simmons, J.P.; W. V. Wakefield.

SOUTH-EAST METROPOLITAN REGION

Chairman: K. I. Julian (chairman, Royal Sussex Hospital, Brighton).

(*a*) Alderman R. H. Burslem, J.P.; F. W. Chambers, O.B.E., J.P.; Dame **Barrie Lambert**, D.B.E., M.B., J.P.; Alderman T. E. Morris, J.P.; Rev. Harcourt Samuel; **H. A. Treble**, B.M.; **J. R. H. Turton**, F.R.C.S.; S. J. Worsley, D.S.O., M.C.

(*b*) **E. R. Boland**, O.B.E., F.R.C.P.; Miss E. K. N. Cumming, S.R.N.; Lord Cunliffe; **F. E. Feilden**, F.R.C.S.E.; Alderman Miss Alice Hudson, M.B.E., J.P.; **A. T. Rogers**, M.B.; E. C. Sherwood.

(*c*) **C. W. Brook**, M.R.C.S.; The Hon. Ruth Buckley; **W. Kelsey Fry**, O.B.E., M.C., M.R.C.S., L.D.S.; Alderman S. C. C. Harris; The Hon. Mrs. Sylvia Henley; **J. B. Hunter**, C.B.E., M.C., F.R.C.S.; W. C. H. Luckett, J.P.; **W. G. Masefield**, M.R.C.S., J.P.

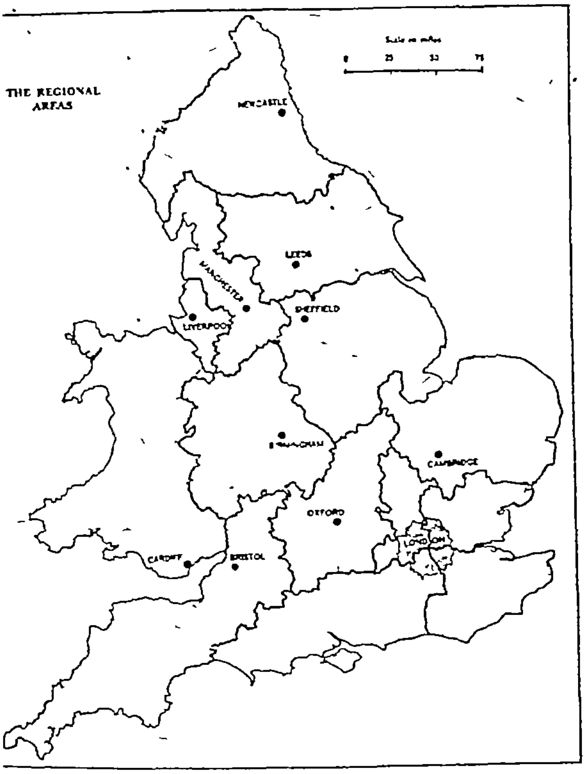
SOUTH-WEST METROPOLITAN REGION

Chairman: F. H. Elliott, D.L., J.P. (chairman, Surrey health committee).

(*a*) Alderman A. E. Allaway, J.P.; Alderman Colonel C. H. Gibson; **P. H. Mitchiner**, C.B., C.B.E., F.R.C.S.; J. A. Tulk, J.P.; **N. E. Waterfield**, F.R.C.S.; Sir Arthur Watson, O.B.E., J.P.; Alderman F. J. Woolley; **J. M. Wyatt**, F.R.C.S.

(*b*) Miss E. C. Batho; **Desmond Curran**, F.R.C.P.; Mrs. Helga Feiling; **C. B. S. Fuller**, M.C., M.R.C.P.; Miss P. Lee, M.B.E., S.R.N.; Alderman Alan Lubbock, J.P.; **M. F. Nicholls**, O.B.E., F.R.C.S.; J. L. Williams.

(*c*) **N. F. Adeney**, F.R.C.S.; G. E. Coke; E. F. Crundwell; Arthur Hague-Winterbotham; A. G. Linfield, O.B.E.; **G. H. Macnab**, F.R.C.S.; **D. Stark Murray**, M.B.; Richard Sargood, M.P., J.P.; George Thompson.



OXFORD REGION

Chairman : **A. Q. Wells,** D.M. (chairman, Oxfordshire alth committee).

(*a*) **E. C. Bevers,** F.R.C.S. ; Prof. **A. D. Gardner,** D.M. ; ord Henley, J.P. ; Alderman Mrs. Alice Jenkins, J.P. ; iss R. R. Jolliffe ; P. C. Raffety, J.P. ; A. J. B. Selwood ; **S. I. Skottowe,** M.D.

(*b*) **A. R. Banham,** F.R.C.S. ; Prof. **A. W. M. Ellis,** F.R.C.P. ; **S. Jones,** M.R.C.S. ; Colonel C. B. Krabbé, O.B.E. ; Miss osemary Spooner ; **J. A. Stallworthy,** F.R.C.S. ; Rev. J. D. urner.

(*c*) Miss Clara Adams, J.P. ; Sir Oliver Franks, K.C.B. ; M. Paterson ; W. R. Robins, J.P. ; Prof. **H. J. Seddon,** R.C.S. ; Miss **Janet Vaughan,** F.R.C.P. ; Alfred Woodley.

SOUTH-WESTERN REGION

Chairman : H. G. Tanner, J.P. (treasurer, University of ristol).

(*a*) Alderman Walter Barrett ; C. P. Brown, J.P. ; A. L. andler ; **R. E. Hemphill,** M.D. ; J. R. Makeig Jones ; **amuel McClements,** M.R.C.S. ; Alderman J. J. Milton, J.P. ; lderman Mrs. J. M. Phillips, J.P. ; **J. W. G. H. Riddell,** C., F.R.C.O.G. ; Miss R. C. Shackles.

(*b*) **C. T. Andrews,** F.R.C.P. ; A. C. Bowden ; Egbert adbury, D.S.C., D.F.C., J.P. ; Mrs. K. A. Goddard, J.P. ; ir Philip Morris, C.B.E. ; Brigadier Joseph Morrison, M.B.E. ; **William Niccol,** M.B. ; P. E. Russell ; Colonel H. B. Stokes, .B.E.

(*c*) Miss M. F. Awdry ; Prof. **R. J. Brocklehurst,** D.M. ; **J. Fuller,** F.R.C.P. ; G. G. Gilmour-White, O.B.E., J.P. ; . C. Morland : Mrs. Jacquetta Marshall ; Alderman H. G. Mason, J.P. ; Prof. **R. Milnes Walker,** F.R.C.S. ; Mrs. M. F. Williams.

WELSH REGION

Chairman : Sir Frederick Alban, C.B.E., J.P. (secretary, Welsh National Memorial Association).

(*a*) **R. D. Aiyar,** F.R.C.S.E. ; **A. H. Coleman,** O.B.E., F.R.C.S.E. ; Alderman E. A. Cross, M.B.E., J.P. ; **H. G. Davies,** M.R.C.S. ; Richard Davies ; Alderman Richard Gronow ; Alderman T. J. Kerrigan ; A. S. W. Johnson, J.P. ; Prof. E. A. Owen ; Mrs. Eleanor Owen ; Rev. B. Waldo-Lewis.

(*b*) Hubert Alexander, J.P. ; Alderman William Casey, J.P. ; **I. J. Davies,** F.R.C.P. ; T. P. Davies ; Alderman W. C. Davies ; Alderman Joseph Dicks ; Alderman J. J. Panes, O.B.E. ; Alderman **D. H. Pennant,** D.S.O., M.D. ; Prof. **O. H. Williams,** F.R.C.S.

(*c*) W. J. Canton ; Prof. **T. B. Davie,** F.R.C.P. ; **J. Lloyd** [illegible] ls ; Alderman Thomas Evans ; William Evans, J.P. ; Mrs. K. W. Jones-Roberts, J.P. ; Thomas McDonald ; Prof. **R. M. F. Picken,** M.B. ; **J. H. O. Roberts,** M.D. ; Alderman the Rev. W. D. Thomas.

BIRMINGHAM REGION

Chairman : R. R. Adam (chairman, Worcestershire health committee).

(*a*) Mrs. A. L. Barker ; **Norman Duggan,** F.R.C.S. ; Captain L. H. Green, M.B.E., J.P. ; Major Cyril Hotchkiss, J.P. ; Prof. **H. F. Humphreys,** O.B.E., M.C., M.B., M.D.S. ; **J. J. O'Reilly,** M.B. ; Sir **Leonard Parsons,** F.R.C.P. ; Arthur Smith, J.P. ; W. T. Smith, J.P. ; H. S. Waites.

(*b*) **J. A. Brown,** M.D. ; **L. A. Dingley,** F.R.C.S. ; E. T. Hobley ; Sir Ernest Johnson ; J. Latham ; R. E. Priestley, M.C. ; Miss Smaldon ; G. Alan Thompson ; Alderman L. Whitehouse, J.P.

(*c*) Alderman A. F. Bradbeer ; L. E. Bury ; Alderman W. L. Dingley ; D. J. Evans ; V. W. Grosvenor, J.P. ; C. O. Langley ; **J. H. Sheldon,** F.R.C.P. ; Prof. **A. P. Thomson,** M.C., F.R.C.P. ; **A. J. Watson,** F.R.C.S.

MANCHESTER REGION

Chairman : Sir **John Stopford,** F.R.C.P., F.R.S. (vice-chancellor, University of Manchester).

(*a*) **Walter Briggs,** M.B., J.P. ; Prof. **Daniel Dougal,** M.C., F.R.C.O.G. ; Miss L. G. Duff Grant, S.R.N. ; Alderman Joseph Eastham, J.P. ; N. G. Frank ; George Gibson, C.H. ; Alderman Thomas Halstead, J.P. ; Major E. F. Pilkington, J.P. ; Sir Thomas Tomlinson, J.P.

(*b*) F. W. Boggis, J.P. ; Joseph Fielding, J.P. ; Alderman G. D. Hastwell ; **Stanley Hodgson,** M.D., J.P. ; William Onions, J.P. ; Prof. **H. S. Raper,** C.B.E., F.R.C.P., F.R.S. ; C. M. Skinner ; **J. D. Silverston,** M.B. ; Mrs. E. A. Watson.

(*c*) Frank Bussy ; Albert Cook, J.P. ; W. A. Davies, C.B.E., J.P. ; Edwin Hall, J.P. ; Prof. **Geoffrey Jefferson,** C.B.E., F.R.C.S., F.R.S. ; **R. L. Newell,** F.R.C.S. ; Mrs. F. A. Ogden, J.P. ; Prof. **Harry Platt,** F.R.C.S. ; Alderman John Shorrock, J.P. ; James Sillavan.

LIVERPOOL REGION

Chairman : Thomas Keeling, J.P. (chairman, management committee, Royal Southern Hospital).

(*a*) **T. H. Harker,** M.D. ; Miss Mary Jones, O.B.E. ; Miss D. C. Keeling, O.B.E., J.P. ; J. F. Mountford ; **D. R. Owen,** F.R.C.S.E. ; Alma Parkin, J.P. ; Alderman David Plinston, J.P. ; Ernest Smethurst ; Prof. **H. H. Stones,** M.D., M.D.S.

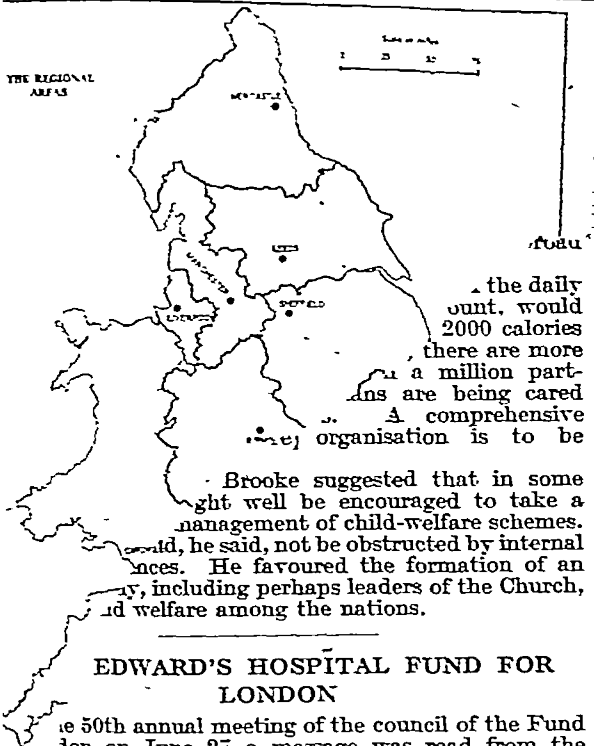
(*b*) Miss A. L. Bulley ; Prof. **Henry Cohen,** F.R.C.P. ; H. D. Ellidge ; T. W. Harley, M.B.E., M.C. ; **J. E. Nicole,** O.B.E., L.M.S.S.A. ; W. S. Rhodes, J.P. ; Prof. **A. Leyland Robinson,** F.R.C.O.G.

(*c*) E. E. Ashton ; Frederick Bidston ; Alderman Nathaniel Birch, J.P. ; Prof. **T. B. Davie,** F.R.C.P. ; Miss A. D. Eills, M.B.E., J.P. ; Prof. **W. M. Frazer,** O.B.E., M.D. ; John Taylor.

Members of boards may resign on giving notice to the Minister, and persons appointed to fill casual vacancies will hold office for the rest of their predecessors' term. If a board resolves that a member's conduct is prejudicial to the efficient performance of its functions the Minister may direct that he shall no longer be a member.

The boards may (and if so directed by the Minister shall) appoint committees, consisting wholly or partly of their own members, to exercise any of their functions, subject to such conditions as the Minister may impose. If, during six months, a member has not attended a meeting of the board or committee to which he belongs, the Minister (unless satisfied that his absence was due to illness or other reasonable cause) will declare vacant his seat on the board or committee.

The rules laid down for the conduct of meetings of regional hospital boards will apply also to meetings of boards of governors of teaching hospitals and of management committees. If the chairman refuses to call a meeting when six members ask him to do so they may themselves call the meeting. No business will be transacted unless at least a quarter of the members are present, and all questions will be decided on a majority vote of those present, the person presiding having a second or casting vote. The provisions of the Local Authorities (Admission of the Press to Meetings) Act 1908 (a) will apply.



Evans; William Evans ... J.P.; Thomas McDon... J. H. O. Roberts, M.D.;

Chairman: R. ... committee).

(*a*) Mrs. A. I... L. H. Gree... Prof. H...

... the daily ...ount, would ... 2000 calories ..., there are more ... a million part...ns are being cared ... A comprehensive ... organisation is to be

... Brooke suggested that in some ...ght well be encouraged to take a ...management of child-welfare schemes. ...ld, he said, not be obstructed by internal ...nces. He favoured the formation of an ...y, including perhaps leaders of the Church, ...d welfare among the nations.

EDWARD'S HOSPITAL FUND FOR LONDON

...e 50th annual meeting of the council of the Fund ...don on June 27 a message was read from the ... as patron, recalling that the Fund had been ...d by King Edward VII in 1897, to provide ...nal support for the voluntary hospitals at a time ...th ...culty and uncertainty.

... Duke of Gloucester, president of the Fund, said ...hen the distinction between the voluntary hospitals ...hose maintained by the local authorities was ended ...Fund would help both kinds of hospital. "The ...that in this great reorganisation the Fund remains ...to do its work in its own way is, I think, a mark ...blic confidence in its management." Grants, he ... had recently been made for travel; representatives ...Charing Cross Hospital had been enabled to make a ... continental tour to study hospital construction, with ...ew to planning the new Charing Cross Hospital to ...uilt at Harrow.

...r Edward Peacock, the treasurer, reported that ...l general receipts for 1946 amounted to £491,409, ...pared with £464,710 in the previous year.

...r. H. Morley Fletcher, chairman of the nursing ...uitment committee, said that the nurses' health-...ord forms issued by the Fund were selling at the rate ...0,000 a year. During the year over 4000 candidates ...training had been advised at the Nursing Recruitment ...tre. The Fund was, he said, continuing its annual ...nts of up to £5000 to group preliminary-training ...hools for nurses.

Sir Harold Wernher, presenting the report of the ...ergency bed service, said that 10,500 calls for help in ...ding a hospital bed for a patient had been dealt with ...ring the year—an increase of 55% over the preceding ...ar. The shortage of beds, even for urgent cases, was ...ore acute than ever, even though the London voluntary ...spitals had reopened since the end of the war no less ...an 3000 beds and now had only 15% of their pre-war ...mplement closed. "The overall shortage of beds," ...cording to the committee's report, "is so serious that ... point can be reached when no hospital, voluntary or ...unicipal, can take in a patient even when urgent ...rgery is required."

Sir Hugh Lett, presenting the report of the committee ...h hospital diet, spoke of the value of meetings which ...ad been instituted for catering officers. The standard ... feeding in hospitals in the King's Fund area was, he ...dded, definitely improving.

Sir Henry Tidy, chairman of the convalescent homes' ...ommittee, said that a directory of homes was being ...pared. The committee had assisted in the reopening ...es ...mes closed during the war.

...blic Health

Smallpox

...focus of infection is at Bilston, where ...s occurred during the past week. This ...ife of a patient removed on June 17, ...to hospital on June 29. She was vacci-... the time of her husband's removal. This ...had very few contacts. Unfortunately the same does not apply to the other Bilston family involved, from which 5 children were admitted to hospital on June 20 and 21. The diagnosis of smallpox is not confirmed in 4 other patients under observation.

Poliomyelitis

There was a further increase in notifications of poliomyelitis from 31 in the week ending June 14 to 44 in the week ending June 21. Some of these notifications were connected with the localised prevalences mentioned last week, but in addition small numbers were notified from all over the country except from the West and from Wales. There appears to have been a succession of cases in some localities. For example, in Ulverston, near Barrow-in-Furness, there were 7 notifications, falling roughly into five generations, between April 6 and June 21. Although notifications of polioencephalitis had not increased in the week ending June 21 (2 notifications), cases have occurred where the diagnosis between poliomyelitis and polioencephalitis has been doubtful.

Suspected Botulism

On June 6, 5 persons who had eaten lunch at a small tea-shop in the London area on the previous day noticed abdominal discomfort followed by obstinate constipation. Of these, 2 vomited, and all subsequently developed difficulty with vision, and/or speech and swallowing. 1 man died on the twelfth day, and some still have signs of poisoning with a persistent neurotoxin involving the brain stem. 2 have remained ambulant throughout. Although the origin and nature of the poison are still under investigation, a tentative diagnosis of botulism has been made and preventive action taken. It is not improbable that several, perhaps half a dozen, other persons were involved, and this note may help practitioners to make a retrospective diagnosis: ptosis, fixed pupils, and diplopia may still be present. The attention of medical officers of health should be called to suspicious cases.

Notification of Puerperal Fever in London

Whereas puerperal pyrexia is notifiable both in London and the provinces, puerperal fever is notifiable in London only. Here the regulations are confused: the separate notification of puerperal fever has been found to serve no good purpose, and the resulting statistics have proved valueless. The London County Council's hospitals committee has therefore suggested that the Public Health (London) Act, 1936, should be amended by the removal of puerperal fever from the list of notifiable infectious diseases.

Infectious Disease in England and Wales

WEEK ENDED JUNE 21

Notifications.—Smallpox, 7; scarlet fever, 870; whooping-cough, 2107; diphtheria, 220; paratyphoid, 11; typhoid, 7; measles (excludng rubella), 10,632; pneumonia (primary or influenzal), 328; cerebrospinal fever, 39; poliomyelitis, 44; polioencephalitis, 2; encephalitis lethargica, 2; dysentery, 47; puerperal pyrexia, 121; ophthalmia neonatorum, 64. No case of cholera, plague, or typhus was notified during the week.

The 7 cases of smallpox were notified at Bilston, Staffs.

Deaths.—In 126 great towns there were no deaths from enteric fever, 1 (1) from scarlet fever, 2 (1) from diphtheria, 7 (1) from measles, 13 (3) from whooping-cough, 78 (1) from diarrhœa and enteritis under two years, and 1 (0) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 258 (corresponding to a rate of 26 per thousand total births), including 25 in London.

Modern Care of Old People

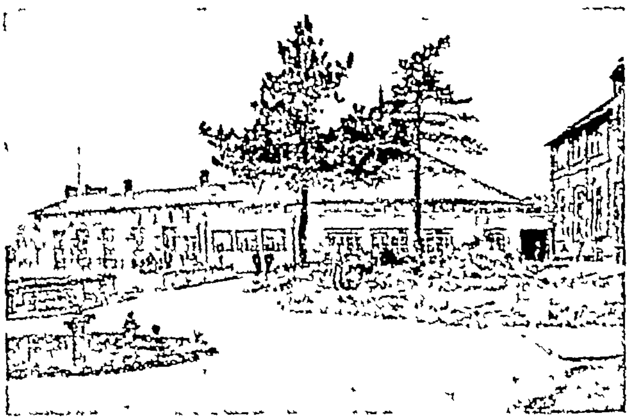
VI

MUNICIPAL INSTITUTIONS

Birmingham's Example

BIRMINGHAM'S provision for the old includes four large homes, administered by the public-assistance committee, for those requiring no special medical care. Of these four, housing altogether 831 people, one was used during the war as a hospital but is to be reopened next month. A fifth, and rather more elaborate, home is planned; this will be self-supporting at a cost to each occupant of about 50*s.* a week. The average cost of each person in the existing homes is 32*s.* 4*d.* a week; and each is expected to contribute according to his means. Those who can afford no contribution are maintained without charge; those with means, however small, retain a small amount for personal use; while those over 65 years and without means are provided with pocket-money.

Two of the homes are for men and two for both men and women. The committee is convinced that there is a place for such mixed homes; these even include suites for married people, which surprisingly are not in great demand.



Dining-hall and new block.

ARRANGEMENTS FOR MEN

Before going to one of the other homes, men spend a few days in a receiving home, with 101 beds, while the superintendent decides which home will best suit them; and where possible, the new entrant goes to the home he chooses. Though nominally simply a receiving centre, this home also retains some who want to remain, besides the very few who have given trouble at the other homes. If, after observation, a man continues to be troublesome he is admitted to an infirmary; but this is necessary in only one or two instances each year.

QUINTON HALL

The principal home for men is at Quinton Hall, on the outskirts of the city. Here a former theological college, surrounded by lawns and open fields, has been adapted and extended to take 310 old people. Linking the old with the new block is a large octagonal dining-hall, containing a stage for concerts and furnished with tables for 6 and 12.

Sitting-rooms and dormitories occupy the rest of the ground floor. About one in three of the residents is incapable of climbing stairs, and needs a ground-floor bed. The dormitories vary in size, some containing as few as 4 and others as many as 30 beds; but the committee proposes to subdivide the larger rooms.

Each man has his personal locker, which is soon to be replaced by a full-length wardrobe. New clothes are issued where necessary, but uniform is shunned; each man has his own three sets of underclothing. The paint is war-worn and rather drab in colouring; but it is being renewed in fresh light colours as quickly as supplies permit. White bedspreads, though they look rather bleak, have been deliberately chosen, because the first signs of soiling are easier to detect on white than on coloured materials. Pastel shades, however, show soiling nearly as quickly, and give a pleasanter look to a ward or dormitory.

The bathrooms contain a simple and effective device for helping old people to raise themselves in the bath: a cross-bar is attached to the end of a rope suspended from the ceiling. Some years ago hand-rails were fitted throughout the corridors; the less able get along by gripping the rail with one hand and a stick with the other.

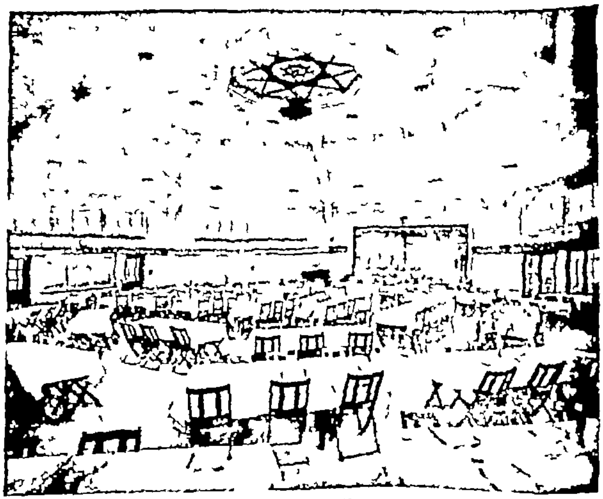
SITTING-ROOMS AND RECREATION

Leading off the ground-floor corridor is a series of airy sitting-rooms, containing from 20 up to about 80 chairs; the larger rooms are shortly to be divided to give a more intimate atmosphere. These too are to be decorated in light colours as soon as possible. Experience with different chairs has shown that most of these elderly people favour a straight-backed wooden armchair, with or without a head-rest; low divans and easy chairs, which are also provided, are preferred by some of the more agile residents.

For entertainment, besides concerts in the winter, there are a billiards-room, a large library, cards, various other games, and a bowling-green. The superintendent and matron retail sweets to the residents, and use the profits for prizes in competitions. In the summer a cricket team, organised by the visiting doctor and superintendent from the staff and others, plays once a fortnight in the grounds and attracts an enthusiastic following.

ADMINISTRATION

There are only two rules: the old people are expected to attend promptly at meals and to be in bed normally by nine o'clock. Though the bedtime rule needs no enforcement (indeed many go to bed after their tea at 4 o'clock, without waiting for supper) and though residents may, if they tell the superintendent beforehand, come in or go to bed later, the principle of a fixed bedtime is perhaps a little at variance with the sense of liberty which the Ministry of Health wishes to encourage in such homes, especially as everybody over sixty has been in the habit of choosing his own bedtime ever since he grew up. During the day residents



Dining-hall.

can come and go as they will, however, and they can receive visitors at any time.

Work is not forced on the residents, but those who like can garden or undertake other useful tasks; and a workshop is to be opened. There is no question of training them in profitable crafts, for their average age (though lowered by one or two cripples in the forties) touches 75; but it is thought that, even if they do not make much, they may like to use their hands and to have the workshop as an additional social centre. In the last few years the age at entry, and thus the average age, has been creeping up, perhaps because men of 65–70, who would formerly have been retired, have been retained in industry.

There are few complaints, except about the price of tobacco; and this is not peculiar to a home for the old. The work is not easy for those in charge: it calls for patience and understanding, some firmness, and above all a feeling that the job is worth doing. Regular visits are paid by members of the public-assistance committee; but they recognise that the atmosphere of the home is made by the superintendent and matron: and since these have been hand-picked the atmosphere is very happy. These officers are so carefully chosen that the committee often has difficulty in finding suitable people even among a large number of applicants.

THE PSYCHOLOGY OF AGE

For an elderly person entry to any institution is a big step, taken with considerable fear and foreboding. At the reception home small dining-room tables for four have proved their value, for if a lonely newcomer is uncomplainingly disinclined to eat the other three at his table immediately notice and pass on the news to the matron. Tables are rather larger at Quinton Hall, since each man eventually attaches himself to a group, which forms a small community in itself; and on first arriving every man is placed under the charge of an older inhabitant until he has established himself.

For those who have reached 75 it is a shrinking world, often bounded on the one hand by sleep and on the other by food. In between these two the demand is principally for comfort and freedom from irritating restrictions. In the Birmingham homes these wishes are satisfied.

Reconstruction

THE DOCTOR'S PENSION

SUPERANNUATION UNDER THE ACT

THE draft regulations [1] which we noticed briefly last week set out a contributory superannuation scheme for—

(a) Officers and servants of regional hospital boards, executive councils, and other bodies constituted under the National Health Service Act.

(b) General medical practitioners, and general dental practitioners on the lists of executive councils.

(c) Other persons engaged in health services, whether provided under the Act or otherwise.

The scheme, which will be administered by the Minister of Health, will be financed by contributions from the participants and from Exchequer moneys. The major benefits are a pension and a lump-sum retiring allowance, together with a widow's pension. Subsidiary benefits include a death gratuity, an incapacity pension, an injury allowance, a short-service gratuity, and an option to a pensioner to allocate part of his pension to his wife or any dependant.

Provision is made for preserving rights in respect of previous superannuable service, and superannuable employment in the central health service is made interchangeable with superannuable service in the civil service, local government service, and teaching service. "The scheme also extends and modifies the Local Government Superannuation Act, 1937, . . . by substituting benefits similar to those provided by the draft regulations for the benefits of the Act of 1937. . . . Similar provision is made in relation to the superannuable staff employed by local education authorities for the purposes of the school health service."

The scheme is comprehensive in that there can hardly be any health worker accepting whole-time or part-time employment in the new service who does not fall into one of the three categories (a), (b), or (c). Included in them will be doctors, dentists, nurses, midwives, physiotherapists, hospital technicians of all kinds, lay administrators, almoners, clerical and domestic staffs, and many types of manual worker. The great majority will be paid by salary, directly or indirectly by the hospital board, or the executive council, and will come into category (a). The doctors and dentists under contract with the executive council will be paid differently, their remuneration being made up of capitations, or fees for items of service, both of which may vary widely from year to year; they are therefore placed in a different category, (b), with a different scheme for the assessment of benefits. The chief beneficiaries under (c) are local-government officers and officers of the school medical service for whom special provision is made though they do not become direct employees of the central authority.

The contributions payable by the "employee" and "employer" respectively are 6% and 8% of the remuneration (except for manual workers where it is 5% and 6%). In the case of practitioners, an allowance for expenses, assessed according to a formula to be laid down by the Minister, will be subtracted from total remuneration before the percentage levy is made. A principal employing an assistant in general practice will have to pay the employer's contribution in respect of his assistant. Anyone who resigns or is discharged from the service before becoming entitled to pension or other benefit will (except if his resignation or dismissal is in consequence of fraud or misconduct in connexion with the performance of his duties) be entitled to a return of his contributions plus compound interest at 2½%.

MAJOR BENEFITS

Pension.—In categories (a) and (c) the amount of pension is for each year of contributing service one-eightieth, and for each year of non-contributing service one-hundred and sixtieth of the average remuneration (defined as the annual average of the remuneration for the last three years of employment). The maximum pension is to be forty-eightieths of the average remuneration. In category (b) the pension is for each year of contributing service 1½% of the remuneration for that year. Should there be more than 40 years' contributing service only the last 40 years can be counted.

Lump-sum retiring allowance.—This immediate payment on retirement amounts to the equivalent of three times the annual pension earned, but only a third of this is payable "in the case of a married male officer in respect of whose service a widow's pension may become payable."

Widow's pension.—This amounts to a third of the pension the officer was receiving when he died, or would have received had he retired on the day before his death.

This represents a considerable advantage over previous schemes (including some applicable to Government servants) where the pensioner's benefits ceased entirely on his death, and his widow was left with no continuing remuneration.

The widow's pension is subject to increase should she be older than her husband, or decrease should she be younger, on an actuarial scale included as a schedule in the draft regulations. "A widow's pension shall cease to be payable to a widow if she remarries, or in respect of any period during which she is cohabiting with a man as his wife."

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[1] H.M. Stationery Office. Pp. 88. 1s. 1d.

SUBSIDIARY BENEFITS

Death gratuity.—This is the equivalent of the retiring allowance, and is payable to the officer's legal personal representatives should he die before reaching retiring age. Again the amount is equivalent to three years' pension as then accruing, and again it is reduced by two-thirds if a widow's pension is payable.

Incapacity pension becomes payable if an officer is no longer employable by reason of permanent ill health or infirmity of mind or body. In amount it is the same as the retiring allowance.

Injury allowance is payable if an officer ceases to be employed in consequence of permanent incapacity due to an injury sustained in the discharge of his duty. This is a variable sum not exceeding two-thirds of his annual average remuneration.

Short-service gratuity.—This, which is payable to an officer who has to retire through ill health before becoming entitled to an incapacity pension, amounts to one year's "average remuneration."

QUALIFYING PERIODS

The periods of service which have to be completed before the above benefits are payable are as follows:

Pension.—Ten years' service, on or after reaching age of 60 (55 for mental-health officers, female nurses, physiotherapists, midwives, and health visitors).

Retiring allowance.—Five years' service, on or after age of 60 (or 55 for categories as above).

Widow's pension.—Ten years' service.

Death gratuity.—Five years' service.

Incapacity pensions.—Ten years' service.

Injury allowance.—No qualifying period needed.

Short-service gratuity.—Five years' service.

OTHER PROVISIONS

Ordinarily if a pensioner after retiring accepts other work remunerated from public funds his total remuneration from pension and earnings may not exceed the annual "average remuneration" as assessed when his pension was granted. Should it do so, the pension will be reduced accordingly. This proviso is waived in the case of practitioners receiving pension who continue to practise between the ages of 65 and 70. If they continue to practise after 70 it becomes operative.

Those doctors or nurses at present included under superannuation arrangements such as those of the Federated Superannuation System for Universities or the Federated Superannuation Scheme for Nurses and Hospital Officers may if they so request continue in their present scheme (the Government taking over the employer's responsibility) and not transfer to the new scheme. Similar arrangements are allowed to local-government officers, who need not transfer to the new scheme unless they so wish. There seem, however, to be some advantages which will induce some of these officers to transfer—not the least being the opportunity they are given to opt to make payments which will allow a period of non-contributing service to be reckoned for pension as if it had been contributing service.

Practitioners in contract with executive councils who have already entered into commitments with life-assurance companies may opt out of the superannuation scheme and receive instead the 8% of their remuneration (ordinarily set aside as the Exchequer contribution to superannuation) for use to help to pay their insurance premiums.

Another useful provision allows the Minister to direct "if he is satisfied there are exceptional reasons for so doing" that in the case of late entrants into the scheme (e.g., a person who becomes an officer of an employing authority after attaining the age of 35) the years of service for calculating benefit may be treated as eight-fifths of the actual years served.

Finally it appears that every effort has been made to ensure that no bar or difference between superannuation provision in the different parts of the future medical service shall remain to hinder the free movement of members of the service from district to district, or from one branch of the service to another. Movement from general practice to part-time or whole-time specialism, from clinical to academic medicine, from teaching to research, from local-authority to central-authority service, are all foreseen and facilitated.

The architects of this very complicated, and at many points entirely unprecedented, scheme, have tackled their task courageously and with no small measure of success.

Medicine and the Law

Overdose of Proprietary Medicine

AT an inquest in Manchester on June 24, evidence was given that a $2^1/_2$-year-old boy had died after drinking half of a bottle of a proprietary medicine which was said to have contained in all about one grain of morphine. The medicine, known as 'Johnson's Celebrated Infants Preservative,' had previously been given by the dead boy's mother to another (infant) son for the relief of flatulence. "It seems to me criminal," said the deputy city coroner, "that this sort of thing is sold indiscriminately to parents who are not told that it can be just as poisonous as carbolic acid." He returned a verdict of death through misadventure by morphia poisoning.

Another Missing Swab

The death of a woman last April at a maternity hospital after a cæsarean section was the subject of a recent inquiry in the Paisley sheriff court. A post-mortem examination disclosed the presence of a swab measuring 24 × 8 inches in the body. Death was due to peritonitis.

The hospital routine was described to the court. After an operation, and before the wound was stitched, the nurse who had been handing out the clean swabs had to check the soiled swabs which had been collected by two other nurses, so that she could see that all were accounted for. Then she had to report to the nursing sister—in this case the matron—who in turn had to report to the surgeon if any swabs were missing. After the operation last April the nurse reported three swabs missing. The matron told her where she would find two of them; these two were then retrieved. The matron omitted to report to the operating surgeon that one swab was missing. The sheriff observed that the matron had failed in her duty. There was evidence that she was feeling overworked after a long period of physical strain; but the whole system of checks which the hospital very properly insisted upon, and which it was her duty to see enforced, had been laid aside.

In very similar circumstances recently an English coroner placed a share of the liability upon the operating surgeon. It is interesting to note that Sheriff Hamilton at Paisley made no such suggestion.

CHILDREN WITH DEFECTIVE SPEECH.—On June 28 Mr. G. Tomlinson, Minister of Education, opened Moor Hurst School at Hurst Green, Surrey, which is the first school in the country for children with speech defects. The West End Hospital for Nervous Diseases bought the house with funds raised from voluntary sources after discussions between the Ministries of Health and Education in 1943, at which Sir Harold Gillies urged the need for intensive speech training for children who had been operated on for hare lip and cleft palate. Originally intended for these children, the school has also admitted aphasic children who are unable to speak, although not deaf. At the formal opening Mr. Tomlinson said that local education authorities needed a further 150 speech therapists for the 75,000–100,000 children requiring treatment.

In England Now

A Running Commentary by Peripatetic Correspondents

THE illegal immigrant ships still come in. My job is merely to minister to the medical wants of the troops guarding the dock area, a task which resolves itself into sitting in the back of my ambulance and keeping brother officers away from my small stock of "medical comforts." So far my only patient has been a private soldier who drank half a beer-bottleful of urine under the impression that it contained its original commodity, a sad reflexion on somebody—probably on those who make the beer rather than the thirsty victim. Those M.O.'s who run the R.A.P. on the wharf itself see some cases—hysterical immigrants with pains in various places; and sometimes as many as half a dozen pregnancies which provide them with an opportunity for discovering how difficult it is to distinguish a breech from an occiput. The troops do their job well, maintaining a remarkable patience in marshalling the queues to go into the searching tents, considering how long they have been standing by before the ship even comes into dock. "Come on, Miss, this way. Its your birthday today!" and "Keep in line, there's no hurry; you'll all get your turn!": this last a bit cynical. The immigrants—at any rate by the time they reach port—are mostly well behaved, and their philosophical acceptance of the searching of their baggage and their persons, and the squirting of D.D.T. powder inside their clothes, seems to indicate a sadly long apprenticeship in being on the wrong side of officialdom.

* * *

It is very difficult to decide what to do when one sees a case where the diagnosis has been missed by somebody else. I mean cases where a hospital or consultant of repute has seen the patient recently and it is obvious that the disease is not a new development but was genuinely overlooked through some omission in the history-taking or examination. It looks so conceited if one writes to a consultant to tell him where he slipped up. No-one has ever written to me telling me of some howler which has been discovered at another hospital, but I have no doubt that at hospitals all over the country patients whom I have misdiagnosed are being set right. Disseminated scleroses are having their spinal tumours removed, presenile dementias are having malarial therapy for G.P.I., and fibrositises of shoulders are having their carcinomas of bronchus investigated. I suggest a central bureau for bricks, to which everyone would send reports of howlers they had uncovered. The sinner would then receive a tactful note from the bureau explaining that such and such a case treated by him for inoperable carcinoma of the stomach was a classical pernicious anæmia, now quite well on liver treatment, thank you. There would be no mention of the hospital or consultant responsible for the discovery. I have seen a lot of motes in other people's eyes recently and I wish I could be told about some of the beams in my own. No marksman has a chance of hitting the bull consistently unless they signal from the butts to show where the wide shots have landed, and I would like to hear about some of my magpies and outers. Poor fellows, I hope they're doing better now.

* * *

Tempora mutantur et nos in illis. How great the changes are was lately driven home when the specialist decreed that my convalescence would be hastened by arm-swinging and breathing exercises. The prescription caused me some dismay, for the last occasion on which I was let in for organised physical training was during the 1914–18 disturbance. The first session was an agreeable surprise (session is the right word, for we sat on stools which eased the situation a good deal), and the exercises, methods, and aims were all new to me.

The even precision of the old drill methods has been replaced by the loose smooth rhythm of easy movement. The only reference the instructor made to muscles was to tell us to loosen them and relax: we were told "unscrew your head slowly and then screw it back on again and never mind the creaks." His emphasis was on the circulation and on giving the lungs sufficient room to work.

Some simple coördination exercises hit the class in a weak spot. It looks easy enough to stick out opposite legs and arms first forwards and then sideways, but in practice our class would have been a howling success on any music-hall stage. The proceedings were held up more than once by the almost hysterical laughter of those in the back rows (I was in front). More exercises were done lying on a mattress (an excellent idea, I felt), and then we graduated to rhythmic contortions with broomsticks and medicine-balls. After the first two days I thought my rectus femoris would never be the same again, but this rapidly passed and I began to enjoy the sessions thoroughly. Moreover I was agreeably astonished by the speed of my recovery. The instructor certainly knew his job, and not only on the technical side—he had a tactful yet stimulating "gym-side manner" which won the support of our collection of crocks.

It seems to me that in general practice far greater use should be made of simple exercises in convalescence, and that would mean much wider opportunities for such therapy. The exercises must be done under skilled direction, or they will certainly be useless and may be harmful. Perhaps it will be possible to organise something of this kind in connexion with the health centres.

What is being done in medical schools today to instruct students on the uses and limitations of physiotherapy? In my own medical school all we had was a few lectures on massage—and even that was unusual at the time. Until I sampled modern exercise therapy myself and saw its effects on the other patients I had no idea either of its efficacy or its scope. I don't suggest that every student should become an expert physiotherapist but he should learn enough to pass appropriate cases to the expert with proper instructions.

* * *

For some time I have been carrying out a health survey in industry which necessitates asking uncomplaining subjects a lot of personal questions. On the whole my questionees have answered with great good will, but as it seems only fair to let them have a go at me after I have cross-examined them, I usually end the interview by saying, "Now I have asked you a lot of questions is there anything you would like to ask me?" Often there isn't, but sometimes there is, and just occasionally I get properly caught. A few days ago, when for the thousandth time I asked my usual formula, the man looked at me for a moment, then answered, "Yes, will you join me in a pint?" It was fortunate that I had already got most of the day's work done, for it was several hours before I got back to see the next patient.

* * *

I am no longer peripatetic. A cellulitis has immobilised me as completely as even my enemies might desire. But the mind still has its flights of fancy, and as I chew my own particular brand of sulphonamide tablets, I speculate on whether the streptococcus or the granulocytes will *pack up first.* *Yesterday it was anybody's guess.* Today the enemy wavers and the turning movement seems likely to come off.

Are people ever threatened with an illness? Probably they've either had it or they haven't, but there must be a time when it begins if one can only mark it. On Sunday at 10 P.M. I cracked my elbow—both it and the skin—and I was quite well until 5.30 P.M. next day, when I suddenly felt exhausted. Half an hour later the arm was painful and I knew that the fight was on because of the sense of exhilaration. A few months ago a peripatetic correspondent described the euphoria which often marks the beginning of a head cold. I have had that all my life, and for a few glorious hours at these times of impending misery I feel really efficient. Normally I have little or no sense of smell but it comes back with the euphoria and I recapture delightful associations. So it was when the cellulitis started.

As I lay yesterday ruminating on the prospects of victory I received a wire from the Editor asking for a note on an old friend who has passed on. I knew him well, liked him, and was in a position to appraise his work—but suppose I hadn't liked him! It's a sobering thought. The streps are putting up a stout rearguard fight. I must make a note to book *my* reviewer.

Letters to the Editor

THE STUDENT AND THE ALMONER

Sir,—If students are to gain any insight into the social problems uncovered by regarding the patient as a human being with family, living, and income-earning problems, some way must be found of introducing them under expert guidance into a large number of homes.

Hospital almoners are already overworked; but physicians on hospital teaching staffs can stimulate interest through the questions they put, and their comments; and midwifery on the district often makes the more imaginative aware for the first time of aspects untouched by the writers of textbooks. I am, however, convinced that a month spent with a general practitioner who took the students into such homes as he could, and who discussed other cases as he went round, would be the most valuable method. I should like this training inserted between the final examination and qualification. Those of us who teach must be aware of a certain impatience among students towards knowledge that does not help in examinations; but when these are passed there is a swing-over towards practical knowledge.

Both practitioner and student would find the experience entertaining and illuminating. There are difficulties, as Dr. Harding (June 21) says; but the plan is feasible.

London, N.W.1. S. R. Eastwood.

SUCCESSFUL REVACCINATION

Sir,—Dr. Geoffrey Edsall's letter of June 21 will be of great interest to many of your readers, and his theses as to the interpretation of the reactions to vaccination seem to be sound. They do not, however, provide a solution to the problems that concern the quarantine officer in practice, and Dr. Edsall's contention that a "nil" reaction should not be accepted (no matter how many failures to take the patient has already experienced) is not a practical proposition for those who wish to travel—particularly if they wish to travel in some haste.

The United States authorities have recently laid down that no person shall be admitted to the States from this country unless he can produce a certificate of successful vaccination performed within the last three years. This, following Dr. Edsall's contentions, has the effect of excluding certain people, including myself, from any possibility of going to the United States.

I was vaccinated in infancy with four criss-cross insertions, the scars of which are still clearly visible. I was revaccinated on the opposite arm by exactly the same method at the age of twelve and took successfully. Since then, though I have been revaccinated on many occasions, I have never had the slightest suggestion of a take, and the so-called immunity reactions have been barely perceptible. On the last occasion that I came into contact with a suspected case of smallpox, only a few weeks ago, I decided to be vaccinated as brutally as possible—that is, by four large insertions (two on one leg by the criss-cross method, two on the other leg by multiple puncture) using fresh lymph obtained from the Government laboratory. A few hours afterwards I had a slight trauma reaction, which rapidly cleared up, but no sign whatsoever of any take or immune reaction.

Dr. Broom would certify me as "insusceptible to vaccination," which seems a reasonably good description of the state of affairs, but which I take it does not necessarily mean that I am immune to an attack of smallpox, though the fact remains that I have seen and handled a number of cases of smallpox in recent years and have not been attacked.

What is to be done from the point of view of travel and immunity from quarantine measures for people who, like me, fail to take? We do not object to a reasonable amount of revaccination, though it is a bit of a nuisance to have to be revaccinated every eight days for an indefinite period. What is more serious is the risk that we run, in leaving the country, of having to submit to "surveillance," or possibly to revaccination with a doubtful lymph applied by methods that may not be above criticism, or even of being refused permission to embark, or to land, because we have not a certificate of successful vaccination.

If Dr. Edsall can suggest an alternative to the te "insusceptible" in such cases, or suggest some int national agreement whereby after, say, three unsuccess revaccinations the vaccinee will be exempt from furt vaccination and from all quarantine measures, he be rendering us a good service. Even then the vacci would have to wait 24 days before embarking, by or air, for say the U.S.A. You will appreciate, Sir, serious effect on travel and commerce of su impedances.

The fact is that we are a non-immune population, considerable risk of invasion by smallpox, and have only ourselves to blame for it. While can do what we like with our people, we must whine if other countries dislike our practices and precautions.

It is up to the authorities to decide how to protect if not from smallpox, at least from serious interferen with our liberty to travel and to trade.

M. T. Morgan
Port M.O.H., London

CONSENT TO DEATH

Sir,—In your annotation of June 7 you quote fr Dr. Harry Roberts's book, *Euthanasia and other Asp of Life and Death*, published in 1936. In the pass quoted, Dr. Roberts criticises as being unduly complicat the procedure given in the first draft of a Bill wh followed suggestions made in my presidential addres the Society of Medical Officers of Health. May I po out that the provisions of the Bill sponsored by t society which I represent, and introduced into the Ho of Lords by the late Lord Ponsonby, are much l complicated. There is no reference to a magistra the nearest relative does not have to be informed, a there is no delay of seven days. Practically all of I Roberts's criticisms have therefore been met.

C. Killick Millard
Hon. Secretary, Voluntary Euthanasi
Leicester. Legalisation Society.

COLD AGGLUTININS IN ATYPICAL PNEUMONI

Sir,—I was associated with Dr. G. E. O. Williams part of the work on cold agglutinins in atypical pne monia, which he reported in your issue of June 21 (p. 86 and would like to make a few comments.

Dr. Williams's views on the ætiology of cases with hig titres are strongly supported by the work of Eat and others.[1] They have isolated a virus from cases atypical pneumonia, grown it in the chick embryo, an transmitted it to cotton rats in which it produces a pneumonic illness. Serum from cases in convalescence, but not in the acute stages, protected the rats from infection (the basis now of a diagnostic test[2]). They found high cold-agglutinin titres in 12 out of 16 cases from which the virus had been isolated.[3] Such titres have been described in several outbreaks of atypical pneumonia,[4,5] whereas apart from trypanosomiasis they are uncommon in other infections (note especially Finland's[5] series of over 800 controls). It is difficult to resist the conclusion that most cases of atypical pneumonia with high cold-agglutinin titres are due to a specific virus.

The common radiological findings of mottling and patchy consolidation in Dr. Williams's cases with high cold-agglutinin titres might have been predicted from the findings at post mortem in a case from whom Eaton and others[2] isolated the virus. The lung contained nodules, discrete in some areas, confluent in others. The pleura over superficial nodules was inflamed.

Stimulated by Dr. Williams, I set out to determine the *clinical* picture presented by infection with the *supposed* virus, taking 1 : 128 as a diagnostic cold-agglutinin titre. I was able to collect only 12 cases. Nevertheless the case-records are similar to one another and to 16 cases from which the virus had been isolated described by Eaton and others.[3] I would therefore like to sketch tentatively what I suspect to be the picture of the

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1. Eaton, M. D., Meiklejohn, G., van Herick, W. *J. exp. Med.* 1944, 79, 649.
2. Eaton, M. D., van Herick, W., Meiklejohn, G. *Ibid*, 1945, 81, 329.
3. Meiklejohn, G., Eaton, M. D., van Herick, W. *J. clin. Invest.* 1945, 24, 241.
4. Meiklejohn, G. *Proc. Soc. exp. Biol., N.Y.* 1943, 54, 181.
5. Finland, W. et al. *J. clin. Invest.* 1945, 24, 451 (see also Dr. Williams's references).

ncomplicated disease. It appears to be essentially a lmonary infection. Upper respiratory symptoms are onspicuous—a helpful point in the clinical distinction m mild influenzal bronchopneumonia. Onset is with nstitutional symptoms and a dry cough; muco- rulent sputum appears later. Diminished resonance d breath sounds and showers of râles are almost ariable. Pleuritic pain, pleural friction, and localised ns of consolidation do occur but are uncommon nsistent with the morbid anatomy above). Herpes rilis occurs less commonly than in bacterial pneu- onias. Splenomegaly is not a feature (compare other ms). The disease is usually mild and prognosis good, t severe cases may occur with prostration, dyspnœa, anosis, and death.

Finally a note on the intriguing association of atypical eumonia, high cold-agglutinin titres, and hæmolytic æmia.[6] A prima-facie case has been made out for their usal relationship. If confirmed, the finding of hæmo- tic anæmia in atypical pneumonia will surely be almost thognomonic of infection with this virus.

North Middlesex County Hospital. D. FERRIMAN.

HYPOPITUITARISM AND ANÆMIA

SIR,—Writing in THE LANCET of May 10, Dr. Watkin- n, Dr. McMenemey, and Dr. Evans describe 2 cases hypopituitarism and anæmia, and their treatment with stosterone. This very interesting article has tempted s to record a similar case which appeared to be benefited y testosterone.

A married woman, aged 57, was admitted to hospital under e care of Dr. Richard Clarke, complaining of a feeling of eakness, lethargy, and cold for about a year. She had been althy in childhood and early adult life. Her first child was illborn, but at the age of 34 she gave birth to a child who still living. Her third pregnancy, at the age of 37, was mplicated by slight antepartum and severe postpartum æmorrhage; the child was stillborn. Thereafter the menstrual eriods, previously regular, became irregular, and the meno- ause came on at the age of 40. She said that she had never een really well since the last stillbirth. During about the ast year, in addition to lethargy, which at one time was so evere as to confine her to bed for six weeks, "too weak to ove," she had felt the cold bitterly, had attacks of numbness n the fingers, and latterly had some difficulty in walking. here was no recent loss of weight, but she had been very ight for some time. Appetite was fair.

The patient's height was 5 ft. $0^1/_2$ in. and her weight 7 st. he was slow in movement and in speech, with a dry cracked oice. The skin was fine but dry, the cranial hair thin and canty, and the nails poorly formed. Axillary and pubic air were completely absent. The only abnormal pigmenta- ion, on the front of the shins and very patchy, bore indirect estimony to her sensitivity to cold. The tongue was smooth nd glazed, and clinically she appeared anæmic. No abnor- nality was found in the cardiovascular or respiratory systems. he blood-pressure was 100/70 mm. Hg. There was an exag- erated lumbar lordosis and dorsal kyphosis. The gait was lightly spastic; there was increased tone in the left leg; nd the left plantar response was extensor. There was some yperæsthesia of the feet, but no sensory loss or ataxia.

The anæmia proved to be normocytic and hypochromic: ed blood-cells 3,200,000 per c.mm.; Hb 7·7 g. per 100 c.cm.; olour-index 0·9; P.C.V. 29·5%; M.C.V. 92 c.µ; M.C.H. 24 γγ; .C.H.C. 26%; reticulocytes 0·4%. Bilirubin less than 0·2 mg. er 100 c.cm.; plasma sodium 290 mg. per 100 c.cm.; blood holesterol 135 mg. per 100 c.cm.

X-ray examination of long bones and spine showed dimi- ished calcium content; the sella turcica was within normal imits.

A gruel test-meal showed complete achlorhydria, but free cid appeared after the injection of histamine. The capillary lood-sugar before and at quarter-hourly intervals after ngestion of 50 g. glucose was as follows: before glucose 75 mg. per 100 c.cm.; after glucose 100 mg., 140 mg., 145 mg., and 160 mg. per 100 c.cm. After injection of 10 units of insulin ntravenously the blood-sugar fell to 24 mg. per 100 c.cm. in half an hour without symptoms of hypoglycæmia. The 24-hour excretion of 17-ketosteroids was 0·8 mg., and the Kepler test was positive in both procedures.

Sheehan[1] has described many cases of hypopituitarism in women following hæmorrhage at childbirth; some of them had severe anæmia. One of the cases with anæmia complicating hypopituitarism described by Snapper et al.[2] was in a woman who had suffered a postpartum hæmorrhage. The case we have described we believe also to be one of hypopituitarism, due to partial necrosis of the anterior pituitary after postpartum hæmorrhage. Hypopituitarism has in this case, as in those of Snapper, and Watkinson et al.,[3] been associated with anæmia and achlorhydria. Unlike the cases of Snapper, but like those of Watkinson, the blood condition of our patient failed to respond to iron, thyroid, and liver, and her general condition remained stationary and apathetic.

Before the war one of us (G. L. F.) was impressed clinically by the plethora, increase in weight, and raised basal metabolic rate (B.M.R.) occurring after some weeks, in females treated with testosterone. Reports have since been published of a number of cases of Simmonds syndrome treated with androgens, which produced increase in weight, increase in B.M.R., and nitrogen retention, along with general clinical improvement.[4 5 6 7] In only one of these papers[4] was the blood picture discussed; and in this it was reported as unchanged.

From clinical experience, however, it was decided to try testosterone in our case; and since its addition to the therapy an improvement in the clinical and hæmatological condition has been observed. From the first the patient was given ferri et ammon. cit. gr. 90 daily, 'Anahæmin' 2 c.cm. twice weekly, 'Benerva' 25 mg. daily, and thyroideum siccum. The thyroid, started cautiously with gr. $^1/_4$ daily, was gradually increased until, 45 days after admission, she was receiving gr. 2 daily. There was, however, very little progress, and on the 27th day six 100 mg. tablets of testosterone were implanted subcutaneously, and before discharge she was transfused with two pints of packed red cells. She was later given methyl testosterone 15 mg. daily, absorbed through the sublabial mucosa, and when seen as an outpatient on the 76th day she had improved clinically and had more energy. Her blood-pressure had risen to 160/100 mm. Hg, but the weight was unchanged.

A month later she was very definite that subjective improvement had occurred. Her blood-pressure was 140/90 mm. Hg, and some pubic hair had appeared. The implanted tablets were still palpable. Red blood-cells 4,900,000 per c.mm., Hb 88%, colour-index 0·9; slight anisocytosis and hypochromia. She was now having tab. ferrous sulphate gr. 3 thrice daily and anahæmin 2 c.cm. weekly.

It is of course premature to make any definite claims in this case; and now that her condition is satisfactory it is proposed to determine whether exhibition of testosterone alone will maintain the improvement.

We are indebted to Dr. Richard Clarke for permission to record this case, to Dr. F. Lloyd Warren for the assay of 17-ketosteroids, and to The British Drug Houses Ltd. for the implantation tablets.

JOHN NAISH
Bristol. GEORGE L. FOSS.

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A painter and decorator, aged 40, complained of inability to grip firmly with the right thumb and index finger. Nine days previously he had made a long cycling trip in cold weather. On his return home in the evening he found he was unable to straighten the tip of the fifth digit of the right hand; nor could he grip a pen firmly between the thumb

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6. Horstmann, D. M., Tatlock, H. *J. Amer. med. Ass.* 1943, **122**, 369. Dameshek, W. *Ibid*, 1943, **123**, 77. Finland, W. et al. *J. clin. Invest.* 1945, **24**, 458. *Science*, 1943, **97**, 167.

1. Sheehan, H. L. *Quart. J. Med.* 1939, **8**, 277.
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3. Watkinson, G., McMenemey, W. H., Evans, G. *Lancet*, 1947, **i**, 631.
4. Lisser, H., Curtis, L. E. *J. clin. Endocrin.* 1945, **5**, 363.
5. Burke, G., Cantor, M. *Canad. med. Ass. J.* 1945, **52**, 275.
6. Werner, S. C., West, R. *J. clin. Invest.* 1943, **22**, 335.
7. Williams, R. H., Whittenberger, J. L., Bissell, G. W., Weinglass, A. B. *J. clin. Endocrin.* 1945, **5**, 163.

Letters to the Editor

THE STUDENT AND THE ALMONER

SIR,—If students are to gain any insight into the social problems uncovered by regarding the patient as a human being with family, living, and income-earning problems, some way must be found of introducing them under expert guidance into a large number of homes.

Hospital almoners are already overworked; but physicians on hospital teaching staffs can stimulate interest through the questions they put, and their comments; and midwifery on the district often makes the more imaginative aware for the first time of aspects untouched by the writers of textbooks. I am, however, convinced that a month spent with a general practitioner who took the students into such homes as he could, and who discussed other cases as he went round, would be the most valuable method. I should like this training inserted between the final examination and qualification. Those of us who teach must be aware of a certain impatience among students towards knowledge that does not help in examinations; but when these are passed there is a swing-over towards practical knowledge.

Both practitioner and student would find the experience entertaining and illuminating. There are difficulties, as Dr. Harding (June 21) says; but the plan is feasible.

London, N.W.1. S. R. EASTWOOD.

SUCCESSFUL REVACCINATION

SIR,—Dr. Geoffrey Edsall's letter of June 21 will be of great interest to many of your readers, and his theses as to the interpretation of the reactions to vaccination seem to be sound. They do not, however, provide a solution to the problems that concern the quarantine officer in practice, and Dr. Edsall's contention that a "nil" reaction should not be accepted (no matter how many failures to take the patient has already experienced) is not a practical proposition for those who wish to travel—particularly if they wish to travel in some haste.

The United States authorities have recently laid down that no person shall be admitted to the States from this country unless he can produce a certificate of successful vaccination performed within the last three years. This, following Dr. Edsall's contentions, has the effect of excluding certain people, including myself, from any possibility of going to the United States.

I was vaccinated in infancy with four criss-cross insertions, the scars of which are still clearly visible. I was revaccinated on the opposite arm by exactly the same method at the age of twelve and took successfully. Since then, though I have been revaccinated on many occasions, I have never had the slightest suggestion of a take, and the so-called immunity reactions have been barely perceptible. On the last occasion that I came into contact with a suspected case of smallpox, only a few weeks ago, I decided to be vaccinated as brutally as possible—that is, by four large insertions (two on one leg by the criss-cross method, two on the other leg by multiple puncture) using fresh lymph obtained from the Government laboratory. A few hours afterwards I had a slight trauma reaction, which rapidly cleared up, but no sign whatsoever of any take or immune reaction.

Dr. Broom would certify me as "insusceptible to vaccination," which seems a reasonably good description of the state of affairs, but which I take it does not necessarily mean that I am immune to an attack of smallpox, though the fact remains that I have seen and handled a number of cases of smallpox in recent years and have not been attacked.

What is to be done from the point of view of travel and immunity from quarantine measures for people who, like me, fail to take? We do not object to a reasonable amount of revaccination, though it is a bit of a nuisance to have to be revaccinated every eight days for an indefinite period. What is more serious is the risk that we run, in leaving the country, of having to submit to "surveillance," or possibly to revaccination with a doubtful lymph applied by methods that may not be above criticism, or even of being refused permission to embark, or to land, because we have not a certificate of successful vaccination.

If Dr. Edsall can suggest an alternative to the te "insusceptible" in such cases, or suggest some int national agreement whereby after, say, three unsucces revaccinations the vaccinee will be exempt from furt vaccination and from all quarantine measures, he be rendering us a good service. Even then the vacci would have to wait 24 days before embarking, by or air, for say the U.S.A. You will appreciate, Sir, serious effect on travel and commerce of su impedances.

The fact is that we are a non-immune population, considerable risk of invasion by smallpox, and have only ourselves to blame for it. While can do what we like with our people, we must whine if other countries dislike our practices and t precautions.

It is up to the authorities to decide how to protect if not from smallpox, at least from serious interfere with our liberty to travel and to trade.

M. T. MORGAN
Port M.O.H., London

CONSENT TO DEATH

SIR,—In your annotation of June 7 you quote fr Dr. Harry Roberts's book, *Euthanasia and other Asp of Life and Death*, published in 1936. In the pass quoted, Dr. Roberts criticises as being unduly complica the procedure given in the first draft of a Bill wh followed suggestions made in my presidential addres the Society of Medical Officers of Health. May I po out that the provisions of the Bill sponsored by t society which I represent, and introduced into the Ho of Lords by the late Lord Ponsonby, are much l complicated. There is no reference to a magistra the nearest relative does not have to be informed, a there is no delay of seven days. Practically all of D Roberts's criticisms have therefore been met.

C. KILLICK MILLARD
Hon. Secretary, Voluntary Euthanas
Legalisation Society.
Leicester.

COLD AGGLUTININS IN ATYPICAL PNEUMON

SIR,—I was associated with Dr. G. E. O. Williams part of the work on cold agglutinins in atypical pne monia, which he reported in your issue of June 21 (p. 86 and would like to make a few comments.

Dr. Williams's views on the ætiology of cases with hi titres are strongly supported by the work of Eat and others.[1] They have isolated a virus from cases atypical pneumonia, grown it in the chick embryo, a transmitted it to cotton rats in which it produces a pne monic illness. Serum from cases in convalescence, but n in the acute stages, protected the rats from infection (t basis now of a diagnostic test [2]). They found high col agglutinin titres in 12 out of 16 cases from which t virus had been isolated.[3] Such titres have been describ in several outbreaks of atypical pneumonia,[4 5] where apart from trypanosomiasis they are uncommon in oth infections (note especially Finland's[5] series of ov 800 controls). It is difficult to resist the conclusi that most cases of atypical pneumonia with high col agglutinin titres are due to a specific virus.

The common radiological findings of mottling an patchy consolidation in Dr. Williams's cases with hig cold-agglutinin titres might have been predicted fro the findings at post mortem in a case from whom Eato and others[3] isolated the virus. The lung containe nodules, discrete in some areas, confluent in other The pleura over superficial nodules was inflamed.

Stimulated by Dr. Williams, I set out to determine t clinical picture presented by infection with the suppose virus, taking 1 : 128 as a diagnostic cold-agglutini titre. I was able to collect only 12 cases. Neverthele the case-records are similar to one another and to t cases from which the virus had been isolated describe by Eaton and others.[3] I would therefore like to sket tentatively what I suspect to be the picture of th

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1. Eaton, M. D., Meiklejohn, G., van Herick, W. *J. exp. Me* 1944, 79, 649.
2. Eaton, M. D., van Herick, W., Meiklejohn, G. *Ibid*, 1945, 8 329.
3. Meiklejohn, G., Eaton, M. D., van Herick, W. *J. clin. Inve* 1945, 24, 241.
4. Meiklejohn, G. *Proc. Soc. exp. Biol., N.Y.* 1943, 54, 181.
5. Finland, W. et al. *J. clin. Invest.* 1945, 24, 451 (see also D Williams's references).

ncomplicated disease. It appears to be essentially a lmonary infection. Upper respiratory symptoms are conspicuous—a helpful point in the clinical distinction om mild influenzal bronchopneumonia. Onset is with nstitutional symptoms and a dry cough; mucourulent sputum appears later. Diminished resonance nd breath sounds and showers of râles are almost variable. Pleuritic pain, pleural friction, and localised gns of consolidation do occur but are uncommon onsistent with the morbid anatomy above). Herpes brillis occurs less commonly than in bacterial pneuonias. Splenomegaly is not a feature (compare other rms). The disease is usually mild and prognosis good, ut severe cases may occur with prostration, dyspnœa, yanosis, and death.

Finally a note on the intriguing association of atypical neumonia, high cold-agglutinin titres, and hæmolytic næmia.[6] A prima-facie case has been made out for their ausal relationship. If confirmed, the finding of hæmoytic anæmia in atypical pneumonia will surely be almost athognomonic of infection with this virus.

North Middlesex County Hospital. D. FERRIMAN.

HYPOPITUITARISM AND ANÆMIA

SIR,—Writing in THE LANCET of May 10, Dr. Watkinon, Dr. McMenemey, and Dr. Evans describe 2 cases f hypopituitarism and anæmia, and their treatment with estosterone. This very interesting article has tempted s to record a similar case which appeared to be benefited y testosterone.

A married woman, aged 57, was admitted to hospital under he care of Dr. Richard Clarke, complaining of a feeling of eakness, lethargy, and cold for about a year. She had been ealthy in childhood and early adult life. Her first child was tillborn, but at the age of 34 she gave birth to a child who s still living. Her third pregnancy, at the age of 37, was omplicated by slight antepartum and severe postpartum æmorrhage; the child was stillborn. Thereafter the menstrual periods, previously regular, became irregular, and the menopause came on at the age of 40. She said that she had never been really well since the last stillbirth. During about the past year, in addition to lethargy, which at one time was so severe as to confine her to bed for six weeks, "too weak to move," she had felt the cold bitterly, had attacks of numbness in the fingers, and latterly had some difficulty in walking. There was no recent loss of weight, but she had been very light for some time. Appetite was fair.

The patient's height was 5 ft. 0$^{1}/_{2}$ in. and her weight 7 st. She was slow in movement and in speech, with a dry cracked voice. The skin was fine but dry, the cranial hair thin and scanty, and the nails poorly formed. Axillary and pubic hair were completely absent. The only abnormal pigmentation, on the front of the shins and very patchy, bore indirect testimony to her sensitivity to cold. The tongue was smooth and glazed, and clinically she appeared anæmic. No abnormality was found in the cardiovascular or respiratory systems. The blood-pressure was 100/70 mm. Hg. There was an exaggerated lumbar lordosis and dorsal kyphosis. The gait was slightly spastic; there was increased tone in the left leg; and the left plantar response was extensor. There was some hyperæsthesia of the feet, but no sensory loss or ataxia.

The anæmia proved to be normocytic and hypochromic: red blood-cells 3,200,000 per c.mm.; Hb 7·7 g. per 100 c.cm.; colour-index 0·9; P.C.V. 29 5%; M.C.V. 92 c.μ; M.C.H. 24 γγ: M.C.H.C. 26%; reticulocytes 0·4%. Bilirubin less than 0 2 mg. per 100 c.cm.; plasma sodium 290 mg. per 100 c.cm.; blood cholesterol 135 mg. per 100 c.cm.

X-ray examination of long bones and spine showed diminished calcium content; the sella turcica was within normal limits.

A gruel test-meal showed complete achlorhydria, but free acid appeared after the injection of histamine. The capillary blood-sugar before and at quarter-hourly intervals after ingestion of 50 g. glucose was as follows: before glucose 75 mg. per 100 c.cm.; after glucose 100 mg., 140 mg., 145 mg., and 160 mg. per 100 c.cm. After injection of 10 units of insulin intravenously the blood-sugar fell to 24 mg. per 100 c.cm. in half an hour without symptoms of hypoglycæmia. The 24-hour excretion of 17-ketosteroids was 0·8 mg, and the Kepler test was positive in both procedures.

Sheehan[1] has described many cases of hypopituitarism in women following hæmorrhage at childbirth; some of them had severe anæmia. One of the cases with anæmia complicating hypopituitarism described by Snapper et al.[2] was in a woman who had suffered a postpartum hæmorrhage. The case we have described we believe also to be one of hypopituitarism, due to partial necrosis of the anterior pituitary after postpartum hæmorrhage. Hypopituitarism has in this case, as in those of Snapper, and Watkinson et al.,[3] been associated with anæmia and achlorhydria. Unlike the cases of Snapper, but like those of Watkinson, the blood condition of our patient failed to respond to iron, thyroid, and liver, and her general condition remained stationary and apathetic.

Before the war one of us (G. L. F.) was impressed clinically by the plethora, increase in weight, and raised basal metabolic rate (B.M.R.) occurring, after some weeks, in females treated with testosterone. Reports have since been published of a number of cases of Simmonds syndrome treated with androgens, which produced increase in weight, increase in B.M.R., and nitrogen retention, along with general clinical improvement.[4] [5] [6] [7] In only one of these papers[6] was the blood picture discussed; and in this it was reported as unchanged.

From clinical experience, however, it was decided to try testosterone in our case; and since its addition to the therapy an improvement in the clinical and hæmatological condition has been observed. From the first the patient was given ferri et ammon. cit. gr. 90 daily, 'Anahæmin' 2 c.cm. twice weekly, 'Benerva' 25 mg. daily, and thyroideum siccum. The thyroid, started cautiously with gr. $^{1}/_{4}$ daily, was gradually increased until, 45 days after admission, she was receiving gr. 2 daily. There was, however, very little progress, and on the 27th day six 100 mg. tablets of testosterone were implanted subcutaneously, and before discharge she was transfused with two pints of packed red cells. She was later given methyl testosterone 15 mg. daily, absorbed through the sublabial mucosa, and when seen as an outpatient on the 76th day she had improved clinically and had more energy. Her blood-pressure had risen to 160/100 mm. Hg, but the weight was unchanged.

A month later she was very definite that subjective improvement had occurred. Her blood-pressure was 140/90 mm. Hg, and some pubic hair had appeared. The implanted tablets were still palpable. Red blood-cells 4,000,000 per c.mm., Hb 88%, colour-index 0·9; slight anisocytosis and hypochromia. She was now having tab. ferrous sulphate gr. 3 thrice daily and anahæmin 2 c.cm. weekly.

It is of course premature to make any definite claims in this case; and now that her condition is satisfactory it is proposed to determine whether exhibition of testosterone alone will maintain the improvement.

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JOHN NAISH
Bristol. GEORGE L. FOSS.

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A painter and decorator, aged 40, complained of inability to grip firmly with the right thumb and index finger. Nine days previously he had made a long cycling trip in cold weather. On his return home in the evening he found he was unable to straighten the tip of the fifth digit of the right hand; nor could he grip a pen firmly between the thumb

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5. Burke, G., Cantor, M. *Canad. med. Ass. J.* 1945, 52, 275.
6. Werner, S. C., West, R. *J. clin. Invest.* 1943, 22, 335.
7. Williams, R. H., Whittenberger, J. L., Bissell, G. W., Weinglass, A. B. *J. clin. Endocrin.* 1945, 5, 163.

and index finger. On questioning he recalled that at the end of the day's cycling his hand had felt numb along the ulnar border and in the ulnar two digits, but this had passed off in an hour or two. There was no definite history of injury though his journey had taken him over rough roads.

Examination revealed a "mallet" deformity of the fifth digit. There was slight wasting of the adductor pollicis and first dorsal interosseous muscle; there was no voluntary activity in the first dorsal interosseous muscle and the adductor pollicis was weak, but all other intrinsic muscles, as well as the extrinsic muscles, of the hand were acting normally. There was no subjective or objective sensory loss.

This case resembles the first 4 of Dr. Ritchie Russell and Dr. Whitty, wherein the lesion is related to a mild trauma to the ulnar nerve at the wrist or in the palm of the hand; I am unable to agree that this connexion exists in their 5th case.

Such cases are ideally suited for interrupted galvanism. Although the history of the patient reported here was only of nine days' duration, wasting was already visible in the adductor pollicis and first dorsal interosseous muscle. The results of research at Oxford during the war indicate that wasting after denervation of a muscle is minimised by interrupted galvanism. A wasted muscle must mean an inefficient muscle, at least for a time, after its reinnervation.

Connaught Hospital, Walthamstow,
London.
E. S. R. HUGHES.

URTICARIAL REACTIONS TO PENICILLIN

SIR,—Having read Dr. Steingold's article of June 21, and your annotation on the same subject, I wish to report a case of mine.

A girl, aged 11, had a right otitis media for three years following scarlet fever. I gave her a course of five daily injections into the right vastus lateralis muscle of 2 c.cm. oil-wax suspension containing 125,000 units of penicillin per c.cm.

On the eighth day she complained of a painless swollen right thigh, intense itching, and fever. I found a large, hard, red blotch, which covered the whole length of the outer half of the right thigh; there was no tenderness. At the site of the punctures the epidermis was slightly raised and blanched, the condition closely simulating insect-bites. The affected thigh was much thicker than the other. Her temperature was 100°F and she had a furred tongue. Thinking that she was developing an abscess, I put her on sulphathiazole, but on the following day her temperature became normal and the rash was spreading over the whole trunk. I assumed, therefore, that this was an urticarial reaction, and discontinued the sulphathiazole. Four days later, after having spread over the whole trunk, while leaving the other limbs and the face free, the rash completely disappeared without any treatment.

This patient gave no previous history of urticaria or other allergic reactions.

Sheffield.
I. GOTTLIEB.

SIR,—There are several points in Dr. Steingold's article (June 21) which require explanation. Reference was made to intradermal tests using penicillin X, penicillin Y, and pure penicillin. The different penicillins known in Great Britain as I, II, III, and IV are identical with those known as F, G, X, and K in the United States. What therefore is penicillin Y that Dr. Steingold used, and what does he mean by pure penicillin? If by the latter he means the white crystalline penicillin containing over 90% penicillin G, then I think this should be stated.

The article described four patients who when treated with varying doses of penicillin developed urticaria within seven or eight days. Since the reactions were of the delayed type it seems strange that the intradermal tests were positive in ten minutes. The serum of persons with this immediate reaction should contain skin-sensitising antibodies which can be transferred to normal skin. Without carrying out passive transfer tests the conclusions reached from such experiments may lead to faulty reasoning.

The skin tests carried out by Dr. Steingold show results which are at variance with those obtained in this department.

Inoculation Department,
St. Mary's Hospital, London, W.2.
A. W. FRANKLAND.

Parliament

ON THE FLOOR OF THE HOUSE

Mr. Bevin has made a statement on the Marshall plan for Europe, which will have to be in fact the European plan for Marshall. And now that Mr. Molotov has joined the consultations the prospects of Europe, East and West, producing a plan of economic rehabilitation may be brighter. Of course this is not a philanthropic UNRRA type of effort by the U.S.A.—it is sound constructive economic building. For unless the nations are sufficiently restored to buy and sell and make and exchange their goods much of the best productive machinery of that republic will rust in idleness.

The Opposition had selected shortages of consumer goods as a subject for debate on Thursday and Sir Stafford Cripps gave the House some interesting information. One of our difficulties is that before the war we had an income of £100–150 million from our overseas investments coming into this country in goods. For these goods we did not need to pay in exports. But now that our investments are largely gone, exports are needed and are drawn from our own stocks of goods. And there is another factor. We have shortages of goods and, on balance, an abundance of purchasing power, for the pre-war low-paid grade of workers are now getting higher wages and their demand is effective—for prams and children's shoes, for example. These facts give us a glimpse of an economic revolution which is proceeding all over the world, and in many countries by methods much more violent than rising prices and changes in the social demand for specific commodities.

The Minister of Health has lately published regulations dealing with terms of pension and superannuation in the National Health Service, and an order setting up the new regional hospital boards. Now that the boards are appointed the interim period before the inception of the National Health Service may be cleared of some of its difficulties and obscurities. The boards will probably advertise their needs for specialists, and when appointments are made the service will begin to assume its working structure. There are many problems ahead, and for those who pictured health centres as well-equipped new buildings with all the latest medical equipment, some disappointment. But it is after all the doctors and nurses who make a good health service; which is just as well, for new buildings on any large scale will have to come later.

MEDICUS, M.P.

FROM THE PRESS GALLERY

Venereal Disease in the Army

In the House of Commons on June 25 Dr. S. SEGAL raised the question of the incidence of venereal disease among our overseas forces. The statistics given elsewhere were, he believed, subject to certain fallacies, for they dealt with the incidence of venereal disease over twelve months per 1000 men in a given command, but they failed, he suggested, to take into account that these 1000 men over a period of twelve months were in a mobile state, with changes taking place through posting and replacement. Hence over a period of twelve months the numbers were probably considerably greater. Though the incidence of venereal disease was grave, the real problem today was how far risks of exposure to disease had been taken for every given case of disease which had been recorded. Considering the well-known methods of prophylaxis and early treatment, the high percentage of cures, and low proportion of relapses, Dr. Segal thought that, even if the figures had been less serious, they would still occasion grave disquiet. They were symptomatic of the loosening of moral ties that had followed every major war.

In so far as this problem affected our troops stationed at home Dr. Segal held that it was not primarily the concern of the War Office. It was firstly the concern of the Church, upon whom lay the responsibility of preaching incessantly the ideals of self-discipline and self-restraint, of a high standard of moral values, and of the sanctity of family life. A heavy responsibility also rested upon the State in making higher standards of education available to as large a proportion of the opulation as possible; in providing houses for newly arried couples: and in establishing a system of family lowances whereby the amount would increase with ich successive child. But for our troops stationed verseas the responsibility belonged primarily to the ar Office. Why was the incidence of venereal disease the Far East six times as high, and in Germany and ustria today almost five times as high as in the Middle ast? Dr. Segal felt that it should be the aim of the ar Office to encourage the recruit to retain as far as ossible his civilian outlook during the brief term of his ilitary service.

Mr. **JOHN FREEMAN**, under-secretary of State for War, greed that this difficulty would only be overcome by eating conditions in the Services overseas which would revent the temptation which led to this scourge. lthough he did not underestimate the seriousness of e problem, there was ground for the belief that the peak ad now been passed. For the first quarter of 1946 the hine Army figures were 30·4 per 1000; for the second quarter 41·8; for the third quarter 44·6; for the fourth quarter 1·8; and for the first quarter of this year 30. The build-up the middle of last year, and the reduction at the nd of last year and the beginning of this year were eflected substantially in the commands. It was worth ointing out also that while these were terrible figures ey were lower than those for a similar period after the rst world war, and it must be remembered that men re far more ready to report this disease than they re in the past.

He could not give a clear answer to Dr. Segal's question y the incidence of the disease in the Middle East ould be lower than in the Far East and north-western urope, but the conditions under which men lived in e Services in the Middle East were not conducive to enereal disease. In Germany and Austria they were nducive to the disease, and in both areas the incidence the disease among the civilian population was high. the Far East it had been difficult to control the sources infection, and only recently had they started to make rogress on that side of the problem. He could assure e House that the War Office fully recognised the nportance of trying to give the Serviceman the opportunity of making civilian contacts, and there were more ivilians doing welfare work overseas than during the ar. While it was possible to take medical measures limit the seriousness of this problem where it had tarted, clearly the way to eliminate it was by a moral, ducational, and welfare approach.

QUESTION TIME

Interim Report on Negotiations

Dr. S. **SEGAL** asked the Minister of Health whether any interim eport would be issued to the House on the progress of egotiations with the negotiating committee of the medical rofession; and when the interim report could be expected. —Mr. A. **BEVAN** replied: I anticipate that these negotiations ill remain confidential until the outcome is known. Dr. **EGAL**: Can the Minister give an assurance to the House hat, if at some future date an interim report is received it ill be just circulated to hon. Members of the House rather han issued for private circulation among the 55,000 medically ualified members of the profession?—Mr. **BEVAN**: These re negotiations with the profession about the conditions on hich they propose to serve in a national service. They o not directly concern hon. Members of the House, except in heir medical capacities. For instance, if there were negotiations going on between the Government and members of the ivil Service on conditions of employment the decision ould not be first announced to the House of Commons. his is essentially a matter for the medical profession in the irst instance, and afterwards for the House, if it wishes.

Administrative Machinery

Mr. S. **HASTINGS** asked the Minister whether, in selecting epresentatives of the medical profession for the local executive ouncils under the new Health Act, he was asking for nominations from the medical committees in the various areas: and whether he was aware that in not a few of these areas medical committees were elected in 1938 and there had been no election since.—Mr. **BEVAN** replied: Appointments of medical members to executive councils are made by the local medical committees and not by the Minister. I am aware that in most areas there have not been elections for panel committees since 1939, and therefore my recognition of local medical committees for the new service has been provisional.

Dr. **SEGAL** asked the Minister how, and by whom, the chairman of a local health service executive council was selected; which local bodies were consulted; and what qualifications were required in assessing suitability for this post.—Mr. **BEVAN** replied: Chairmen of executive councils are appointed under the National Health Service Act by the Minister of Health. I am making careful inquiries in each case, but there have been no formal consultations. No particular qualifications can be specified: my object is to get good chairmen. Dr. **SEGAL**: Is the Minister aware that in at least one area public opinion has been outraged by the appointment of a chairman who has had a pecuniary interest in hospital contracts in the past? Is it already too late to reconsider this appointment?—Mr. **BEVAN**: I do not know the instance which the hon. Member has in mind, but in these appointments I am not concerned with party or political considerations, but to get the right kind of chairman for the bodies who have to do this work. If there is any instance of nepotism, or near nepotism, I would like the hon. Member to bring it to my notice.

Local Health Committees

In answer to a question, Mr. **BEVAN** stated that all local health authorities except Norfolk and Cardigan county councils had constituted health committees, and Norfolk county council had appointed a health services reorganisation committee which was engaged on the preparation of proposals.

Land for Health Centres

Mr. **HASTINGS** asked the Minister to what extent major local authorities were, at the present time, able to acquire land to enable them to build health centres when conditions were more favourable; and whether he would take steps to increase these powers where they were insufficient.—Mr. **BEVAN** replied: There are ample powers in section 58 of the National Health Service Act, but I am advised that these cannot be exercised yet. Provincial authorities can proceed under the Public Health Act, 1936. The powers conferred by the corresponding London Act are narrower, but I fear that I cannot promise legislation to increase them. Mr. **HASTINGS**: Does the Minister realise how important it is that sites that are required for health centres should not be lost for all time, because sufficient powers are not available?—Mr. **BEVAN**: I doubt whether sites are being lost. At all events, it is no use at the moment acquiring them too far ahead of time, because the health centres could not be built at the present time for lack of building materials and labour owing to the prior claims of housing. Next year the position may be different.

Hospital Equipment and Supplies

Mr. H. **DAVIES** asked the Minister to what extent it was proposed to obtain equipment and supplies for hospitals under the National Health Service by centralised purchase, in place of the present system of purchase by individual hospitals; and whether a similar policy would be applied to installation and maintenance services.—Mr. **BEVAN** replied: Hospital equipment and supplies cover a wide range. For some items, there may be advantage in central purchase. But where present methods of supply and servicing are working satisfactorily it is not proposed, at the outset of the new service, to interfere with them. For the time being central purchase will be limited to major equipment which is in short supply, and various other items which may be found to lend themselves to central purchase on grounds of economy or better efficiency.

Tuberculosis in the Air Force

Mr. H. **USBORNE** asked the Secretary of State for Air how many men had been discharged from the R.A.F. suffering from tuberculosis, between September, 1939, and June, 1945, and June, 1945, and the present time, respectively.—Mr. P. **NOEL-BAKER** replied: The numbers are as follows: September, 1939–June, 1945 = 6642; July, 1945–June, 1947 = 3147. The increase in the number of discharges per annum during the later period is largely due to the wider application of radiography to the Royal Air Force. An X-ray examination is now provided for new entrants and for members of the Service on release from overseas.

and index finger. On questioning he recalled that at the end of the day's cycling his hand had felt numb along the ulnar border and in the ulnar two digits, but this had passed off in an hour or two. There was no definite history of injury though his journey had taken him over rough roads.

Examination revealed a "mallet" deformity of the fifth digit. There was slight wasting of the adductor pollicis and first dorsal interosseous muscle; there was no voluntary activity in the first dorsal interosseous muscle and the adductor pollicis was weak, but all other intrinsic muscles, as well as the extrinsic muscles, of the hand were acting normally. There was no subjective or objective sensory loss.

This case resembles the first 4 of Dr. Ritchie Russell and Dr. Whitty, wherein the lesion is related to a mild trauma to the ulnar nerve at the wrist or in the palm of the hand; I am unable to agree that this connexion exists in their 5th case.

Such cases are ideally suited for interrupted galvanism. Although the history of the patient reported here was only of nine days' duration, wasting was already visible in the adductor pollicis and first dorsal interosseous muscle. The results of research at Oxford during the war indicate that wasting after denervation of a muscle is minimised by interrupted galvanism. A wasted muscle must mean an inefficient muscle, at least for a time, after its reinnervation.

Connaught Hospital, Walthamstow,
London.
E. S. R. HUGHES.

URTICARIAL REACTIONS TO PENICILLIN

SIR,—Having read Dr. Steingold's article of June 21, and your annotation on the same subject, I wish to report a case of mine.

A girl, aged 11, had a right otitis media for three years following scarlet fever. I gave her a course of five daily injections into the right vastus lateralis muscle of 2 c.cm. oil-wax suspension containing 125,000 units of penicillin per c.cm.

On the eighth day she complained of a painless swollen right thigh, intense itching, and fever. I found a large, hard, red blotch, which covered the whole length of the outer half of the right thigh; there was no tenderness. At the site of the punctures the epidermis was slightly raised and blanched, the condition closely simulating insect-bites. The affected thigh was much thicker than the other. Her temperature was 100°F and she had a furred tongue. Thinking that she was developing an abscess, I put her on sulphathiazole, but on the following day her temperature became normal and the rash was spreading over the whole trunk. I assumed, therefore, that this was an urticarial reaction, and discontinued the sulphathiazole. Four days later, after having spread over the whole trunk, while leaving the other limbs and the face free, the rash completely disappeared without any treatment.

This patient gave no previous history of urticaria or other allergic reactions.

Sheffield.
I. GOTTLIEB.

SIR,—There are several points in Dr. Steingold's article (June 21) which require explanation. Reference was made to intradermal tests using penicillin X, penicillin Y, and pure penicillin. The different penicillins known in Great Britain as I, II, III, and IV are identical with those known as F, G, X, and K in the United States. What therefore is penicillin Y that Dr. Steingold used, and what does he mean by pure penicillin? If by the latter he means the white crystalline penicillin containing over 90% penicillin G, then I think this should be stated.

The article described four patients who when treated with varying doses of penicillin developed urticaria within seven or eight days. Since the reactions were of the delayed type it seems strange that the intradermal tests were positive in ten minutes. The serum of persons with this immediate reaction should contain skin-sensitising antibodies which can be transferred to normal skin. Without carrying out passive transfer tests the conclusions reached from such experiments may lead to faulty reasoning.

The skin tests carried out by Dr. Steingold show results which are at variance with those obtained in this department.

Inoculation Department,
St. Mary's Hospital, London, W.2.
A. W. FRANKLAND.

Parliament

ON THE FLOOR OF THE HOUSE

Mr. Bevin has made a statement on the Marshall plan for Europe, which will have to be in fact the European plan for Marshall. And now that Mr. Molotov has joined the consultations the prospects of Europe East and West, producing a plan of economic reha tation may be brighter. Of course this is not philanthropic UNRRA type of effort by the U.S.A. is sound constructive economic building. For u the nations are sufficiently restored to buy and sell make and exchange their goods much of the best productive machinery of that republic will rust in idleness.

The Opposition had selected shortages of consumer goods as a subject for debate on Thursday and Sir Stafford Cripps gave the House some interesting information. One of our difficulties is that before the war we had an income of £100–150 million from our overseas investments coming into this country in goods. For these goods we did not need to pay in exports. But now that our investments are largely gone, exports are needed and are drawn from our own stocks of goods. And there is another factor. We have shortages of goods and, on balance, an abundance of purchasing power, for the pre-war low-paid grade of workers are now getting higher wages and their demand is effective—for prams and children's shoes, for example. These facts give us a glimpse of an economic revolution which is proceeding all over the world, and in many countries by methods much more violent than rising prices and changes in the social demand for specific commodities.

The Minister of Health has lately published regulations dealing with terms of pension and superannuation in the National Health Service, and an order setting up the new regional hospital boards. Now that the boards are appointed the interim period before the inception of the National Health Service may be cleared of some of its difficulties and obscurities. The boards will probably advertise their needs for specialists, and when appointments are made the service will begin to assume its working structure. There are many problems ahead, and for those who pictured health centres as well-equipped new buildings with all the latest medical equipment, some disappointment. But it is after all the doctors and nurses who make a good health service; which is just as well, for new buildings on any large scale will have to come later.

MEDICUS, M.P.

FROM THE PRESS GALLERY

Venereal Disease in the Army

In the House of Commons on June 25 Dr. S. SEGAL raised the question of the incidence of venereal disease among our overseas forces. The statistics given elsewhere were, he believed, subject to certain fallacies, for they dealt with the incidence of venereal disease over twelve months per 1000 men in a given command, but they failed, he suggested, to take into account that these 1000 men over a period of twelve months were in a mobile state, with changes taking place through posting and replacement. Hence over a period of twelve months the numbers were probably considerably greater. Though the incidence of venereal disease was grave, the real problem today was how far risks of exposure to disease had been taken for every given case of disease which had been recorded. Considering the well-known methods of prophylaxis and early treatment, the high percentage of cures, and low proportion of relapses, Dr. Segal thought that, even if the figures had been less serious, they would still occasion grave disquiet. They were symptomatic of the loosening of moral ties that had followed every major war.

In so far as this problem affected our troops stationed at home Dr. Segal held that it was not primarily the concern of the War Office. It was firstly the concern of the Church, upon whom lay the responsibility of preaching incessantly the ideals of self-discipline and self-restraint, of a high standard of moral values, and of the sanctity of family life. A heavy responsibility also rested upon the State in making higher standards of education available to as large a proportion of the pulation as possible; in providing houses for newly rried couples; and in establishing a system of family owances whereby the amount would increase with ch successive child. But for our troops stationed erseas the responsibility belonged primarily to the ar Office. Why was the incidence of venereal disease the Far East six times as high, and in Germany and stria today almost five times as high as in the Middle ast? Dr. Segal felt that it should be the aim of the ar Office to encourage the recruit to retain as far as ssible his civilian outlook during the brief term of his ilitary service.

Mr. John Freeman, under-secretary of State for War, greed that this difficulty would only be overcome by eating conditions in the Services overseas which would revent the temptation which led to this scourge. lthough he did not underestimate the seriousness of e problem, there was ground for the belief that the peak ad now been passed. For the first quarter of 1946 the hine Army figures were 30·4 per 1000; for the second quarer 41·8; for the third quarter 44·6; for the fourth quarter 1·8; and for the first quarter of this year 30. The build-up the middle of last year, and the reduction at the nd of last year and the beginning of this year were eflected substantially in the commands. It was worth ointing out also that while these were terrible figures ey were lower than those for a similar period after the rst world war, and it must be remembered that men ere far more ready to report this disease than they ere in the past.

He could not give a clear answer to Dr. Segal's question hy the incidence of the disease in the Middle East hould be lower than in the Far East and north-western urope, but the conditions under which men lived in e Services in the Middle East were not conducive to enereal disease. In Germany and Austria they were onducive to the disease, and in both areas the incidence f the disease among the civilian population was high. n the Far East it had been difficult to control the sources f infection, and only recently had they started to make rogress on that side of the problem. He could assure he House that the War Office fully recognised the mportance of trying to give the Serviceman the opportunity of making civilian contacts, and there were more ivilians doing welfare work overseas than during the war. While it was possible to take medical measures o limit the seriousness of this problem where it had started, clearly the way to eliminate it was by a moral, ducational, and welfare approach.

QUESTION TIME

Interim Report on Negotiations

Dr. S. Segal asked the Minister of Health whether any interim eport would be issued to the House on the progress of egotiations with the negotiating committee of the medical rofession; and when the interim report could be expected. —Mr. A. Bevan replied: I anticipate that these negotiations will remain confidential until the outcome is known. Dr. Segal: Can the Minister give an assurance to the House that, if at some future date an interim report is received it will be just circulated to hon. Members of the House rather han issued for private circulation among the 55,000 medically qualified members of the profession?—Mr. Bevan: These are negotiations with the profession about the conditions on which they propose to serve in a national service. They do not directly concern hon. Members of the House, except in their medical capacities. For instance, if there were negotiations going on between the Government and members of the Civil Service on conditions of employment the decision would not be first announced to the House of Commons. This is essentially a matter for the medical profession in the first instance, and afterwards for the House, if it wishes.

Administrative Machinery

Mr. S. Hastings asked the Minister whether, in selecting representatives of the medical profession for the local executive councils under the new Health Act, he was asking for nominations from the medical committees in the various areas: and whether he was aware that in not a few of these areas medical committees were elected in 1938 and there had been no election since.—Mr. Bevan replied: Appointments of medical members to executive councils are made by the local medical committees and not by the Minister. I am aware that in most areas there have not been elections for panel committees since 1939, and therefore my recognition of local medical committees for the new service has been provisional.

Dr. Segal asked the Minister how, and by whom, the chairman of a local health service executive council was selected; which local bodies were consulted; and what qualifications were required in assessing suitability for this post.—Mr. Bevan replied: Chairmen of executive councils are appointed under the National Health Service Act by the Minister of Health. I am making careful inquiries in each case, but there have been no formal consultations. No particular qualifications can be specified: my object is to get good chairmen. Dr. Segal: Is the Minister aware that in at least one area public opinion has been outraged by the appointment of a chairman who has had a pecuniary interest in hospital contracts in the past? Is it already too late to reconsider this appointment?—Mr. Bevan: I do not know the instance which the hon. Member has in mind, but in these appointments I am not concerned with party or political considerations, but to get the right kind of chairman for the bodies who have to do this work. If there is any instance of nepotism, or near nepotism, I would like the hon. Member to bring it to my notice.

Local Health Committees

In answer to a question, Mr. Bevan stated that all local health authorities except Norfolk and Cardigan county councils had constituted health committees, and Norfolk county council had appointed a health services reorganisation committee which was engaged on the preparation of proposals.

Land for Health Centres

Mr. Hastings asked the Minister to what extent major local authorities were, at the present time, able to acquire land to enable them to build health centres when conditions were more favourable; and whether he would take steps to increase these powers where they were insufficient.—Mr. Bevan replied: There are ample powers in section 58 of the National Health Service Act, but I am advised that these cannot be exercised yet. Provincial authorities can proceed under the Public Health Act, 1936. The powers conferred by the corresponding London Act are narrower, but I fear that I cannot promise legislation to increase them. Mr. Hastings: Does the Minister realise how important it is that sites that are required for health centres should not be lost for all time, because sufficient powers are not available? —Mr. Bevan: I doubt whether sites are being lost. At all events, it is no use at the moment acquiring them too far ahead of time, because the health centres could not be built at the present time for lack of building materials and labour owing to the prior claims of housing. Next year the position may be different.

Hospital Equipment and Supplies

Mr. H. Davies asked the Minister to what extent it was proposed to obtain equipment and supplies for hospitals under the National Health Service by *centralised* purchase, in place of the present system of purchase by individual hospitals; and whether a similar policy would be applied to installation and maintenance services.—Mr. Bevan replied: Hospital equipment and supplies cover a wide range. For some items, there may be advantage in central purchase. But where present methods of supply and servicing are working satisfactorily it is not proposed, at the outset of the new service, to interfere with them. For the time being central purchase will be limited to major equipment which is in short supply, and various other items which may be found to lend themselves to central purchase on grounds of economy or better efficiency.

Tuberculosis in the Air Force

Mr. H. Usborne asked the Secretary of State for Air how many men had been discharged from the R.A.F. suffering from tuberculosis, between September, 1939, and June, 1945, and June, 1945, and the present time, respectively.—Mr. P. Noel-Baker replied: The numbers are as follows: September, 1939–June, 1945 = 6642; July, 1945–June, 1947 = 3147. The increase in the number of discharges per annum during the later period is largely due to the wider application of radiography to the Royal Air Force. An X-ray examination is now provided for new entrants and for members of the Service on release from overseas.

Obituary

REGINALD CECIL BLIGH WALL

M.A., D.M. OXFD, F.R.C.P.

Dr. Cecil Wall came of a medical family on the spear and distaff side. His father and his grandfather both practised in Bayswater, and his father Dr. R. B. Wall was master of the Society of Apothecaries in 1909–10. His mother was the daughter of James Luke, F.R.S., who was president of the Royal College of Surgeons in 1862.

Cecil Wall was educated at Bradfield College, of which he later became a trustee and councillor, and at the Queen's College, Oxford, which he entered with a Fitzgerald exhibition. At Oxford he proved himself a crack rifle shot, winning the Spencer cup in 1888 and the Rifle Association's bronze medal in 1891. After taking his B.A. in 1893 he went to the London Hospital with a scholarship, and he qualified in 1897, taking his degree the following year. In 1899 he was awarded the Andrew Clark scholarship in medicine and pathology. Having held house-appointments at the London he joined the staff of the Eastern Dispensary and the Poplar Hospital, and later he was appointed to the staffs of his own hospital and of the Brompton. He was also physician to the Alliance Insurance Company.

Swaine

At the London Hospital Dr. Wall became known to generations of students as an able teacher who gave much thought to their instruction. He had a good education and a good brain, and his teaching of accurate observation and deduction was the means by which many learnt a scientific approach at the bedside. On ward rounds his habit was to demonstrate the first case in detail, devoting perhaps half an hour to its demonstration and discussion. By careful choice of cases he arranged that his students should see him handling comprehensively examples of all the commoner conditions, and consciously or unconsciously they gained much profit. He also made it a practice to spend a long afternoon each week in visiting all his patients unaccompanied; and it was largely this conscientious approach to hospital work that made his reputation as a physician and preserved that reputation over long years in which medicine underwent radical changes. By the people of the East End district which the London Hospital chiefly serves, his merits were fully appreciated.

Though particularly well known for his expertness in diseases of the chest, he by no means confined himself to them. Chorea was the subject of his valuable Bradshaw lecture of 1920, delivered before the Royal College of Physicians, to whose fellowship he had been elected in 1908. Like his Schorstein lecture, given at the London Hospital in 1928, it appeared in our columns. At the London he was a lecturer in therapeutics as well as in diseases of the chest. His interest in teaching was also shown during his tenure of the post of dean of the Brompton Hospital medical school, and as a member of the boards of the medical faculties of Oxford and London, and a member of the board of advanced medical studies of London University. He had a considerable gift of organisation and was a capable chairman at professional meetings. As an examiner he served the universities of Oxford and London, the Royal College of Physicians, and the Society of Apothecaries.

A man of deep loyalties, giving affectionate service to his old school and university and to his two hospitals, Dr. Wall had a special place in his heart for the Apothecaries. In the 300 years of its existence the society can, indeed, have had no more devoted member, nor one who believed more sincerely in its importance to the nation and to medicine. Admitted to the yeomanry in 1891, he was master in 1932–33, and from 1934 to 1939 was its representative on the General Medical Council. From 1934 until his death he held the of archivist to the society, and was the better enabled to make full use of his antiquarian talents. In 19 he gave the Thomas Vicary lecture at the Royal Coll of Surgeons on the History of the Surgeons' Company 1745–1800, which he expanded and published two y later as an entertaining monograph to which Sir D' Power contributed a foreword. In 1944 he continued story in his FitzPatrick lectures to the Royal College Physicians which dealt with the history of the En medical profession in the 18th and 19th centuries. wide knowledge of medicine and its history covered details of pharmacy both ancient and modern: he could point out, for example, that in the first edition of the *British Pharmacopœia* the dose of calomel had been 15 grains and that there had not been any edition in which the dose was not reduced to a lesser one. As archivist at Apothecaries' Hall he knew the story of every picture, every bit of furniture, and every piece of silver that the society possessed, as well as of every piece of the society's property and in which parts of it what had stood before from the days of the Tudors. He was prepared to speak on any or on all of these subjects at any length and at any moment, and he always spoke with interest, though this was somewhat marred by a monotony of the voice in later years owing to his deafness.

His little history of the society and its hall (19 traced the lineal descent of the general medical practitioner of today from the apothecary of the 17th century; and for some fifteen years he had been working on a larger history which remains for other hands to complete.

Dr. Wall married Dorothy, daughter of H. Innes Fripp, and they had a son and two daughters. He died at his home in London on June 19, aged 77.

LEONARD FINDLAY

"Professor Findlay was a master of the art of discourse," writes a colleague, "and I shall never forget the tall, firm, erect, figure striding into the ward ready at every opportunity to subject each statement and each observation to the most critical scrutiny; but his criticisms were so astute and so honest that they never caused offence to an honest observer. One always knew that he was prepared to have his statements torn to pieces and subjected to the same treatment as those of others. The care he would take in delving to the limits of each problem was always an object lesson; and, like all true clinicians and scientists, he always noted down his own observations and made his assistants do likewise. There can have been few men better able to set the young doctor on the difficult path of a scientific approach to clinical medicine. He taught one to evaluate each laboratory finding, each clinical sign, each symptom, and so the whole child."

Births, Marriages, and Deaths

BIRTHS

ANDERSON.—On June 23, at East Sheen, the wife of Dr. I. M Anderson—a daughter.

BRYCE-CURTIS.—On June 23 in London, the wife of Dr. P. J Bryce-Curtis—twin daughters.

CHILDS.—On June 19, at Southsea, the wife of Dr. H. K. Childs—a daughter.

EAGER.—On June 21, at Oxford, the wife of Dr. R. G. Eager—a daughter.

GRIFFITHS.—On June 22, at Oxford, the wife of Dr. R. C. L. Griffiths—a daughter.

HUNT.—On June 22, at Brighton, the wife of Dr. G. N. Hunt—a son.

NASH.—On June 26, in London, the wife of Dr. F. W. Nash—a son.

SIMON.—On June 27, the wife of Dr. George Simon—a daughter

MARRIAGES

GIBSON—WELLS.—On June 24, in London, M. O. J. Gibson, M.B. to Sarah Josephine Wells.

DEATHS

ARMSTRONG.—On June 23, in Liverpool, Hubert Armstrong, M.D. Vict.

HARMER.—On June 25, at George, S. Africa, John Daniel Harmer, O.B.E., M.B. Edin., F.R.C.S.E.

JONES.—On June 24, at Ringwood, Hants, Henry Travers Jones, M.B. Lond., D.P.M., aged 66.

KERBY.—On June 25, Theo Rosser Fred Kerby, M.R.C.S., D.M.R.E.

PACKER.—On June 26, Harry Dixon Packer, C.I.E., M.R.C.S., colonel R.A.M.C. (retired), aged 75.

SEARLE.—On June 23, in Kenya, Charles Frederick Searle, M.C. T.D., M.D. Camb., D.P.H.

SHAW.—On June 26, in London, John Arthur Pilkington Shaw, M.R.C.S.

Notes and News

THREE-DIMENSIONAL PHOTOGRAPHY

STEREOSCOPIC effect has been achieved in photography, a device invented in France, without special viewing aratus. For instantaneous exposures a multiple camera objectives in line along a fixed base is used, while another e of camera moves during exposure over an arc of 16°. inary photographic material is used, but the photograph ounted behind a grid of thin glass treated with cellulose tate comprising a lenticular optical system. The results remarkable, and as the process is not expensive it should, the owners claim, have a future in medical teaching. It l be interesting to see if it can be successfully applied to iography, particularly of the head and chest. The process eing developed in Britain by Deep Pictures Ltd., 150, New nd Street, London, W.1.

MEDICAL BOOKS AT OXFORD

To show academic hospitality to the Association of Surgeons d the International Congress of Physiologists who meet Oxford this month, an exhibition has been arranged in e Bodleian Library illustrating the history of medicine, rgery, and physiology from classical times to the present y. The manuscripts include works written by Greek, tin, and Arabic writers beginning with Hippocrates. One the medieval manuscripts exhibited is a medical treatise, itten about 1290, containing the earliest known representa n of a human dissection. The printed books date from 74 and include early editions of Vesalius, Geminus, Paré, nacre, William Harvey, Thomas Willis, and Thomas Sydenam. The exhibition is in two sections; one general, the other voted to The Oxford Scene. In the latter are shown some rious quack advertisements circulated in Oxford nearly 0 years ago. Other manuscripts show that as early as 1594 e faculty of medicine was concerned with the smoking of bacco, while *Artificiall Embellishments*, published in 1665 y an Oxford doctor, is a comprehensive guide to beauty lture. The exhibition is open free to the public daily 2 P.M. to 5 P.M.) except Saturdays and Sundays. An illustrated catalogue is on sale (price 1s.).

SOURCE OF ANTILEPROTIC OILS

Of the innumerable genera of the flacourtiaceæ, three roduce oil used in leprosy—hydrocarpus, oncoba, and arpotroche. In *As Flacourtiáceas Antilepróticas*, a compre ensive work of 132 pages produced in the leprosy prophylaxis epartment at Sao Paulo, Brazil, Helena Possolo describes he botanical features of the genera and species concerned nd the physical and chemical qualities of the oils extracted rom the seeds. The introduction deals with the geographical istribution of the plants and the history of their use, and he illustrations give details of the more important species. There is also a bibliography of over 300 references.

University of Oxford

On July 25 the honorary degree of D.SC. will be conferred on Dr. S. A. S. Krogh of the Zoophysiological Laboratory, Copenhagen, Dr. A. Szent-Györgyi of the University of Budapest, Dr. H. S. Gasser, director of the Rockefeller Institute for Medical Research, New York, and Prof. C. H. Best, F.R.S., head of the Banting-Best Institute of Medical Research, Toronto.

University of Birmingham

Mr. P. B. Medawar, a fellow of Magdalen College and a member of the department of zoology and comparative anatomy of the University of Oxford, has been appointed Mason professor of zoology in the university. His research at Oxford has included studies of nerve suture published in these columns and elsewhere.

Royal College of Surgeons of England

Dr. W. K. Livingston, professor of surgery of the University of Oregon, will deliver a Moynihan lecture at the college, Lincoln's Inn Fields, W.C.2, on Tuesday, July 8, at 6.15 P.M., on the Physiological Responses to Wounding.

London Hospital

Sir Frederick Ogilvie will present the prizes in the college library on Wednesday, July 9, at 3 P.M.

University of St. Andrews

At recent examinations the following were successful:

M.D.—D. C. Sinclair (with honours); H. H. A. Elder.

M.B., Ch.B.—J. D. Andrew, Margaret M. Downes, D. M. Green, Margaret Lamb, J. M. McGilchrist, E. C. Mathieson, Jessie Muirhead, R. J. A. Nicol, J. J. A. Reid, Margaret W. Richardson, W. B. Robertson, C. E. G. Smith, G. R. Tudhope (with commendation); Mary Auld, Mona A. Barron, Christine Benson, W. S. Bowman, Ruth Brogden, J. F. Butchart, G. S. Caithness, Diana Campion, Gillian Crow, A. L. M. Davidson, Margaret B. Dempster, K. P. Duncan, Alexander Ewing, A. D. Forrest, J. P. Fraser, J. A. Freeman, J. L. Hamilton, A. P. B. Harston, Margaret J. Jackson, Olive M. Landsman, A. G. R. Law, J. S. M. Low, Sheila McCall, R. H. A. MacGranthin, Donald McLauchlan, Margaret C. MacLeod, R. K. Machell, A. B. Mann, Helen S. Mathewson, D. R. S. Ritch, I. K. Sharp, Ada H. Shepherd, William Shepherd, Isobel M. Soutar, O. H. Taylor, A. C. Traill, Elizabeth White, Nora P. Woods.

University of London

Sir Francis Fraser, director of the British Postgraduate Medical Federation, has been appointed deputy vice-chancellor of the university for 1947–48. Dr. K. J. Franklin, has been appointed to the university chair of physiology at St. Bartholomew's Hospital, and Miss Margaret Murray, D.SC. to the university chair of physiology at Bedford College.

Dr. Franklin, who is 49, was educated at Christ's Hospital, and Hertford College, Oxford, where he was a classical scholar. During the 1914–18 war he served with the Royal Field Artillery in France and Belgium. After taking first-class honours in animal physiology in 1921, he held demonstratorships in physiology at Oxford and at St. Bartholomew's Hospital, whence he took his medical degree in 1924 and his D.M. three years later. In 1924 he was elected a fellow of Oriel College, where he now holds the posts of tutor, librarian, and lecturer in physiology. In 1924 he also became university demonstrator of pharmacology, an appointment which he held till 1938. In 1925 he was awarded a Radcliffe travelling fellowship and he spent the next year as assistant professor of physiology at the University of Michigan. In 1935 Dr. Franklin was appointed assistant director of the Nuffield Institute for Medical Research, and he is also dean of the Oxford medical school. He has published a *Short History of Physiology* (1933) and a *Monograph on Veins* (1937) and he has edited translations of Richard Lower's *De Corde* (1669), of *De Venarum Ostiolis* (1603), and of *Hieronymus Fabricius of Aquapendente*. He is a member of the Oxford teams whose investigations on circulation of the blood in the fœtus and in the kidney have lately been published. In 1940 he was elected F.R.C.P.

Commonwealth and Empire Health and Tuberculosis *Conference*

A few tickets for this conference, which is to be held in the Central Hall, Westminster, on July 8, 9, and 10, are still available, and may be had from Dr. Harley Williams, N.A.P.T., Tavistock House North, Tavistock Square, W.C.1.

Tuberculosis Educational Institute

The institute is holding a refresher course at the Dunn School of Pathology, Oxford, from Sept. 23 to 26, on the pathology and bacteriology of tuberculosis. The speakers will include Sir Howard Florey, F.R.S., Prof. J. W. S. Blacklock, Mr. E. Chain, D. PHIL., Dr. Robert Cruickshank, Miss Honor Fell, D.SC., Dr. K. F. W. Hinson, Dr. Jethro Gough, Dr. A. Q. Wells, Prof. W. H. Tytler, Dr. D. Barron Cruickshank, Dr. E. Nassau, Dr. C. E. Dukes, Dr. S. R. Gloyne, and Dr. Hyme Lempert. Further information may be had from Dr. Harley Williams, Tavistock House North, Tavistock Square, London, W.C.1.

Royal Society of Medicine

On July 1, at the annual meeting, Sir Maurice Cassidy, the president, presented the society's gold medal to Sir Alexander Fleming, F.R.S., and to Sir Howard Florey, F.R.S., who was unavoidably absent. The recipient of the Hickman medal, Prof. R. R. Macintosh, was introduced by Dr. Stanley Rowbotham, who described the award of this medal as the highest honour that an anæsthetist can be paid by his colleagues. The president also handed the diplomas of honorary fellowship to Prof. Naguib Mahfouz Pasha, Sir Edward Mellanby, F.R.S., and Dr. C. M. Wenyon, F.R.S., and to the Swedish chargé d'affaires as representative of Prof. Einar Key.

The following are the officers for the coming year:

President: Sir Maurice Cassidy. Hon. treasurers: Dr. Charles Newman and Mr. L. R. Broster. Hon. secretaries: Mr. W. A. Pool and Dr. A. T. M. Wilson. Hon. librarians: Mr. E. K. Martin and Dr. Thomas Hunt. Hon. editors: Mr. Eric Crook and Dr. E. R. Cullinan. Other members of council: Miss Geraldine Barry, Dr. E. R. Boland, Sir Ernest Rock Carling, Dr. E. A. Cockayne, Mr. Zachary Cope, Dr. Macdonald Critchley, Dr. Maurice Davidson, Dr. D. T. Davies, Mr. Charles Donald, Dr. Charles Harris, Mr. J. B. Hunter, Dr. H. L. Marriott, Mr. M. F. Nicholls, Mr. R. H. O. B. Robinson, Dr. A. C. Roxburgh, and Sir Henry Tidy.

The annual report shows that there are now 8715 fellows and members of the society.

Medical Art Society

This society is to hold an exhibition at 1, Wimpole Street, London, W.1, from July 17 to 26. The secretary is Dr. Henry Wilson, 142, Harley Street, W.1.

Unesco Awards

UNESCO has awarded grants-in-aid to 47 scientists in 10 European countries and in the U.S.A., for the purpose of attending the sixth International Congress for Experimental Cytology, which is to be held in Stockholm from July 10 to 17.

L.C.C. and N.H.S. Act

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Till now civilians repatriated from enemy-occupied territories have been entitled to six months' free medical treatment irrespective of whether their illness was due to their internment or not. These arrangements have now been cancelled (Ministry of Health circular 111/47), but patients whose illness is attributable to their internment will continue to be an E.M.S. responsibility.

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Dr. Harold Spitta has been appointed chairman of the council in succession to the late Mr. D. C. Bartley. During the past year the following governors have been elected to fill vacancies on the council: Surgeon Vice-Admiral Sir Basil Hall, Brigadier H. Glyn Hughes, Mr. R. W. Raven, Lieut.-Colonel Sir Bernard Reilly, Dr. Eric Sargent, and Mr. Noel Waterfield. In the report presented at the annual meeting on July 4 it was announced that during the period 1945–47 eleven open scholarships and exhibitions to Oxford and Cambridge had been won. "Successes in the London 1st M.B.," the report continues, "have shown an abrupt decline, not easily to be explained by a falling off in the quality of candidates, since successes in the equivalent examinations at Oxford and Cambridge have remained as high as ever."

Appointments

BRUN, CLAUDE, M.B. Lond., F.R.C.S.: accident officer, Salford Health Committee and Salford Royal Hospital joint accident service.

HOLDEN, HERBERT, M.B. Lpool: asst. radiotherapist, General Hospital, Northampton.

RASSIN, MEYER, M.B. Edin., F.R.C.S.E.: surgeon, West Middlesex County Hospital.

ROBSON, T. W., M.B. Edin., D.P.H.: *deputy M.O.H. and senior asst.* school M.O., Reading.

STENGEL, ERWIN, M.D. Vienna: director of clinical research, Graylingwell Hospital, Chichester.

WATKINS-PITCHFORD, JOHN, M.B. Lond., D.P.H.: H.M. inspector of *factories*.

WILSON, ELIZABETH, M.B. Glasg.: asst. M.O.H. and asst. school M.O., Wigan.

Guy's Hospital, London:

MOYNAHAN, E. J., M.R.C.P.: registrar, dermatological department.
SALMON, L. F. W., M.B.E., M.B. Lond.: specialist in ear, nose, and throat department.
YOUNG, A., F.R.C.S.: specialist in ear, nose, and throat department.

St. Mary's Hospital Medical School (*University of London*):

SAMES, C. P., M.S. Lond., F.R.C.S.: asst. director of the surgical unit.
STANLEY, B. E. C., M.B. Lond., F.R.C.S.: asst. in the surgical unit.

North Middlesex County Hospital:

FAUX, NANCIE, M.B. Lond., D.A., D.P.H.: senior anæsthetist.
KNOWLES, G. S. A., M.B. Lond., D.A.: senior anæsthetist.
REID, G., M.B. Edin., F.R.C.S.E.: temporary surgeon.

City General Hospital, Leicester:

HIRSCH, W. P., M.R.C.S., M.R.C.O.G.: obstetrical and gynæcological registrar.
SHIELD, J. B., M.B. Edin., F.R.C.S.E.: chief asst., orthopædic department.

Royal Sanitary Institute

On Saturday, July 12, a meeting of the institute is to be at 10.30 A.M. in the Guildhall, Worcester. Mrs. E. Moore will speak on a Home Help and Domestic Help Se and Mr. T. W. Marsden on Public-health Aspects of Relief.

Return to Practice

The Central Medical War Committee announces Dr. James S. Young, M.R.C.O.G., has resumed civilian pra at 57, Harley Street, London, W.1 (Langham 3556).

Diary of the Week

JULY 6 TO 12

Monday, 7th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
3.45 P.M. Prof. C. M. West: Anatomy of Circulatory Sy (First lecture.)
5 P.M. Prof. R. A. Gregory: Stomach.
WESTMINSTER HOSPITAL SCHOOL OF MEDICINE, Horseferry R S.W.1
5 P.M. (Meyerstein lecture theatre.) Clinico-pathological de stration of two cases of aplastic anæmia.

Tuesday, 8th

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3.45 P.M. Professor West: Anatomy of Circulatory Sy (*Second lecture.*)
5 P.M. Prof. G. W. Pickering: Nutrition of Heart.
6.15 P.M. Prof. W. K. Livingston: Physiological Respons Wounding. (Moynihan lecture.)
COMMONWEALTH AND EMPIRE HEALTH AND TUBERCU CONFERENCE
10 A.M. (Central Hall, Westminster, S.W.1.) Dr. G. J. Whe Dr. F. J. Wiles, Dr. Claude Taylor, Dr. P. V. Benjar Tuberculosis in the Commonwealth, including I Diseases.
2.15 P.M. Mr. Aneurin Bevan, M.P., Dr. Norman Tatte Dr. B. R. Clarke: National Health Service Act (I —and its effect on tuberculosis work.
INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn R W.C.1
5 P.M. Mr. V. E. Negus: Nose, Nasopharynx, and Paran Sinuses.

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3.45 P.M. Dr. D. V. Davies: Joints.
5 P.M. Prof. Alan Kekwick: Nutrition and the Surgeon (Prote
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11 A.M. (Winter Garden, Eastbourne.) Annual meeting.
2.30 P.M. Dr. W. G. Masefield: Presidential address.
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11.30 A.M. Dr. R. R. Trail, Dr. Etienne Berthet: Care Rehabilitation Schemes.
2.15 P.M. Prof. W. H. Tytler, Dr. E. R. Long, Dr. A. Q. W Dr. H. C. Hinshaw, Dr. K. N. Irvine, Dr. H. S. Wi Specific Measures in Prevention and Treatment of Tu culosis, Streptomycin, B.C.G., &c.
MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH
8.30 P.M. (7, Drumsheugh Gardens, Edinburgh.) Prof. J. Learmonth, Miss Catherine Burt, Dr. Douglas Matthe Anticoagulants.

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ABERNETHIAN SOCIETY, St. Bartholomew's Hospital, E.C.1
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THE CENTAURS
OR
SCIENCE AND RULERS*

WALTER ELLIOT
P.C., M.C., F.R.C.P., F.R.S., M.P.

THE Centaurs, half-man, half-horse, represented in egend the union of knowledge and strength. The egend has a special interest for those of us whose study s, or has been, medicine, since Chiron the ancient, the ead of the race, was the teacher of Æsculapius, the ounder of medicine. The thought of these gigantic indly creatures, the guardians of learning, the friends f man, is worth commemorating in a world which has een so many monsters born, not all as lovable. The hief of these monsters, perhaps, is the modern State, he modern conjunction of knowledge and strength.

England has a special interest in all this, because of the orm in which that conjunction presented itself to the mind of one of her great philosophers, Hobbes, still one of the most authoritative writers on the State. Hobbes hought of the State as Leviathan, and made that the itle of his book. Return for a moment to the original exts (in which Hobbes's mind was undoubtedly steeped), and consider Leviathan as he is there described to us:

> "His heart is as firm as a stone: yea, as hard as a piece of the nether millstone. When he raiseth up himself the mighty are afraid; by reason of breakings they purify themselves.
>
> "Upon earth there is not his like, who is made without fear. He beholdeth all high things; he is a king over all the children of pride."

And there is, lastly, the terrible adjuration—

> "Lay thine hand upon him, remember the battle, do no more."

This is much more the conception with which we are familiar nowadays. All the spirit of our time seems to side with the ferocious, the awe-inspiring, Leviathan-ruler, the omnipotent State. Yet perhaps the Greeks had a better word, or at least a better thought, for it.

It is noteworthy that about the Centaurs their second thoughts were best: the original Centaur tales are merely about a fierce shaggy race whose name means "the bull-killers" and who dwelt in the mountains of Thessaly. The benign race, so wise and far-reaching in their knowledge that they knew everything from archery to medicine, and so urbane and well disposed that they asked nothing better than to communicate their knowledge, was a later conception. The Greek legends became more humane as they progressed. It is a view we might strive to imitate.

PHILOSOPHERS AND KINGS

The great strength of the Greek legend is that it recognises, and indeed rather delights in, the thought of this union of strength and science as a benevolent combination, capable of communion with men but remote from them. It was not till the disillusion of Greek thought that it turned to this union as a desirable ruler on earth, the belief that all would be well if kings were philosophers and philosophers were kings.

Robert Louis Stevenson once recoiled from marriage because it was "to domesticate the Recording Angel." In the modern State we tend to domesticate not only the Recording Angel but the Day of Judgment.

Harvey, whom this society commemorates, maintained all through his life the view of government as a diversity rather than a unity, neither seeking to turn Charles the King, his close companion, into a scientist, nor desiring, himself, to be any kind of a king. Today our rulers are becoming most horribly scientific; and some at least of our scientists are becoming so very kingly. It is a mistake.

The danger of the philosopher-king nowadays is, that the mere brute weight of knowledge is becoming so great that by the time a man has tackled it all—and the supreme philosopher can aim at no less—he has lost the power of disbelief altogether. The faculty of disbelief, like every other faculty, atrophies with disuse. Yet it is perhaps the most important single scientific touchstone that man's mind possesses, and it was never more necessary than it is now. The phrase "science tells us" should raise an instant challenge in our minds. Very often, however, it is the prelude to a dumb acquiescence. Add to this the weight of government, and you crush the mind of man into the ground.

Necessary as the power of disbelief is to a scientist, it is even more so to a ruler, and in the fusion it is lost to both. Modern knowledge and modern government are two such immensely powerful things that, conjoined, they flash readily together into tyranny. What is more, they are each so engrossing that each distracts the mind from the other, and you tend to get a figure who is regarded as a terrific philosopher amongst the kings, and a terrific king amongst the philosophers. The mind of the administrator should be a haft, the mind of the scientist should be a blade. Nothing but confusion will result if the blunt haft is continually trying to prolong itself forward to be a blade, and the edged blade continually claiming to be used direct as a haft. This is a plea therefore for the maintenance of these two views, the biaxial eyes of the soul, and for resistance to the tendency to fuse the whole into a single monocular approach. It is worth while remembering, since we are on the subject of legend, that the single eye was the mark of that race of giants whom Ulysses outwitted, the Cyclops, amongst the strongest of beings, but also the stupidest.

Nowadays governments, which is to say the rulers, have to work in, and through, our scientific age. In so doing, philosopher-kings inevitably identify themselves to some extent with some particular set of scientific doctrines. It is very difficult for them thereafter to detach themselves from these doctrines; and the true scientific spirit, the equal delight in being found wrong as in being found right, so be it that knowledge is advanced, gets lost altogether. I do not say that all scientists attain and retain these heights. Von Helmholtz said that he owed his entire scientific reputation to performing the experiments set out as demonstrations in the textbooks, and then seeing why the results there predicted did not happen; but all teachers are not Helmholtzes, and we have often watched the embarrassment and even the indignation of a lecturer in similar circumstances—and indeed may have shared in it ourselves.

LEVIATHAN AND OUR DAILY BREAD

Take one or two examples of this addiction to particular views. Take, for example, contemporary nutrition.

The contention is advanced that the nation is as well fed, or is better fed, as a result of rationing than it was before the war. This should have an objective examination. Adequate feeding is not an abstract but a concrete affair; it is the balance of output against output. It must be effected, for instance, by full employment. The intake for a nation, every person in which is in full activity, must be greater than the intake for a nation in which a significant fraction is running at a low level of muscular activity. To the Centaurs that would have been self-evident. But Hobbes saw more clearly than the fabulists. In the fusion of knowledge with power, it is knowledge that takes second place. Leviathan comes grinding forward—and Leviathan is not a distant creature dwelling in the hollow of the hills.

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* Harveian lecture delivered before the Harveian Society of London o

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Rassin, Meyer, M.B. Edin., F.R.C.S.E.: surgeon, West Middlesex County Hospital.
Robson, T. W., M.B. Edin., D.P.H.: deputy M.O.H. and senior asst. school M.O., Reading.
Stengel, Erwin, M.D. Vienna: director of clinical research, Graylingwell Hospital, Chichester.
Watkins-Pitchford, John, M.B. Lond., D.P.H.: H.M. inspector of factories.
Wilson, Elizabeth, M.B. Glasg.: asst. M.O.H. and asst. school M.O., Wigan.

Guy's Hospital, London:

Moynahan, E. J., M.R.C.P.: registrar, dermatological department.
Salmon, L. F. W., M.B.E., M.B. Lond.: specialist in ear, nose, and throat department.
Young, A., F.R.C.S.: specialist in ear, nose, and throat department.

St. Mary's Hospital Medical School (University of London):

Sames, C. P., M.S. Lond., F.R.C.S.: asst. director of the surgical unit.
Stanley, B. E. C., M.B. Lond., F.R.C.S.: asst. in the surgical unit.

North Middlesex County Hospital:

Faux, Nancie, M.B. Lond., D.A., D.P.H.: senior anæsthetist.
Knowles, G. S. A., M.B. Lond., D.A.: senior anæsthetist.
Reid, G., M.B. Edin., F.R.C.S.E.: temporary surgeon.

City General Hospital, Leicester:

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Shield, J. B., M.B. Edin., F.R.C.S.E.: chief asst., orthopædic department.

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2.15 P.M. Prof. W. H. Tytler, Dr. E. R. Long, Dr. A. Q. We Dr. H. C. Hinshaw, Dr. K. N. Irvine, Dr. H. S. Wil: Specific Measures in *Prevention* and *Treatment* of Tuberculosis, Streptomycin, B.C.G., &c.
Medico-Chirurgical Society of Edinburgh
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OR
SCIENCE AND RULERS*

WALTER ELLIOT
P.C., M.C., F.R.C.P., F.R.S., M.P.

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The great strength of the Greek legend is that it recognises, and indeed rather delights in, the thought of this union of strength and science as a benevolent combination, capable of communion with men but remote from them. It was not till the disillusion of Greek thought that it turned to this union as a desirable ruler on earth, the belief that all would be well if kings were philosophers and philosophers were kings.

Robert Louis Stevenson once recoiled from marriage because it was "to domesticate the Recording Angel." In the modern State we tend to domesticate not only the Recording Angel but the Day of Judgment.

Harvey, whom this society commemorates, maintained all through his life the view of government as a diversity rather than a unity, neither seeking to turn Charles the King, his close companion, into a scientist, nor desiring, himself, to be any kind of a king. Today our rulers are becoming most horribly scientific ; and some at least of our scientists are becoming so very kingly. It is a mistake.

The danger of the philosopher-king nowadays is, that the mere brute weight of knowledge is becoming so great that by the time a man has tackled it all—and the supreme philosopher can aim at no less—he has lost the power of disbelief altogether. The faculty of disbelief, like every other faculty, atrophies with disuse. Yet it is perhaps the most important single scientific touchstone that man's mind possesses, and it was never more necessary than it is now. The phrase "science tells us" should raise an instant challenge in our minds. Very often, however, it is the prelude to a dumb acquiescence. Add to this the weight of government, and you crush the mind of man into the ground.

Necessary as the power of disbelief is to a scientist, it is even more so to a ruler, and in the fusion it is lost to both. Modern knowledge and modern government are two such immensely powerful things that, conjoined, they flash readily together into tyranny. What is more, they are each so engrossing that each distracts the mind from the other, and you tend to get a figure who is regarded as a terrific philosopher amongst the kings, and a terrific king amongst the philosophers. The mind of the administrator should be a haft, the mind of the scientist should be a blade. Nothing but confusion will result if the blunt haft is continually trying to prolong itself forward to be a blade, and the edged blade continually claiming to be used direct as a haft. This is a plea therefore for the maintenance of these two views, the biaxial eyes of the soul, and for resistance to the tendency to fuse the whole into a single monocular approach. It is worth while remembering, since we are on the subject of legend, that the single eye was the mark of that race of giants whom Ulysses outwitted, the Cyclops, amongst the strongest of beings, but also the stupidest.

Nowadays governments, which is to say the rulers, have to work in, and through, our scientific age. In so doing, philosopher-kings inevitably identify themselves to some extent with some particular set of scientific doctrines. It is very difficult for them thereafter to detach themselves from these doctrines ; and the true scientific spirit, the equal delight in being found wrong as in being found right, so be it that knowledge is advanced, gets lost altogether. I do not say that all scientists attain and retain these heights. Von Helmholtz said that he owed his entire scientific reputation to performing the experiments set out as demonstrations in the textbooks, and then seeing why the results there predicted did not happen ; but all teachers are not Helmholtzes, and we have often watched the embarrassment and even the indignation of a lecturer in similar circumstances—and indeed may have shared in it ourselves.

LEVIATHAN AND OUR DAILY BREAD

Take one or two examples of this addiction to particular views. Take, for example, contemporary nutrition.

The contention is advanced that the nation is as well fed, or is better fed, as a result of rationing than it was before the war. This should have an objective examination. Adequate feeding is not an abstract but a concrete affair ; it is the balance of output against output. It must be effected, for instance, by full employment. The intake for a nation, every person in which is in full activity, must be greater than the intake for a nation in which a significant fraction is running at a low level of muscular activity. To the Centaurs that would have been self-evident. But Hobbes saw more clearly than the fabulists. In the fusion of knowledge with power, it is knowledge that takes second place. Leviathan comes grinding forward—and Leviathan is not a distant creature dwelling in the hollow of the hills.

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* Harveian lecture delivered before the Harveian Society of London on May 21.

Leviathan is our daily life—Leviathan is the food office, Leviathan is Whitehall. Nay more, Leviathan is the constituencies. Daily bread is no longer the affair of the Deity, or of farmers, or of merchants, or of individuals, or of families. Daily bread has become the affair of Leviathan.

By reasoning we may appeal to Leviathan's intellect, and though it is a small hope it is our only hope. Let us ask him to look at the figures.

The figures seem to show that, before the war, the food-supply for 1937–38 equalled about 51,500 million calories. At 2900 calories per head the requirements were 48,000 million calories. These were the gross rations pre-war. There was on these figures enough to meet the requirements of the whole population. But actual surveys of one kind or another indicated that for the lowest nutritional third of the population (not necessarily the lowest income third) the intake was markedly below this figure. Active steps were taken, pre-war, to accelerate the steadily rising curve of nutrition, both in calories and in protective foods, which had been a feature of our national life during the whole of the present century. These steps were admittedly having an increasing effect. The Combined Food Board in 1944[1] stated that on theoretical grounds average intake requirements (food actually eaten) are estimated at 2550 calories per head per day.

Now the figure of 2900 calories per day (often quoted as the present British intake) is only the gross total of all the present supplies coming forward for civilian consumption divided by all the people in the country, just as in the case of the 2900+ before the war. The actual figures for consumption in the home, taken out for a sample—a small sample—of actual families, were 2390 calories in December, 1945, and 2300 in December, 1946 (Ministry of Food figures).

Compared with the 3500 calories given as required for the actual intake of the most active, the heavily working, section of the population, these average figures show a deficit of 1200 calories a day. These sample dietaries do not cover school or canteen meals. A canteen meal is supposed to contain 600–1000 calories. Even at the higher figure, a canteen meal would only bring the 2300 calorie figure to 3300; which is well under the figure of about 4000, generally taken as the requirement for a man in hard muscular work. The lower figure of 600 only brings the figure to 2900, which is significantly below the figure given by the National Research Council of the United States as the requirement for a "moderately active" adult man. The present rations have to some extent been improved over pre-war, by a higher extraction of flour and greater spread of liquid milk. But in other respects, such as variety, admittedly desirable to promote a high intake, they are deficient.

Special provision has also to be taken into account. Bransby and Magee[2] agree that, even with this, the present rationed foods, since the rationing of bread, do not provide an adequate food intake, and that this has to be made up by the canteen meals, and the "family pool," plus unrationed foods, and a certain gain in calories which can be achieved if points are exchanged into bread units. Allowing full weight for the effect of these factors, in that the rations are surplus to the needs of children under about 12, women, and old people, and that therefore the "family pool" is a real source of surplus food for the "bread-winner," the chief unrationed food is potatoes. The average male would have to eat ½–1½ lb. of potatoes a day to balance his food budget. That is 3½–10½ lb. per week. As the supply of potatoes ran about 5 lb. per week in 1943–44, and certainly has not increased since, the upper limit would require much good fortune to reach, and much assiduity to consume. The manual worker is considered to require up to 14 lb. of potatoes a week. His chances of getting or of digesting them are small. Indeed, catering establishments have requested by the Ministry of Food several times rece to cut down potato consumption by 20%; it would interesting to know whether the health authorities, the fuel authorities, have been in agreement with injunction.

The contention that we are better fed than before the war is therefore certainly a matter for investigation and for further proof. One would expect to find spokesmen of industry, and of industrial Ministries, fighting the question of food intake at every turn, using the present figures to explain and even to justify absenteeism and low output generally, and making the case, which is scientifically true, that the heat-engine of the body cannot do more work than the fuel put into it allows, any more than a car can be made by exhortation to cover the last few miles of its journey on an empty petrol tank. But Leviathan encountered *this problem from the food angle first. Leviathan brings* every ounce of his weight into play to make certain that this aspect prevails. There are many statistics in our national life most creditable to the efforts made to maintain an adequate food intake—the new low levels *for stillbirths and for neonatal, infant, and maternal* mortality. But the very success of these efforts has led to the rations being "pared." Bacon has been recently cut by 1 oz., cheese by 2 oz., and cooking fats by 1 oz. Meat has been increased by 2 oz., but there are apprehensions regarding the continuance of this level and the present provision is admittedly getting "tighter." Full activity for the nation would in fact mean not merely a maintenance but an increase of the gross quantities per head available pre-war. But this is now a matter of polemics, not of science; and where Leviathan enters, polemics are a very one-sided affair. Our nutritional balance-sheet has been brought to a very narrow margin; and it may be that here, as elsewhere, we are drawing upon stocks. There is certainly nothing to spare. Investigation not assertion—the Centaur's approach, not Leviathan's—is urgently required.

LEVIATHAN AND OUR CHILDREN

Take another example. One of the classes traditionally subject to direction is the population of school age. The extension of authority, which is one of the outstanding features of our age, has over many years brought this class in Great Britain into a regimentation not surpassed, and indeed not reached, in any previous time. This has disadvantages as well as advantages. From the medical point of view the close confinement, for many hours a day, of a naturally active and inquiring category of human beings is prima facie a drawback. Furthermore this confinement is not individual but collective. The naturally centrifugal habits of young children are replaced by an extreme centripetalism (We must leave out of account, for the moment, the various reactions of this upon the mind.) Upon the body it has the same effect, for certain reactions, as the herding together of other species. In particular, it exposes them very markedly to mass infection.

I am not unaware of the great benefits which supervision brings to the young, in many cases. It is not, however, all gain—Leviathan is not the ideal nurse. There were advantages in the education of the young Greeks with the Centaurs. It was not a matter of all day and every day in close confinement—and it did not go on for ten years.

As Minister of Health, many problems of public health were constantly thrust on my notice. The problem of epidemics among children was one of the most insistent

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1. Food Consumption Levels, U.S.A., Canada, and U.K., Report of Special Joint Committee.
2. Bransby, E. R., Magee, H. E. *Brit. med. J.* 1947, i, 525.

and the most baffling. Indeed one of the earliest of my memories, as an Under-Secretary, was a long and intense scene in the House of Commons, when James Maxton and several of his colleagues, the Clyde members, were eventually suspended from the House because of their anger over a sharp rise in the Glasgow death-rate due to an epidemic of measles. Eighteen years later this subject came very closely under my notice again, for I happened to be Minister of Health in 1939–40, when, for the first time in half a century or more, a disturbance of the school year was caused, so universal and extensive that it produced many significant results. I refer to the evacuation and dispersal of children at the commencement of the war.

Let me quote from *A Study of Measles* [3] by Dr. Brincker, hen a principal medical officer of the London County Council. He draws attention to the very well-known phenomenon of "the regular series of biennial explosions of measles in London." He quotes Greenwood and Topley [4]:

> "The periodicity of such an epidemic disease as measles is probably due to *periodic changes in the constitution of* the population exposed by risk leading, after each epidemic wave, to a gradual reaccumulation of susceptibles. . . . In the natural world the reaccumulation of susceptibles is by births rather than by immigration; but there are specialized herds, such as schools in general and boarding-schools in particular, in which the immigration of immunes term by term is probably a decisive factor in determining the course of events."

The operative word is "herds." This was long suspected, but no opportunity ever arose to put it to the proof on the grand scale. Not till the evacuation and dispersal, forced on the country in 1939 by the terror of air-bombing. The air-bombing did not actually take place that winter, but the fate of Rotterdam and Warsaw showed how easily the threat might have been fulfilled. It did take place later, though not with the catastrophic suddenness which was one of the main nightmares of those who had to organise measures for the safeguarding of the civilian population in the years immediately preceding 1939. The blitz of 1940–41, and the V.1's of 1944–45, made it necessary to utilise all the mechanism that had been worked out before 1939, and were put into practice in the autumn of that year. The absence of air-bombing, however, in the first evacuation, makes it possible to review it as a purely peace-time operation.

The results of that great movement may be summed up in a few sentences. Dr. Stocks [5] says:

> "Never since 1917 had there been a break in the biennial periodicity of epidemics (of measles) but in the first quarter of 1940, when one was expected to begin, it failed to appear. It is difficult to avoid the conclusion that this was connected with the great and unprecedented reduction of school contact between the children living in London from September 1939 to Easter 1940, and after, as will be seen later."

And Dr. Gale [6] says:

> "It is difficult to make up one's mind exactly how far the reductions in incidence of infectious disease were due to removal of children from the thickly populated evacuation towns with consequent 'thinning' of the child population and how far they were due to school closure. . . . I believe that school closure was a considerably more important factor than 'thinning'."

How important this was, in actual deaths, may be seen from table I.

The tendency, pre-war, for simplicity's sake, may be taken as high in years ending in an even number, and low in years ending in an odd number. The sudden arrest of the biennial swing has produced a lasting effect, and the oscillation, though re-established to some extent, is at an altogether lower level, and has changed to high in odd, and low in even, years. Table II gives the figures for calendar years. I have not been able to give the figures for "winters." An overlook back to 1936 in calendar years is given.

TABLE I—MEASLES DEATHS IN LONDON (ADMINISTRATIVE COUNTY) DURING "YEARS" (OCTOBER–SEPTEMBER) FROM 1922–23 [5]

1922–23 ..	154	1928–29 ..	112	1934–35 ..	10
1923–24 ..	1530	1929–30 ..	1113	1935–36 ..	596
1924–25 ..	117	1930–31 ..	50	1936–37 ..	15
1925–26 ..	1170	1931–32 ..	885	1937–38 ..	245
1926–27 ..	53	1932–33 ..	62	1938–39 ..	2
1927–28 ..	1480	1933–34 ..	906	1939–40 ..	5

TABLE II—MEASLES DEATHS IN LONDON DURING CALENDAR YEARS

1936 ..	584 ..	even	1942 ..	31 ..	even
1937 ..	24 ..	odd	1943 ..	50 ..	odd
1938 ..	235 ..	even	1944 ..	7 ..	even
1939 ..	4 ..	odd	1945 ..	31 ..	odd
1940 ..	29 ..	even	1946 ..	17 ..	even
1941 ..	51 ..	odd			

By the way, in the period 1939–40 the figures were, 5 in London, 2 in Birmingham, 31 in Liverpool, 19 in Manchester, 5 in Leeds, and 3 in Sheffield, 65 in all, as against 617 in the same cities in the previous biennial peak 1937–38. It would not be true to say, without further comment, that owing to the closing of the schools in the autumn of 1939 552 children were alive who would otherwise have been dead, but it is true to say that the deaths of 552 more children from this one disease in 1939–40 would not, pre-war, have been regarded as anything beyond normal. Dr. Gale [6] comments:

> "Closure of the schools over a large area would be, to put it mildly, a highly inconvenient procedure, and the graphs of weekly notifications suggest that unless the period was long enough to extend into the non-epidemic season, the epidemic would start soon after the re-opening. I do not think therefore that the experience of the dispersal upsets the policy which we have been advocating for years of keeping a school open in face of an epidemic. We should however consider the matter of infections spread seriously when the question of post-war design of schools arises. I have wanted to investigate the incidence of infectious disease in open-air schools but have been deterred by the obvious difficulties of devising a control."

It seems clear therefore that as one of the concomitants of education involving "herding," we must expect the destruction of considerable numbers of children. The bearing of this on present-day reforms in education, and particularly on the relative importance of smaller classes—i.e., less herding—as against prolongation of the school age is obviously important. Frankly, it would appear that nothing is so important as keeping down the numbers in classes.

There is much confirmatory evidence on the effects of "herding." Dr. Margaret McLaughlin,[7] in a paper based on 12 months' work in Birmingham day nurseries, concludes that among those presumed susceptible the incidence of measles was four times greater among children in the nurseries than in the corresponding home group. It is worth noting that she also thinks that respiratory-tract infections were from two to eight times more frequent among "nursery" children than among the corresponding home group. This is borne out by the figures for such conditions as adenoids and enlarged tonsils, and lung diseases (non-tuberculous), obtained during the years of dispersal and evacuation in the London administrative county. Adenoids and tonsils, which showed a figure of 9·2% of the children inspected in 1938, showed 9·0% in 1939 and 3·5% in 1940, rising to 5% in 1941. Lung diseases (non-tuberculous) showed 1·5% in 1938, 1·1% in 1939, and 0·6% in 1940, rising to 1·0% in 1941.

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[3] Brincker, J. A. H. *Proc. R. Soc. Med.* 1938, 31, 807.

[4] Greenwood, M., Hill, A. B., Topley, W. W. C., Wilson, J. *Spec. Rep. Ser. med. Res. Coun., Lond.* no. 209, 1936.

[5] Stocks, P. *J.R. statist. Soc.* 1942, 104, 311.

[6] Gale, A. H. *Proc. R. Soc. Med.* 1943, 36, 97.

[7] McLaughlin, M. *Brit. med. J.* 1947, i, 631.

It would not be right to lay overmuch stress on these figures, but they certainly do not contradict those earlier quoted. They all emphasise the importance of the family—the quarrelsome, insulated, isolated, family—to which modern psychologists also begin to bear witness.

Yet on the whole it has been difficult to attract the attention of Leviathan to this aspect. I have read, I suppose, dozens of papers on the impact of evacuation on education, for every one I have read on the impact of evacuation on life. Yet it is clearly important in itself, and not less in its implications, because the effects of herding may not be confined to the obvious results of death-rates from infectious diseases. The psychological results, to which observers of city-bred populations are beginning to call attention, may alas be noteworthy. I was much struck by certain passages in a paper read at a recent conference under the auspices of the Association of Agriculture by Dr. C. S. Flack, headmaster of Aston Commercial School, Birmingham. He pointed out that "in matters of education the limitations of a congested city environment have not yet been sufficiently recognised."

Leviathan however is driving straight ahead and is difficult to turn. We shall be a great deal more congested, both in mind and body, before we are better.

INDEPENDENT INSTITUTIONS

I have given two examples of the pressure of Leviathan, one upon children and one upon adults. I think it urgent, indeed vital, that alternative lines of progress to these derived from such immense pressures—immense, concentrated, pressures—should exist.

I should expect these to be preserved by independent bodies of various kinds, of which the Harveian Society is one. I should expect them to be preserved chiefly by the universities, existing as self-governing independent institutions. The rapid and increasing assistance given by the State to the universities must be judged according to whether it comes from the Centaurs or from the Leviathans, and the recent expansion of the university grants from £2 million a year to something like £9 million is not without its dangers. Even the University Grants Committee, most tolerant of bodies, is drawn into a degree of supervision which may easily defeat its own object, the cultivation of independent thought.

It is easy for the lower forms of life to destroy the higher. Even the Centaurs, flown with wine and insolence, at a marriage feast fell into conflict with their brutish neighbours, the Lapithæ, and were overborne. Nothing either in Hobbes or the *Book of Job* has overborne Leviathan. Let us therefore be wary always.

"... Man is a unique product of evolution in that he, far more than any other creature, has escaped from the bondage of the physical and the biological into the multiform social environment. This remarkable development introduces a third dimension in addition to those of the external and internal environments—a dimension which many biologists, in considering the evolution of man, tend to neglect. The most important setting of human evolution is the human social environment . . . this can influence evolutionary changes only through the media of mutation, selection, genetic drift, and hybridisation. Nevertheless, there can be no genuine clarity in our understanding of man's biological nature until the rôle of the social factor in the development of the human species is understood. A biologist approaching the problems of human evolution must never lose sight of the truth stated more than 2000 years ago by Aristotle: 'Man is by nature a political animal'."—TH. DOBZHANSKY and M. F. ASHLEY MONTAGU, *Science*, June 6, 1947, p. 587.

VAGOTOMY FOR PEPTIC ULCER

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THE surgical treatment of peptic ulcer has for its ob the prevention of recurrence in the face of inevit stress rather than the healing of a particular ulcer. relation of exacerbation of symptoms due to pe ulcer to environmental and emotional strain sugg that the hypersecretion of acid and possibly other orders of function predisposing to ulcer formation due to nervous impulses arising in the higher cent That such impulses are carried in the vagus was sh by Pavlov's demonstration that the gastric secretion response to conditioned stimuli is abolished by cutt off the vagal innervation. It is therefore reasonable hope that vagal section in man will abolish that of gastric hypersecretion which is due to nerv impulses and so protect the stomach from psyc stress.

Neither animal experiments nor the earlier attem in man gave any indication that the degree of secretion could be permanently affected by vagotomy. Ferguson (1936) divided both vagi below the diaphrag in monkeys and found that they all developed cardi spasm, and some of them gastric hypotonia, but in case was there any reduction in the acid response to test-meal. Hartzell (1929) reviewed the literature vagotomy and described experiments in which the vag were divided in dogs, some above and some below the diaphragm. He found that the acid response to a test meal fell, there being an increase in pH of 1·5–2 units; in a dog in which one vagal trunk was not divided the acidity did not fall. Vanzant (1931) re-examined four of Hartzell's dogs $2^1/_2$ years later and found that the acid values had returned to their preoperative level. Shapiro and Berg (1932) studied the gastric acidity after a test meal in a Pavlov pouch and in the main stomach in five dogs before and after partial gastrectomy and division of the vagi below the diaphragm: they found that the acid values were depressed for 2–4 weeks but then returned to their previous level.

Attempts to treat peptic ulcer in man by vagotomy are reviewed by Hartzell (1929); all the writers cited by him used the abdominal route. Pieri and Tanferna (1930) performed section of the left vagus in the chest in two cases, and of all vagal branches below the diaphragm in three. They found a reduction in the acid response to an Ewald meal, but at follow-up investigations at intervals of up to 18 months the acid values had returned to their preoperative level. Weinstein et al. (1944) review the subject of vagotomy before 1938 and emphasise that all authors relied on a partial section They describe two intrathoracic vagotomies in man which they thought at the time were complete: one patient died of adrenal hæmorrhage and was found at necropsy to have 20–40% of his vagal fibres still intact, and the other was shown to have intact vagal fibres by the hypoglycæmia test (see below). They say that "it is far from simple to expose all sides of the œsophagus. . . Many of the smaller fibres will escape the most determined operator." This review leads to the conclusion that section of the vagi below the diaphragm is incomplete, and that incomplete vagal section is not effective in permanently lowering acid secretion.

The first consistently successful vagotomies are reported by Dragstedt and Schafer (1945), Dragstedt (1945), and Thornton et al. (1946). They use the left nspleural approach and take care to mobilise a portion the œsophagus and define all branches of the vagal :nks. They emphasise that some fibres enter the ophageal muscle and travel in it down to the stomach ; tion of two trunks is no guarantee that a complete gotomy has been performed.

These anatomical facts presumably explain the failure vagotomy in the past. The section below the diaphragm it has usually been performed is inadequate, but these thors have done five vagotomies from the abdomen making an incision in the diaphragm and mobilising portion of the œsophagus from below; this was mbined with gastro-enterostomy in cases where there s pyloric obstruction.

These workers have reported their experiences with irty-nine patients; one died of bronchopneumonia m aspiration of material vomited after operation; ey now make it a point to aspirate the stomach ntinuously for 3 to 4 days until the transient gastric ony has passed off.

Thirty cases of duodenal ulcer gave almost uniformly tisfactory results over periods of up to 3 years. In e of two cases of gastric ulcer healing was progressing t incomplete after 6 weeks. Seven cases of anasto-otic ulcer were less satisfactory, and two required further atment.

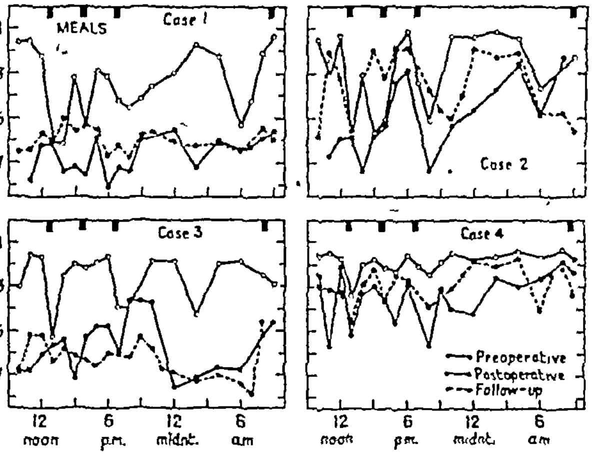
Before operation the average total volume of night cretion was 821 c.cm. and free acidity 47 c.cm. N/10 OH per 100 c.cm. The corresponding figures after eration were 335 c.cm. and 15 c.cm., which are com-rable with figures obtained from patients with unrelated nditions. The secretory response to histamine is affected by vagotomy; the secretory response to poglycæmia produced by insulin was abolished in all ses, and this is regarded as a test of complete vagal ction.

Results in fifteen cases are reported by Moore et al. 946). There were no fatalities and no recurrences in e whole series. To test the ability of the operation to revent recurrence, no dietary restrictions were imposed n the patients. Samples of gastric juice were withdrawn intervals of 2 hours during periods of up to 48 ours and showed considerable reduction in acidity; ough most patients showed a pH of 1·0 at some me during the night, in no instance after operation d the pH fall below 1·5. So far as the follow-up exami-ations were taken, no tendency was noted for the acid alues to return to their previous level.

Encouraged by the report of Dragstedt and Schafer 945) we have performed the operation on four patients ith severe and recurrent peptic ulceration. The cases e chose were all characterised by an excessive secretion acid sustained throughout the 24 hours, and we lt that the success of any operation must be judged rgely by its effect on this secretion. There are cogent asons for believing that the level of intragastric cidity plays some part in determining whether an ulcer eals or recurs, and it is known that the degree of acidity the stimulus to pain in patients with active ulcers Bonney and Pickering 1946).

CHEMICAL INVESTIGATION

To measure the values of intragastric acidity under onditions as normal as possible a Ryle tube was passed nto the stomach, usually through the nose, and left in lace for 24 hours; specimens of gastric juice (about 5 c.cm.) were withdrawn at hourly intervals during the ay and 2-hourly intervals at night. The patient ontinued to eat his ordinary four meals daily under the leulengracht régime and, except the first two tests in ase 1 and the first test in case 2, received no alkali uring the test. The pH of each specimen was determined lectrometrically on the unfiltered juice with the double quinhydrone electrode. Electrometric determination of acidity was chosen rather than titration, because there was sometimes insufficient juice for titration and the presence of food and coloured matter rendered the end-point uncertain. To judge the accuracy of the electrometric method, fifteen determinations were made on a single specimen, and the standard deviation was found to be 0·067 pH units.



Results of 24-hour acid tests in cases 1–4.

The 24-hour test was performed shortly before operation and after recovery. It has also been carried out at follow-up examinations at different intervals after operation.

CASE-RECORDS

Case 1.—Male, aged 44, clerk.

10 years ago: epigastric pain, starting just before meals, relieved by food and alkali; periods of freedom of several months. Radiography showed duodenal ulcer.

18 months ago: partial gastrectomy; large duodenal ulcer found.

9 months ago pain started under right costal margin, relieved by food, alkali, and vomiting.

6 months ago. readmitted; pain and vomiting persisted 3 weeks and then relieved by continuous nocturnal milk drip. Radiography showed irregularity in region of stoma. Discharged after 2 months to continue with milk drip at home.

1 month ago: readmitted with recurrence of pain; laparotomy showed a large stomal ulcer adherent to liver, and no resection could be undertaken.

Vagotomy was performed on Dec. 11, 1945. Milk drip discontinued at once. Discharged free of symptoms after 5 weeks.

When seen again a year after operation, feels well, no pain, excellent appetite, and weight steady; has returned to work.

Case 2.—Male, aged 56, filler of gas cylinders.

10 years ago: perforated duodenal ulcer. A month after operation epigastric pain began, coming on 1–$1^1/_2$ hours after meals and at night. Relieved by food and alkali. Attacks persisted in spite of dietetic treatment.

5 months ago: admitted to hospital with severe pain. Radiography showed deformed duodenum; became symptom-free on Sippy diet and was discharged after a month.

1 month ago: readmitted as pain had recurred 2 weeks after discharge.

Vagotomy was performed on March 12, 1946. Discharged free of symptoms, and receiving no alkali, after a month.

When seen again 6 months after discharge, states he has had no further pain and takes powder only if he is constipated. Can eat anything, feels very well, and has put on 8 lb. Returned to work a month after discharge.

Case 3.—Male, aged 38, truck-driver.

25 years ago: began to have attacks of epigastric pain and vomiting; pain relieved by alkali.

19 years ago : chronically inflamed appendix removed for attacks of pain in right abdomen.

9 years ago : severe recurrence of epigastric pain ; treated in hospital ; well for 8 months, then relapsed.

6 years ago : admitted to hospital with severe pain ; radiography showed duodenal ulcer, and a test-meal "an extremely high curve." Partial gastrectomy was performed.

5 years ago : readmitted with pain in distribution of left 7th and 8th thoracic nerves ; a lump appeared beneath left costal margin ; laparotomy showed a large anastomotic ulcer, which was resected.

$4^{1}/_{2}$ years ago : vomited 2 pints of blood.

4 years ago : perforated a gastric ulcer proximal to the anastomosis.

$3^{1}/_{2}$ years ago : readmitted for attacks of pain ; relieved by gastric aspiration. Continuous nocturnal aspirations maintained at home for a year, during which he was admitted once for melæna.

$2^{1}/_{2}$ years ago : readmitted with severe pain not relieved by powder ; barium meal showed anastomotic ulcer with leakage of barium into peritoneal cavity. Aspirations were continued ; volume of nocturnal aspirate 400–1400 c.cm., with free acidity of 60–70 c.cm. of $N/10$ NaOH per 100 c.cm. ; pain continued. Started on continuous nocturnal milk drip of $1^{1}/_{2}$ pints milk containing 5 oz. 'Aludrox.' Continued milk drip at home for 2 years and remained free of symptoms.

6 months ago : attack of melæna ; readmitted.

Vagotomy performed on April 23, 1946. The milk drip and all alkali treatment were discontinued at once. Was discharged after 6 weeks.

When seen 4 months after discharge, no further epigastric pain ; feels very well, and has taken no alkali. Returned to work 4 weeks after discharge.

Case 4.—Male, aged 45, warehouse dispatch manager.

15 years ago : attacks of epigastric pain began, coming on at any time of day or night, relieved by alkali ; periods of freedom shortened progressively and now last only 3 or 4 days. Taking very large amounts of alkali ; vomiting very rare.

3 months ago : admitted to hospital with severe pain. Radiography showed a long J-shaped stomach with a deformed duodenal cap and a small pyloric niche ; no evidence of pyloric obstruction.

Vagotomy performed on June 18, 1946. Seven days after operation the stomach was dilated, and persistent vomiting began ; relieved by continuous aspiration for 24 hours. Discharged after 5 weeks.

When seen again 4 months after discharge, says he feels better in every way and can eat anything ; has put on 16 lb. As the barium meal showed an uncertain pyloric niche, he was gastroscoped by Mr. J. C. Goligher, and a good view of the pylorus was obtained ; there was no evidence of an ulcer or of any scarring.

OPERATIVE TECHNIQUE

The nerves are divided as they course down the œsophagus from the lower border of the hilum of the lung to the cardia. The œsophagus can be exposed in this position from the right or left side of the chest. On the left side it is overlapped by the aorta, but on the right it is lying immediately under the pleura and is thus more easily accessible. In case 1 the approach was made from the left side, but in the other cases the œsophagus was exposed from the right.

The patient is placed in the lateral position, and the thorax is opened through the bed of the ninth rib after resection. Wide exposure is obtained with a rib spreader. The pulmonary ligament is divided, thus opening the mediastinal pleura, and the lower lobe of the lung is displaced upwards and packed off. The œsophagus is then raised from its bed, and a piece of tape is passed round it to act as a retractor. The main trunk of the right vagus is easily identified below the hilum of the lung ; it is divided, and the proximal end is ligated. Artery forceps are put on the distal end. By rotating the œsophagus the main trunk of the left vagus is discovered and similarly treated. As the trunks are traced downwards they are found to divide to form a plexus surrounding the œsophagus, and branches from the plexus pierce the muscular walls. The whole plexus is carefully dissected downwards to the diaphragm and removed, all branches entering the œsophagus being divided. A search is then made for any branches that may have come from the main trunks above the point of division. If found these must be divided. The œsophagus is then replaced in its bed and the overlying pleura sutured. The lung is distended by the anæsthetist and the chest is closed.

Postoperative management.—From the first the patient requires the care usual after an intrathoracic operation, the object being to restore full pulmonary function as soon as possible. He is encouraged to cough and is given breathing exercises. A pleural effusion usually develops and will require two or three aspirations. A careful watch should be kept for dilatation of the stomach and, if it develops, gastric aspiration should be instituted.

DISCUSSION

The results of the pH determinations show that a very great reduction in acidity follows vagotomy. The figure shows the results of the 24-hour tests. The preoperative test was performed within 2 months of operation. The postoperative test was done from a month to 6 weeks after operation, and the follow-up tests as follows :

Case 1 .. 11 months after operation.
Case 2 .. 7 „ „ „
Case 3 .. 6 „ „ „
Case 4 .. 4 „ „ „

It should be realised that pH is a logarithmic measurement (being log.$_{10}$ of the reciprocal of the hydrogen-ion concentration expressed in g. per litre), that an increase in pH of 1 unit therefore represents a tenfold reduction in acidity, and that the pH number increases as acidity is reduced, pH 7 being neutral, and pH 1·0 about equivalent to decinormal acid.

The parietal cells secrete hydrochloric acid at a concentration which renders the secretion isotonic with plasma, actually 0·17 molar (Hollander 1934). Such a solution has a pH of about 0·91, which therefore represents a theoretical maximum of the acidity of any gastric juice. In actual practice we have found it rare to encounter a juice more acid than pH 1·1 ; in this respect our experience therefore differs from that of Moore et al. (1946).

In our four patients the reduction in hydrogen-ion concentration following the operation was much greater in the two patients with stomal ulcers following gastrectomy than in those in whom the stomach was intact. In fact in cases 1 and 3 (both anastomotic ulcers) most of the postoperative acid values are near neutrality or even on the alkaline side of neutral. This great reduction in acidity we are inclined to ascribe to increased regurgitation of jejunal contents ; possibly the reduction in motility and in the volume of gastric secretion, as demonstrated by Dragstedt, facilitates more effective regurgitation.

In cases 2 and 4, where the stomach is intact, the acidity is reduced but still follows the general trend of the preoperative curve ; it is also notable that the follow-up investigations show a tendency for the acidity to return to its preoperative level.

The possibility that the relief of symptoms is due simply to section of the pain-bearing afferent fibres is discussed by Moore et al. (1946). They claim to be able to produce pain in the stomach by distending it with a balloon after vagal section. We have made no observations on this point but agree that the beneficial results the operation can hardly be due simply to section of e pain fibres.

It is remarkable that the abdominal vagus can be t without untoward results. Dilatation of the stomach me on after operation in case 4 but was soon overcome y gastric suction. Constipation does not result from e operation; in fact there may be some improvement an irregular bowel habit.

For many years operations for the relief of ulceration ve been regarded as physiological rather than anatomi- l. This claim was made for gastrojejunostomy, but e results have led surgeons to shun the operation except patients with pyloric obstruction and low gastric idity. Even partial gastrectomy is followed by recur- nt ulceration in some patients, and in others it is llowed by severe anæmia.

Vagotomy is perhaps the most physiological operation r ulcer yet devised. Its immediate success in the relief f symptoms has been proved; its lasting success must emain a matter of doubt until further time has elapsed nd more experience has been gained. Late results em to depend on two questions: (1) whether the peration can succeed in preventing regeneration of the agal nerve supply to the stomach; and (2) whether e stomach can recover its hyperacidity without egeneration of the nerves.

Only four cases are reported. They were selected for gotomy because they were extreme examples of the er diathesis and three of them had been abandoned considered unsuitable for any gastric operation by dominal surgeons. The history in case 3 is a record pain and catastrophe over many years. The most iking effect of vagotomy has been the gratitude of the tients, who have not experienced such comfort and lief for years. Postoperative investigations gave an lequate explanation for the symptomatic relief. Later llow-up investigations have shown a tendency for the stric acidity to rise again, but in no case has it reached e preoperative level, and relief of symptoms has been aintained without any dietary precautions. These sults support the claims made for vagotomy by other orkers. It is too early to draw final conclusions, but e operation carries a very small operative risk and ould at least prove to be a useful and successful adjunct the treatment of a very distressing condition.

SUMMARY

The literature of vagotomy for peptic ulcer is eviewed.

The clinical histories of four patients on whom this peration has been performed are described. All have xperienced symptomatic relief.

Measurements of the gastric pH before and after peration show a substantial reduction in acidity.

A brief description of the operative technique is given, nd the place of vagotomy in the treatment of peptic lcer is discussed.

We wish to thank Prof. G. W. Pickering for his helpful nterest and criticism.

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TREATMENT OF THE BLADDER AFTER SUPRAPUBIC CYSTOSTOMY

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During the campaign in Italy the two neurosurgical units of the British Army in that country received many cases of traumatic paraplegia or paraparesis. When these cases became numerous, the problems of the treatment of the bladder in which a suprapubic cystostomy had been performed urgently demanded a solution. As there is no generally accepted treatment for the bladder with an indwelling suprapubic catheter, the following investigation was undertaken.

TREATMENT

The treatments investigated fall into three groups: (1) mechanical treatment, (2) sulpha chemotherapy, and (3) combined mechanical and sulpha chemotherapy. A fourth, control, group consisted of patients having no treatment and those having penicillin intramuscularly. The latter category of control was necessary, because many of the patients were receiving at the time penicillin for the wounds involving the meninges, and it seemed possible that this might have had some effect in sterilising the urinary tract.

MECHANICAL

(1) *Tidal drainage.*—The apparatus used was that described by Lawrie and Nathan (1939). It was attached to the suprapubic catheter. This method has the disadvantage that, for a few days after the catheter is changed, there is leaking round the catheter whenever the pressure rises. The irrigating fluid used in all the mechanical methods was either proflavine sulphate 1 in 10,000 in isotonic saline, or neutralised acriflavine 1 in 5000 in isotonic saline; the relative value of these two solutions was not investigated.

(2) *Tidal drainage with acid buffered solution.*—It was thought that, if the urine could be kept sufficiently acid (or sufficiently alkaline), bacteriostasis might be maintained. The strengths of solutions were found which were necessary to maintain the urine at pH 5·2 for three hours and at various values of pH above this. When it soon became obvious that this was an inefficient method of controlling infection, an attempt was made to combine the buffered acid solution with a solution of mandelic acid; but by this time other methods had proved much more successful, so this was abandoned.

(3) *Washouts.*—These were done three times a day with the solutions mentioned. Washing out was continued until the returning solution was free from particles when held up in a glass; the bladders were washed out in short sharp gushes with a bladder syringe. In all these cases, besides the suprapubic catheter, a thin soft very flexible tube was left in the suprapubic stoma; this was inserted before the catheter, so that its end would lie on the floor of the bladder. In washing out, the syringe was connected to the fine rubber tube, so that the fluid rushing out of it would stir up the sediment on the floor of the bladder and would then pour out unimpeded through the relatively large de Pezzer or Malecôt catheter. The solution was used at body temperature. When draining, the catheter was connected by tubing to a bottle attached to the bed at pubic level; this system was sterilised, the neck of the bottle being plugged with cotton-wool.

The washouts were done by R.A.M.C. orderlies. Though this was necessary because of the amount of work falling on the shoulders of doctors and nurses, it was considered that such personnel was typical of the personnel throughout the British and other armies, and was like the nursing staff which these patients would be under for years to come on return to the U.K. The point in the investigation was not to find out an ideal treatment under perfect conditions, but to work out the best and most practical treatment under the conditions reigning in the hospitals abroad and at home.

(4) *Combined washout and tidal drainage.*—The defect of tidal drainage seemed to be that it was too gentle; a sediment always remained at the base of the bladder which was not washed out during siphonage. The apparatus was therefore

modified so that it could be combined with washouts by syringe. This was done by syringing through the thin rubber *tube mentioned above;* the glass connexion of the lead-in tube of the tidal-drainage apparatus was replaced by a glass Y-tube, so that, when the bladder was being washed out, the fluid could flow out of the one arm of the Y, while the other remained in the circuit of the tidal-drainage apparatus, clipped off.

MECHANICAL TREATMENT AND SULPHA CHEMOTHERAPY

(5) *Tidal drainage and sulphanilamide* (2 g. per day): this small dose was tried, as in the intact bladder it is usually sufficient to clear an infection.

(6) *Tidal drainage and sulphadiazine* (6 g. per day).

(7) *Washouts and sulphathiazole* (6 g. per day).

(8) *Washouts and sulphadiazine* (6 g. per day).

SULPHA CHEMOTHERAPY ALONE

(9) *Sulphanilamide* (2 g. per day).

(10) *Sulphathiazole* (6 g. per day).

(11) *Sulphadiazine* (6 g. per day). In many cases, for the first few days after wounding, more than 6 g. of sulphadiazine was given. This was because of the wound involving the spinal cord or meninges, and not because of the bladder. From the point of view of this investigation it is of no importance, as the results of giving 6 g. or of giving more than this are the same.

(12) *Sulphadiazine* (4 g. per day).

CONTROLS

(13) No treatment.

(14) Penicillin only, by intramuscular injection.

RESULTS

The effect of treatment was judged by (1) the amount of pus; (2) the presence of constitutional signs of infection which could be attributed to a urinary infection; and (3) the amount of bacteria.

The amount of pus was considered a better criterion than the amount of bacteria. The indication of the nocuous effects of bacteria on the mucosa is shown by the amount of pus formed. It seems that the presence of *Bact. coli* or of a non-pathogenic staphylococcus is not in itself harmful. It sometimes happened that, though no organisms could be grown from the urine which contained no pus when aspirated from the bladder, the urine taken out of the bottle attached to the bed grew *Bact. coli.* Swabs taken from the inside of the tube attached to the catheter within twelve hours or so of boiling often grew *Bact. coli*, streptococci, staphylococci, and diphtheroids; and swabs of the suprapubic wounds would grow various organisms. As, then, the environment of the bladder often contained more organisms than the urine from the bladder, it seemed that the number of leucocytes was a better criterion of urinary infection than was the number of bacteria. Also a leucocyte count is more feasible than an attempt to grade the number of bacteria present. The urinary leucocyte counts were performed on a specimen of uncentrifuged urine taken from the suprapubic catheter; it was performed by counting the number of cells seen in a field under the low power; twenty fields were counted.

TABLE I—SEPARATE RESULTS OF ALL METHODS OF TREATMENT USED

Method of treatment	No. of cases			
	Bad group	Good group	Best group	Total
(1) Tidal drainage	4	0	0	4
(2) Tidal drainage with acid buffered solution	1	0	0	1
(3) *Washouts*	3	0	1	4
(4) Combined washout with tidal drainage	1	1	0	2
(5) Tidal drainage and sulphanilamide	1	0	0	1
(6) *Tidal drainage and sulphadiazine*	0	1	1	2
(7) Washouts and sulphathiazole	0	1	0	1
(8) Washouts and sulphadiazine	0	0	2	2
(9) Sulphanilamide 2 g. ..	0	2	0	2
(10) Sulphathiazole 6 g... ..	0	0	2	2
(11) Sulphadiazine 6 g.	1	2	12	15
(12) Sulphadiazine 4 g.	0	0	2	2
(13) No treatment	3	0	0	3
(14) Penicillin intramuscularly ..	4	0	0	4
Total	18	7	20	45

The twelve methods of treatment and the two contr have been placed in three groups—bad, good, and b The criteria for these groups are:

Best Methods.—The urine was sterile on culture and contained no leucocytes. Also included in this group are the *cases in which there were less than 10 leucocytes* per

Good Methods.—In this group were placed those wh showed 10–20 leucocytes per field, or in which the patholo reported "occasional leucocyte."

Bad Methods.—In this group were placed those which sho 20 or more leucocytes per field, or what was reported a "pus plus plus," "moderate pus," or "albumin plus plu All those showing constitutional signs of urinary infection w placed in this group.

Table I gives the number of cases for each form treatment which come into each group of results. obtain significant results from so few cases, they will considered in four groups only. Table II shows results collected into the four treatment groups.

TABLE II—RESULTS IN GROUPS OF METHODS

Group	No. of cases treated				
	Mechanical	Combined	Chemotherapy	Control	Tot
Bad ..	8	2	1	7	1
Good ..	0	3	4	0	
Best ..	1	3	16	0	2
Total	9	8	21	7	4

It will be seen that the control group (no treatm and penicillin only) falls entirely into the bad catego

Mechanical methods proved no better than the cont methods. In addition to the figures given in the tabl it must be pointed out that only 3 cases of the ent *series had fever attributed to urinary infection, and* al were in the mechanical treatment group. It may the fore be concluded that mechanical methods of treatme *are more harmful than no treatment at all.* The tables a show that combining a mechanical method with chem therapy detracts from the success of the chemotherapy

Four-fifths of those in the best group were th treated by chemotherapy. When it is remembered th for cases to be placed in this best group the urine had be sterile or had to contain less than 10 leucocytes p field, it will be realised that we have in the sulpha dr an efficient means of dealing with urinary infection the paralysed bladder. Sulphathiazole and sulphadiazi *seem to be equally good, 4 g. in twenty-four* hours bei sufficient.

Further information may be obtained by consideri a few of the cases in greater detail. It was fou that sulphadiazine always cleared a *Staph. aur* infection. A *B. proteus* infection developed in only of the 45 cases, the one treated by tidal drainage wi solution buffered at 5·2. While having the bladder ir gated with this acid solution the patient developed fev which immediately ceased when this form of treatme was stopped.

Patients having what is apparently inadequate trea ment do not always suffer from it.

One patient reached the neurosurgical base fifty days af the onset of the paraparesis. *For the first month of this ti* he had had one or two washouts a week with Duke's apparat and for the last ten days a washout three times a day wi a funnel and tube. His urine showed only 2 leucocytes f field, contained no albumin, and grew *Bact. coli* only.

Once the bladder is free from infection, there bei no leucocytes and the urine being sterile, one cann cease giving sulphadiazine.

In 4 cases with sterile urine and less than 10 leucocyt per field sulphadiazine was stopped and no treatment w given. In the first case, *Bact. coli* was grown from the uri on the third day; on the seventh day hæmolytic streptococ were also grown the patient was then given sulphadiazi in: after a week of this, no leucocytes were found in enty fields; culture still grew *Bact. coli* but no hæmolytic eptococci. In the second case a week after sulphadiazine s stopped the urine contained much pus. In the third case r days after sulphadiazine was stopped there was a slight ection. In the fourth case eight days after sulphadiazine s stopped there was a *Bact. coli* infection, with a moderate ount of pus.

Sulphadiazine was given in doses of 6 g. in twenty-four ours; no patient had this for more than three weeks.

One case raised the question whether this prolonged adminiration of a large dose damaged the bladder mucosa: while e catheter was being changed after three weeks' sulphaazine, a semi-organised shred was found, which was shaped e the bladder and microscopically seemed to be thick mucus. he sulphadiazine was reduced to 4 g. in twenty-four hours; e urine continued to consist of thick glairy mucus, though contained less than 6 leucocytes per field and grew only *act. coli*. No other case having sulphadiazine for three weeks owed any ill effects.

The leucocyte count remained normal, and there were o symptoms or signs of blockage of the renal tubules. æmaturia or renal pains have been seen in patients aving larger doses of the drug, but were never seen in atients having 6 g. in twenty-four hours. But with this ose of sulphadiazine or sulphathiazole, sulpha crystals ere often found in the urine.

Owing to regular evacuations of cases to the United ingdom, no case was seen for longer than fifty days. herefore this investigation was of the treatment of the rinary tract in the first few weeks of paraplegia *only*. n this time it is clear that the best method of treatment f the bladder after suprapubic cystostomy is to give al sulphadiazine. It remains to work out the length time for which this drug can be given and the minimal ecessary dose. Here, not less than 4 g. in twenty-four ours was tried; but half this or less may be adequate.

Siegel (1945) has shown that with 2 g. per day, a blood vel of 3·2–13·9 mg., with an average of 7·2 mg., per 100 ml. obtained, and that with 1 g. the blood level is 1·7–8·1 mg., ith an average of 3·5 mg., per 100 ml.

Prolonged administration of small doses of sulphadiazine o vast numbers of men has been reported by Coburn (1945). e gave sulphadiazine 1 g. daily to 300,000 U.S. Naval ersonnel for 3–6 months. With this dose he found no renal omplications, a mild dermal reaction in 0·5%, "severe lphonamide diseases" (exfoliative dermatitis or granuloytopenia) in 1 in 10,000 men. He also found that, with such dose, sensitisation to the drug was not produced, nor was the evelopment of drug-fast organisms shown; those cases which, n spite of this prophylactic dose, got an upper respiratory ract infection with hæmolytic streptococci reacted entirely ormally to the routine therapeutic dose of the drug.

Coburn showed that this dose (1 g.) of sulphadiazine was n excellent prophylactic against infective respiratory disrders: the number of patients admitted to hospital per onth for respiratory disorders was 5–18 in his 300,000 conrols, but less than 1 in the 600,000 having daily doses of ·5 g. or 1 g. This prophylactic effect is relevant to cases of araplegia, which are liable to succumb to respiratory infecions, if they escape death from urinary tract infection.

Lehr (1945) has shown that sulphacetamide is far less oxic than sulphadiazine or sulphathiazole. He never found vidence of renal damage in rats receiving enormous doses f this compound. It has the great advantage that it is ighly soluble in acid urine.

The success of oral sulphadiazine in controlling urinary infection in the paralysed bladder raises the question whether this form of treatment has not rendered obsolete all mechanical forms of treatment, such as tidal drainage and washouts. This applies to all cases where there is an indwelling catheter and to all cases before and after prostatectomy; in these old bronchitic subjects the prophylactic effect of the drug on the respiratory tract is an additional reason for preferring it. It remains also to investigate the newer sulpha drugs, sulphamerazine and sulphamezathine.

SUMMARY

An investigation of various forms of treatment of the bladder after suprapubic cystostomy was undertaken.

With mechanical methods, which included tidal drainage and washouts, the results were worse than in controls having no treatment.

The effects of sulphonamide therapy were excellent. Sulphadiazine and sulphathiazole were more satisfactory than sulphanilamide, and can be given in small doses with safety for six months.

I take this opportunity of thanking Mr. F. J. F. Barrington, who helped me with advice and criticism.

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INTRAVENOUS ADMINISTRATION OF IRON

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IRON is well known to be toxic when administered parenterally. The toxic effects arise from precipitation of iron in the blood, producing multiple pulmonary and sometimes systemic emboli, with symptoms resembling those of fat-embolism; from irritation of the gastrointestinal tract, giving rise to diarrhœa and vomiting, and from depression of the central nervous system, which may lead to coma and death (Heath et al. 1932, Goodman and Gilman 1941, Best and Taylor 1943).

The lethal dose for an animal is given by Best and Taylor (1943) as 30–60 mg. of metallic iron per kg. of body-weight. If this holds good for man, the lethal dose for an adult weighing 70 kg. would be 2–4 g. Toxic symptoms, however, appear long before this dose is reached. The maximal dose of injectio ferri *B.P.* is gr. $^1/_{10}$ (6 mg.). Heath et al. (1932) gave 15 patients with hypochromic anæmia a daily dose of 32 mg. of iron intramuscularly, in the form of iron and ammonium citrate, for about ten days, and found that 96% was utilised in the formation of hæmoglobin; with this dose there were prohibitive toxic reactions.

The work of McCance and Widdowson (1937, 1938) and of Hahn and Whipple (1936) has shown that a daily intake of 5–8 mg. is required to keep a normal man in iron equilibrium. Young children, however, require considerably more iron (as much as 0·6 mg./kg. of body-weight). Women, up to the climacteric, require from two to four times as much iron as men do. Leverton and Roberts (1937) have shown that normal young women need about 16 or 17 mg. daily. Pregnant women require about 20 mg. of iron daily. The average daily needs of those who require iron most is therefore about 15–20 mg. To raise the hæmoglobin of a patient by 1% about 25–30 mg. would be needed. Another 15–20 mg. would have to be added if enteral supply or absorption is deficient. If this amount, which is over double the usual permitted dose, was given daily it would take fifty days to raise the hæmoglobin from 40% to 90%. For these and other obvious reasons, the parenteral use of iron in anæmia has been extremely limited.

To probe the question further, the administration of iron by intravenous infusion was tried at this hospital. For this purpose two different solutions were used:

(1) A sterile solution of colloidal ferric hydroxide prepared from material supplied by Messrs. Evans Medical Supplies Ltd.

ELECTRO-ENCEPHALOGRAPHIC CHANGES IN MIGRAINE

REVIEW OF 51 CASES

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We have reason to expect electro-encephalograms (E.E.G.) to show a persistent generalised dysrhythmia more often in migrainous than in normal subjects for migraine and epilepsy are genetically associated. Ulrich (1912) found a family history of epilepsy in 20% of 500 cases of migraine. Turner (1907) found the smaller but still significant proportion of 4·3%. Conversely, Cobb (1932) found that 4·3% of 1086 epileptics had migraine, compared with 1·5% of 250 normal controls. Many other workers have demonstrated a similar relationship.

The E.E.G. data on this point vary considerably. Reviews of the clinical use of E.E.G. (Williams 1945, Gibbs and Lennox 1944) do not refer to migraine. Gibbs et al. (1937) mentioned 2 cases in which "significant changes in E.E.G." were recorded after intravenous ergotamine tartrate, but gave no further details. Strauss and Selinsky (1941) found abnormal records between attacks in 4 of 20 cases, but 2 of the 4 patients were also epileptic. No change was found in "resting" records taken during migraine. But in 5 cases with normal records overbreathing produced generalised abnormal slow-wave activity only during migraine. In 2 of these ergotamine tartrate abolished both the headache and the abnormal response to overbreathing. Harty et al. (1942) found 11% of abnormal E.E.G. in U.S. Army recruits with recurrent headaches but without neurological signs. Solomon et al. (1943) found that 14 out of 40 cases of migraine examined in the U.S. Navy gave abnormal E.E.G., but they did not specify the abnormality.

These findings are chiefly concerned with single records made on subjects at times not specifically related to the migraine, and they suggest little of diagnostic value. However, Engel et al. (1944) found that in decompression sickness (caisson disease) visual scotomata sometimes preceded a unilateral headache. In these cases a focal E.E.G. abnormality in the occipital cortex was found only during the period of scotoma and early headache.

Following this up, Engel et al. (1945) made observations on 3 subjects with clinical migraine in whom an aura of homonymous hemianopia was followed by contralateral hemicrania. They found a similar transient focus of slow-wave abnormality in the occipital region. This happened only when the hemianopia was present, and the record was normal both during the headache and between attacks.

This suggests that the value of the E.E.G. in the investigation of migraine may be increased if repeated records are taken during various phases of the attack. It is also interesting in view of the widely accepted theory of the vasomotor origin of migraine, according to which a prodromal vasoconstriction of cerebral arteries causes such phenomena as defects in the visual field, dysphasia, and other local motor or sensory abnormalities; and a subsequent excessive vasodilatation causes the actual headache (Schumacher and Wolff 1941).

This view is supported by the therapeutic effect of vasoconstrictor drugs (O'Sullivan 1936). It seems likely that a vasoconstriction causing sufficient cerebral dysfunction to produce focal neurological signs would change the electrical activity of the cortex, whereas a simple vascular distension would be less likely to do The results of Engel et al. (1944, 1945) suggest that is the case. The observations cited, however, appe to be inconclusive, and suggested to us that furth investigation might be profitable.

SELECTION OF CASES

The term "migraine" is sometimes extended to co almost any recurrent headache or conditions w subsequent history may establish a progressive struct lesion as the basis of the symptoms. For this we have limited our inquiry to 51 cases of recu headache beginning before the age of 25, sho no irreversible neurological change over a pe of 3 years, and having also at least 3 of the follo 5 features:

(1) *A family history of similar benign headache.*

(2) A pre-headache phase (aura) of transient visual change, dysphasia, paræsthesiæ or weakness of monople hemiplegic distribution, or "psychic" changes of a ste typed pattern for any given case.

(3) Hemicranial distribution at some stage in its cour

(4) Amelioration by vasoconstrictor drugs or by mech occlusion of the common carotid or its branches.

(5) Association with nausea or vomiting.

TABLE I—TRANSIENT ABNORMALITIES OF E.E.G. IN MIGRAIN SUBJECTS

Case no.	Resting record	Record during aura or headache
1	Bifrontal 8 c.p.s. episodes	More conspicuous 8 c.p. episodes
2	Bifrontal 6–8 c.p.s. episodes	Exaggerated
3	Bilateral 8 c.p.s. episodes	Exaggerated
4	Inconstant asymmetrical record	No change
6	Normal record at 12 c.p.s.	Generalised 10 c.p.s. wav
8	Bifrontal 5–6 c.p.s. episodes	Exaggerated
10	Generalised dysrhythmia	No change
11	Generalised dysrhythmia	Exaggerated
12	Normal record	No change
13	Normal record	No change

This arbitrary limitation is designed especially t exclude cases of progressive intracranial disease wit "migraine" as an early symptom. Nevertheless, i view of the vasomotor background of migraine, som cases of vascular malformation or intracranial neopla may be included, for they may cause a sequence o vasoconstriction and overdilatation; just as the may for years show, as their only manifestation, epilepti attacks which are regarded as idiopathic (Penfield an Evans 1935).

AIMS AND METHOD

Information was sought on three points: (1) th incidence of generalised persistent dysrhythmia, of th type seen in epileptic stock, compared with that in th normal population; (2) the possibility of discovering transient focal abnormality during the aura of an attack and of correlating its localisation with the symptoms o signs; and (3) the possibility of discovering a persisten focal abnormality, which would suggest that the migrain was only a symptom of progressive intracranial diseas and might aid its early diagnosis.

A Grass E.E.G. machine was used with a 3-channe ink recording system. Three routine positions wer used in all cases: right and left frontal, parietal, an occipital leads, and transverse temporoparietal lead In cases where these records indicated it, further lead relation to any focus of abnormality, were used. al leads were also used in searching for focal lity in relation to the aura of an attack. Criteria rmality were those agreed to by the Electro-alographic Society (Williams 1941).

FINDINGS

e of Persistent Dysrhythmia

e 51 cases (aged 14–56), 30 had persistently al records. This is significantly higher than the ed 10–15% of abnormality found in a normal ation—i.e., those with no personal or family history igraine, epilepsy, or other neurological disease is 1942, Gibbs et al. 1942, Hill and Watterson 1942). ese 30, 14 had generalised non-specific dysrhythmia, ad bilateral symmetrical episodic activity at 6–10 es per sec. (c.p.s.), and 4 had localised unilateral abnormality. These were all present in repeated records taken between attacks. No less than 21 of the 30 had a positive family history of migraine.

Records were also taken of 36 relations, aged 11–57, of the migrainous subjects. Generalised dysrhythmia was found in 15. But of these, 6 had a history of migraine or of epilepsy. Excluding these, the incidence of dysrhythmia was still 9 out of 27 subjects with no personal history of migraine or epilepsy, compared with an expected incidence of 4 out of 27 normal subjects.

Transient Abnormality

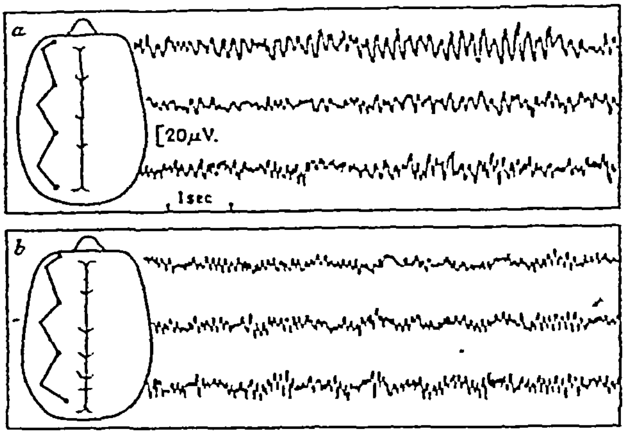
Records were obtained in 13 cases during an attack: in 10 during the aura or at the onset of headache, and in 8 when the headache was fully developed. The findings in the first group are summarised in table I.

The accompanying figure shows the E.E.G. records during the aura and during the headache in case 8. The increase of 5–6 c.p.s. waves is well shown.

The case was that of a male student, aged 22, who had had recurrent headaches since the age of 11 years. These were left frontotemporal in distribution, always associated with nausea and usually with vomiting. Since the age of 15, and possibly earlier, they were preceded by an aura. He would wake in the morning feeling extremely cheerful and on top of the world. This would be reflected also in his behaviour, which would be unusually boisterous and uninhibited. About 11 A.M. his headache would start and gradually increase in intensity, and in 2 or 3 hours he would feel so wretched that he would, if possible, retire to bed. Nausea and vomiting came on at this stage.

Ergotamine taken early in the headache would abort the attack. When he had learnt to recognise the aura, the drug taken late in this would usually, but not always, prevent the attack.

There were no abnormal physical signs and his past health was otherwise good. His father had migraine and asthma.



Electro-encephalographic record of case 8: (a) at aura stage with onset of slight headache; (b) during severe headache.

TABLE II—RELATION OF TYPE OF AURA TO TYPE OF E.E.G. ABNORMALITY

Case no.	Type of aura	E.E.G. between attacks	E.E.G. during aura or early headache
1	Right homonymous hemianopia	Bifrontal 8 c.p.s. episodes	Exaggerated
4	Teichopsia	Variable generalised asymmetry	No change
5	Left homonymous hemianopia	Generalised dysrhythmia	No change
6	Left homonymous hemianopia	Normal record, 12 c.p.s. waves	Generalised 10 c.p.s. waves
7	Scotoma or hemianopia	Normal record	Not done
11	Teichopsia	Generalised dysrhythmia	Exaggerated 6 c.p.s. activity
2	"Feels queer and off colour"	Bifrontal 6–8 c.p.s. episodes	Exaggerated
8	Euphoria and elation	Bifrontal 5–6 c.p.s. episodes	Exaggerated

In the 8 cases in which the E.E.G. was made during the headache the records were indistinguishable from resting records.

In 8 of the 13 cases an aura preceded their attacks. The relation between type of aura and E.E.G. abnormality both between and during attacks is shown in table II.

None of the 6 cases with visual aura showed focal abnormality either during the aura or between attacks; 2 cases with a "psychic" aura showed an exaggeration of a frontal episodic abnormality. It is tempting to link the locality of the abnormality with the type of aura; but this is unjustified, because the same localisation of abnormal waves was found in a case with a visual aura.

Persistent Focal Abnormality

In 4 cases there was a persistent focal abnormality: 1 in the right frontal, 1 in the left parietal, and 2 in the left occipitoparietal regions. All 4 showed transient focal neurological signs associated with their headaches. Ventriculography, done in 3 of these, revealed no abnormality. All 4 showed no sign of a progressive lesion at follow-up 2 or 3 years after first being seen and 7–33 years since the onset of their symptoms.

DISCUSSION

The incidence of generalised dysrhythmia is high in the E.E.G. records both of migrainous subjects and of their relations. This fact confirms the considerable evidence for the constitutional basis of migraine.

A transient focal abnormality during the aura, as observed by Engel et al. (1945), was not found in the present cases, but exaggeration of a previous abnormality was seen in some cases at the time of the aura. The changes noted by Engel et al. disappeared rapidly when the visual symptoms cleared. The fact that our records of cases with visual aura were taken when this was receding may explain the difference.

The exaggeration of a previous abnormality is compatible with a vascular basis for migraine, and is in keeping with the observations of Darrow and Graf (1945) that abnormal high-voltage activity can be induced in the cortex of cats by producing cerebral vasoconstriction.

Further support for this theory was afforded by our observations on the E.E.G. changes following the injection of ergotamine tartrate. In 5 cases intravenous ergotamine tartrate 0·5 mg. was given, and records were obtained before and within 5 min. of the injection. In 2 cases the resting records were normal, and there was no change after the ergotamine. In 3 cases general or local abnormality was shown by the resting records, and in all of these the dysrhythmia was increased by ergotamine. In 1 case with localised dysrhythmia a gradual increase in amplitude was seen, with spread of the abnormality to the opposite cortex, with the result that large 6 c.p.s. waves were present bilaterally. In the first 2 cases the headache was not relieved by ergotamine, whereas in the last 3 it was.

These results suggest that a series of readings made throughout the whole migraine cycle is desirable, but the crucial period is that of the aura rather than the headache.

Persistent focal abnormality does not appear to be of much diagnostic value in these cases. Such a finding at a site corresponding to the neurological manifestations of an attack does not necessarily indicate a focus of progressive intracranial disease.

Conversely, where migraine may be a symptom of organic brain disease, normal records can give a false sense of security.

In one case, not in the present series, a patient with migraine of many years' standing began to develop persistent neurological signs between attacks. An E.E.G. taken at this time showed only a generalised cortical dysrhythmia. Some three months later he was admitted to hospital, as his signs appeared to be progressing. The E.E.G. now showed a focus of increased abnormality in the right temporal region, and at operation an astrocytoma was found in the frontotemporal field.

Nevertheless, the routine use of the E.E.G. in investigating these cases is always advisable, for a small focal lesion may be clearly demonstrated in some instances.

It therefore appears worth while to make E.E.G. studies in all cases of migraine, for accumulation of such records will help us to understand constitutional dysrhythmias. If correctly timed, they may also help to correlate clinical findings with cerebral localisation.

SUMMARY

Of 51 cases of migraine studied by electro-encephalography abnormalities were found in 30: generalised dysrhythmia in 14; symmetrical bilateral episodic activity in 12; and a persistent focal abnormality in 4.

Exaggeration of a previous abnormality was noted only at the period of aura or early headache in 5 of 8 cases, and after ergotamine tartrate in 3 of 5 cases.

The transient focal abnormality found by Engel et al. (1945) was not observed.

The value of E.E.G.'s in migraine is discussed, and it is emphasised that the time in the migraine cycle at which records are taken is important.

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TECHNIQUE OF LARYNGEAL ANÆSTHES

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ANÆSTHETISING the larynx with cocaine or one of substitutes is, or should be, an integral part of laryn intubation and of bronchoscopy.

The usual ways of doing this are all open to s criticism. The difficulty lies in depositing the solu where it is required—on the inaccessible larynx trachea. One technique accomplishes this by bo squirting 2 or 3 c.cm. from a syringe through the mo on to the posterior pharyngeal wall; after which anæsthetist side-steps smartly out of the line of patient's mouth and relies on the violent gagging coughing to spread the liquid throughout the phar and larynx. On the whole the procedure works, bu is unpleasant and unsightly.

With *the type of spray in common use the liqu* atomised almost entirely in the form of large dropl This would be of little importance were it not for fact that the pathway from the nozzle to the lar is not a direct line. The trouble, in practice, is that larger and therefore heavier droplets continue in the in which they are propelled from the spray, and adl to any structure on which they impinge. Thus greater part of the solution is deposited on ton posterior pharyngeal wall, and turbinates, and only very light droplets are carried by the air current thro the irregular upper respiratory passages to the lary only a small proportion of the atomised liquid there is effective.

With the advice and technical help of Dr. H. Epstein I set out to find an easy means of anæstheti the air passages, particularly the larynx. Firs Collison's inhaler was tried. Solutions of cocaine to 50% were placed in the glass bulb and nebulised passing 8 litres of oxygen a minute through it. "fog" was delivered through the standard face-p to a patient under light general anæsthesia. E after 5 min. only 0·25 c.cm. was nebulised. There no evidence of the larynx being anæsthetised. particles from such an inhaler are so small that onl minute fraction are deposited en route; practically pass into the bronchial tree, just as they do when penic solutions are used in the inhaler.

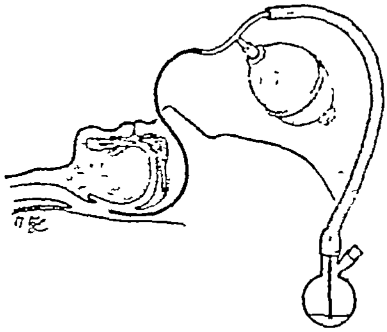
Later the Drager, 'Rybar,' and 'Deedon' inha were tried, but the same situation was encounter large droplets adhered to the many structures met before the larynx was reached, while the very s droplets were carried deep into the bronchial tree. larynx became anæsthetised eventually, but at expense of as much solution as when the more sin sprays are used.

A small experiment shows that the large droplets f a spray adhere on impact, and explains why a spray f one of the common devices, through the nose or mo is inefficient in anæsthetising the larynx. Hold a rul tube straight and blow a spray into one end; the sp comes out of the other end practically unchanged. curve the tube slightly, and repeat the experim Only a small proportion of the solution, in the form finer droplets, comes through as a spray; larger drop condense in the tube, and liquid dribbles out of the di end. The more the tube is curved the greater the fil ing action it exerts. In clinical practice it is true t if the bulb is squeezed on inspiration, some medi sized droplets are carried to the larynx, but these f only a small part of the total volume of liq atomised.

o far as I can trace, the first to attempt to overcome se difficulties was Rowbotham (1945). In 1937 he made ng, curved, fine, but rigid metal spray, designed so t when introduced through the nose of the unconscious ient the tip of the nozzle could be directed at the ynx. Used with understanding the spray is strikingly cessful in a large proportion of cases, but perhaps s qualification is enough to prevent its widespread ption.

In 1945 Harang described a method which involved patient's cooperation and, at the same time, is bject to some of the other disadvantages I have scribed.

In 1945 Kenton made a big advance by describing long malleable tube through the distal end of which spray could be made to issue. The technique he scribes gives excellent results, but in our hands is casionally disappointing. Kenton advocates that, ter light general anæsthesia has been induced, a nasoharyngeal airway—i.e., shortened endotracheal tube—ould be passed through the nose. He then introduces is specially designed tube through this outer tube and rays the larynx from close quarters. We found that e outer tube occasionally caused nasal bleeding; and, the nares were narrow, the outer tube became firmly ipped, making it difficult to control the direction in hich the tip pointed. Unless care is taken to hold the glass container low, the solution quickly siphons from it into the pharynx. Moreover, the technique is hardly suitable for a conscious patient on whom, for example, a bronchoscopy is to be done.



The soft rubber tube of the atomiser I use is identical with Magill's endotracheal tube for infants, size 00, with a nozzle on the end. It is passed directly and easily through the nares. After passing the soft palate the tip is directed by the natural curve of the tube towards the glottis, which can thus be sprayed readily. When this has been done an endotracheal tube can be passed readily through nose or mouth either blindly or by direct vision. To prevent siphoning, the glass container of the spray hangs lower than the nozzle; and, since the glass container always hangs downwards, the spray can be held in any position.

Technique.—I use a weaker solution of cocaine than that generally advocated. Analgesia from a 3–4% solution is slightly slower in onset and shorter in duration than from the 10–20% solutions commonly used, but otherwise is equally effective. 1 c.cm. of 10% cocaine is placed in the container, and 2 c.cm. of tap water is added. I usually use the lot—100 mg. of cocaine hydrochloride. If the patient is to remain conscious, the nose is sprayed and the nozzle advanced as the mucosa becomes insensitive. More commonly the patient is given 'Pentothal' and the lubricated tube is passed about 5 in. through the nose. The bulb is compressed, and a fine spray spreads over the larynx and pharynx. The position of the nozzle is varied by pushing in or pulling out the tube slightly. A cough or interruption of the patient's regular breathing is a sure sign that the spray has found its target. After 2 min. analgesia is perfect.

If bronchoscopy is to be performed, the nozzle is directed through the cocainised larynx well down into the trachea. The bulb is squeezed on inspiration to ensure that the inspiratory air stream carries the spray at least as far as the carina.

Using this technique, members of this department have sprayed themselves and passed endotracheal tubes blindly on themselves without any difficulty.

I am indebted to Mr. H. G. Epstein, PH.D., and Mr. R. Salt, who, over a long period, have made up for me various models until the present one was evolved.

The spray can be obtained from the Longworth Scientific Instrument Co. Ltd., of Longworth Road, Oxford.

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Preliminary Communication

AN EARLY SIGN IN SPRUE

THE SPLIT : UNSPLIT FAT RATIO IN THE FÆCES

DURING 1944 thirty-six cases of sprue syndrome were collected at Karachi. Thirty were early cases, eighteen of these developing at Karachi within three months of their arrival in India, and the remaining six were chronic cases evacuated from Iraq. Any sign which would help to distinguish sprue from the other numerous forms of bowel disease was very welcome, and such a sign was found in the alteration of the ratio between the split and unsplit fat in the fæces.

As happens in early cases of sprue, the total percentage of fæcal fat was often within normal limits, but at this stage a significant rise in the split : unsplit fat ratio could usually be demonstrated, particularly if the patient was put on a fat-free diet.

Of eleven cases on a full diet of 110 g. of fat daily, four had a total fæcal fat below 35%, but in only one was the split : unsplit fat ratio also within normal limits. In eighteen others, tested on a low-fat diet containing 16 g. of fat daily, for which the normal was a total fæcal fat of up to 20% with a split : unsplit ratio of 3 : 1, there were ten with total fæcal fats below 20%, and of these only two had a normal ratio; in the remaining eight, with fæcal fat above 20%, the ratio was greatly increased in every instance. Thus the ratio was found to be increased in eleven of the fourteen doubtful cases.

The milder cases responded to treatment with 150 mg. of nicotinic acid daily and a low-fat diet of 16 g. of fat; in chronic cases liver therapy was also introduced. During recovery, the total fæcal fat often returned to within normal limits quite rapidly, but the fats ratio lagged behind by one or two months. This lag was a useful indication of incomplete recovery; the two relapses which occurred heralded their arrival by an increase in an already raised split : unsplit fat ratio, the total fats being normal. A temporary rise also was often noticed when a convalescent patient was changed from a low-fat to a full diet, giving warning that recovery was not absolute.

It is not suggested that a raised split : unsplit fat ratio is an infallible test for sprue, but that it is a helpful sign in early or doubtful cases. Since there is a lag in the return of this ratio to normal, it can be used to determine the end-point of the episode.

Ashford County Hospital,
Middlesex.

C. A. HINDS HOWELL
M.A., D.M Oxfd, M.R.C.P.

Lieut.-Colonel Perin Mullaferoze, F.R.C.S., has been appointed O.B.E. in recognition of her services in the Netherlands East Indies.

Reviews of Books

Medical Disorders of the Locomotor System

Ernest Fletcher, m.d. Camb., m.r.c.p., physician to the arthritis clinic and lecturer on rheumatic diseases, Royal Free Hospital, London. Edinburgh: E. & S. Livingstone. 1947. Pp. 625. 45s.

The practice of a clinical specialty must be justified in the first instance by the benefit to the patient of professional advice based on a more extensive knowledge and experience of a particular disease or group of diseases than can be offered by the general practitioner. The specialties which are likely to endure have grown slowly and naturally out of general medicine and surgery, and it is incumbent on those who practise them to seize the many opportunities which come their way for the scientific study of the diseases they treat, and not to be content merely with the routine application of some complicated but empirical therapeutic procedure.

Orthopædic surgery has long been accepted as a legitimate specialty. In this book Dr. Fletcher and his collaborators show that the anatomy, physiology, and pathology of the locomotor system can make a satisfactory basis for specialised medical as well as surgical practice. They seek to include in this field much more than what are commonly termed the rheumatic diseases, and in their approach to it combine to maintain the broader outlook of the general physician rather than the narrower view of the specialist in physical medicine. They advocate in fact orthopædic medicine as a specialty comparable with orthopædic surgery.

Following the opening chapters on clinical examination and joint pathology there is a well-illustrated account of the applied anatomy of the locomotor system by Prof. G. A. G. Mitchell. In a special chapter on the incidence and prevalence of adult rheumatism, Mr. E. Lewis-Faning, ph.d., shows how inadequate are the existing morbidity data and how difficult it will be to improve them. The relation of focal infection to locomotor disorders, and the assistance which can be offered by the pathologist and the radiologist in their diagnosis, are dealt with at some length by special contributors. Dr. Fletcher uses with advantage a practical clinical approach in his chapters on arthritis, sciatica, and the various cervicobrachial syndromes. Dr. W. S. C. Copeman contributes a useful section on fibrositis, and Dr. Donald Hunter a short but comprehensive account of the medical diseases of bone. The book concludes with a short chapter on physical therapy.

It seems likely that the chronic rheumatic diseases will have more attention under the new health service, and physicians intending to specialise in this field will find in this symposium a comprehensive review of current theory and practice as well as an extensive bibliography which will suggest further reading.

Municipal Health Services

Norman Wilson, m.a., d.p.a., lecturer in public administration, University of Liverpool. London: Allen & Unwin. 1947. Pp. 178. 7s. 6d.

Mr. Wilson has had many years' practical experience of the work of health departments, the results of which are obvious throughout this volume. Although it was written before precise details of the National Health Service Act were available, its essential value is not affected and it will be invaluable to social workers, members of local authorities and regional hospital boards, and a wide circle of medical readers interested in the administrative aspects of the new service. Existing services, and the powers on which they are based, with particular reference to those of the all-purpose authority, are described with clarity. The provision of poor-law medical services and of school medical services by separate committees leads to a thoughtful disquisition on integration, incidentally apposite to the new structure. The duties of the m.o.h. and his numerous specialist medical colleagues, the functions of the Ministry of Health, the advantages and disadvantages of joint boards, and the need for large health units with sufficient financial resources are well handled.

Ancient Anodynes

E. S. Ellis, m.r.c.s. London: W. Heinemann. 1[illegible] Pp. 187. 21s.

Dr. Ellis's survey of the history of all forms of [illegible]thesia from primitive up to recent times has evide[illegible] been a labour of love. He has avoided the dange[illegible] writing an encyclopædia of names and dates, and [illegible] enriched his account with many apposite quotati[illegible] professional and lay. Man from his earliest days [illegible] sought to escape pain, and roughly speaking the anod[illegible] devised fall into two classes—those which stimulate [illegible] excite, and those producing anæsthesia. To these [illegible] be added anæsthesia resulting from hypnosis, [illegible] similar psychological methods. Dr. Ellis reviews [illegible] all, with plenty of telling incidents. He might per[illegible] have given fuller details of the use of anæsthesi[illegible] ancient Greece, scene of the first civilisation in Euro[illegible]

Dynamic Aspects of Biochemistry

Ernest Baldwin, b.a., ph.d., university lectur[illegible] biochemistry, Cambridge. London: Cambridge Un[illegible]sity Press. 1947. Pp. 457. 21s.

Biochemistry is concerned with (1) the nature of the constituents of living matter, and (2) the chemical reactions which take place therein. Confining himself to the latter, Dr. Baldwin has written a book which was badly needed and will be widely welcomed by students, teachers, research-workers, and those who wish to keep in touch with modern conceptions of metabolic processes. Developing the book from his biochemistry lectures for part I of the natural sciences tripos at Cambridge, he begins with a systematic survey of enzymes, and goes on to treat metabolism from the viewpoint of enzyme biochemistry. The time is indeed ripe for such an essay; the present understanding of the fermentation process and of the tricarboxylic acid cycle of carbohydrate oxidation, the new concept of the energy-rich phosphate bond, and the new knowledge won by the use of isotopes *make it possible to tell a coherent story of the* processes of carbohydrate, fat, and protein metabolism and their interrelations. The many tables, the novel method of depicting enzyme reaction sequences by what the author calls "whirligigs," and the unusually good index add to the quality of the book.

Psychiatric Interviews with Children

Editor: Helen Leland Witmer. New York: The Commonwealth Fund. London: Oxford University Press. *1946. Pp. 443. 25s. 6d.*

Here is a good idea. Everybody would like to know, and the beginner in psychotherapy needs to know, what goes on between the expert and his patient. As it is difficult, if not impossible, to listen in, the next best thing is to read what the psychiatrist said, with explanations, such as these authors kindly provide, of why he said it. The trouble about this book is that it makes it all seem much too easy. The patients shed their problems after a little conversation which, but for the footnotes, might be thought to be casual. That so brief a form of therapy should be successful suggests that the methods of selection and the type of case are not the same in the United States as here. The impression is that the cases were less severe than those considered to be "treatment cases" in our clinics. We need not doubt that the simple case responds to simple methods, nor question the wisdom of providing services so lavish that simple cases can receive attention; but a second volume would be welcome to let us into the secrets of treatment of the long, intricate, and "sticky" case.

Textbook of Surgical Treatment (3rd ed. Edinburgh: *E. & S. Livingstone. 1947. Pp. 644. 32s. 6d.).*—Prof. C. F. W. Illingworth and his 21 collaborators have brought this well-known and well-balanced textbook up to date. The chapter on wounds and their infections has been rewritten, and there are new sections on penicillin in surgery, faciomaxillary injuries, plastic surgery, and reablement. Among new *material scattered through the text are accounts of the* Rh factor, the use of protein in surgery, and the anticoagulant treatment of thrombosis. Some 60 new illustrations have been added.

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THE LANCET

LONDON: SATURDAY, JULY 12, 1947

Boards and Management Committees

THE appointment of the regional hospital boards ings us face to face with some of the implications the National Health Service. The interval since the iscussions in Parliament has revealed a pretty general nsensus of opinion that the hospital part of the ct is on the whole well designed, and that it is at ast much better than the alternative proposals of e Coalition Government. The fiction so long throned at Whitehall that local-government machin-y alone provided the means by which a health rvice could be run is now happily dead, and it is sy to detect a widespread relief strongly tinged with al optimism for the future.

A year ago attention was concentrated on the need r three things—good regional machinery, sufficient dependence for the hospitals and their management ommittees, and a financial system which would avoid he strangling effects of Treasury control. To take he last point first, there is now solid ground for elieving that the need for global budgets rather than temised control is fully appreciated by the Ministry f Health, and that it has been or will shortly be ccepted by the Treasury. The future alone can show ow far the method can be carried in practice. The mendments made in Parliament enabling hospitals o accept funds from other sources will be a significant afeguard. A double system whereby the main urden falls upon the Exchequer and oppor-unity is yet left for voluntary effort to play its art promises to preserve the best traditions of the ast.

What of the regional boards and the hospital anagement committees ? Many have been wondering ately whether the boards can carry the loads assigned hem. More mature consideration than was possible last year suggests that the task imposed on the individual who accepts membership may prove so exacting as to deter the capable and energetic man or woman with numerous other interests. Frequent meetings at regional headquarters which may be far from home ; many subcommittees, even if full use is made of coöpted personnel ; a heavy dose of agenda papers and reports to be absorbed—may not this burden prove too much on a purely voluntary unpaid basis ? May it not lead to congestion and delay, and throw too much upon the officials ? This is certainly one of the major sources of anxiety. Another touches the hospital management committees. Granted a reasonable measure of independence, will the larger units of the future enlist the same degree of local interest and enthusiasm as the units of today ? Will it in fact be possible—and the answer can only be guessed by thinking of individual cases—to secure in a group of hospitals a sense of pride and ownership equal to that which now surrounds almost every voluntary hospital ? These are genuine anxieties which ought not to be dismissed as indicating a premature defeatism ; and two or three suggestions may be offered.

In the first place, it is well to remember that the conception of the regional board is founded upon the experience of voluntary bodies of an advisory rather than an executive character. It was the experience of the regional councils sponsored by the Nuffield Trust, and the analogy of bodies such as the King's Fund in the metropolitan area, that furnished the background upon which the Ministry worked in drafting the Act. Once the decision to accept the regional principle and to give the boards executive functions had been taken, the question arose whether to proceed by way of voluntary bodies on the Nuffield model or by way of whole-time or part-time paid personnel—" commissioners " as they were called in one of the earlier tentative reports. The latter would have been small, mainly expert, bodies composed of men of the type who prepared the surveys. Such men would have had time to make themselves masters of their subject, and to know their regions from A to Z. The fact that the Ministry chose the former alternative is not surprising, nor need it be a ground for criticism ; but it was perhaps a pity that a decision had to be taken before the full implications could be seen. What now seems important is that some compromise with the latter principle of expert personnel on a paid basis should not be ruled out of account simply because it is not suggested in the Act. If it appears, in say six months' time, that the regional boards as now constituted are snowed under by the mass of work falling on them and on their executive staff, can the Minister still perhaps come to their rescue by appointing on a paid basis but as full responsible members of the boards a few of the survey officers and others equally well fitted to provide a hard core of strong personnel in the region ? The possibility should be kept in mind even if legislation were required, for it begins to look already as if something of the kind might make just the difference between success and failure.

Secondly, there is the anxiety noted above about the size of the units to be controlled by the hospital management committees. It is true that no rigid rule as regards size is laid down in the Act, but it is generally expected that the regional boards will follow broadly the indications in the surveys which point to something like a thousand beds as the average unit. Such a unit, it has been repeatedly argued, is necessary if the full range of service is to be provided. Here surely it is advisable to pause and remind ourselves that at the time the surveys were carried out the regional conception existed only in embryo : may it not be that much of the coördination of development of hospitals, of medical staff, and of inter-hospital services could now equally well be achieved through regional control in these matters ? The conception of grouping into thousand-bed units represents an earlier approach to the problem of coördination, and the more recent regional idea has been superimposed on it—with the result that the machinery for coördination is in danger of becoming top-heavy. Given regional control on the points that matter, it should be possible to approach the problem with a much more open mind, and to allow more weight to the need to keep the function of management essentially local. Service on the management committee of the hospital in one's own town or immediate district is quite a different thing from service on the management committee which meets at the larger hospital ten miles away. There are innumerable instances, where the grouping of several hospitals under one management is foreshadowed in the surveys, which could with advantage be reviewed from this angle. Regional control makes it reasonable to allow more latitude in granting management-committee status than could possibly have commended itself to the surveyors three or four years ago in the absence of an alternative means of achieving coördination. Some official recognition of this fact by way of guidance to the regional boards would go far to allay widely prevalent disquiet.

There is another thing which we can see more clearly now than was possible a year ago. In their desire to secure a proper chain of authority from the Minister downwards, the draftsmen of the Act provided that the regional boards should be appointed by the Minister, and the hospital management committees by the regional boards. This is intelligible and logical. It may be workable at regional level; but when it comes to the hospital management committees it is going to be very difficult to choose the right people. Lacking, as they often must, intimate personal knowledge of the people concerned, the regional boards will be guided partly by paper qualifications and partly by hearsay or recommendations which come in from other bodies. Someone says that so-and-so would be a good member; it sounds probable; so we will appoint him or her. Is this method going to work as well as the older method of the voluntary hospitals, which has usually amounted in practice to a form of coöption? The older method is open to criticism and to occasional abuse, but in the main it has worked pretty well. Its chief weakness is a tendency for people to hang on to office too long—a weakness which the regional board can well control. The method of appointment from above is equally open to criticism and to occasional abuse, and on the whole committees appointed on these lines have certainly not shown themselves decisively superior; in fact they have often failed to develop a corporate personality. Is not some compromise needed to make the best of both worlds? Let the regional boards name a nucleus for each hospital management committee, but having done so let them *trust those they* have chosen and leave them to submit the names of the rest of the committee. In this way a real team can be built up, and the regional board can at the same time assure itself of control amply sufficient to safeguard the chain of responsibility required by the structure of the Act.

The Act must after all be regarded as a compromise between the principle of ministerial responsibility on the one hand and reliance upon voluntary service on the other. Having discarded reliance on local-government machinery, the Act relies on the element of voluntary service to supply the energy and initiative without which the whole machine will tend to run down. It is not too much to ask that at the point where this initiative is most essential—at the management-committee level—the principle of ministerial responsibility should yield a little ground. The old idea of coöption has in this country a good ancestry by no means confined to the voluntary hospitals of the last 200 years; it holds good in varying degrees for universities and schools and city companies, and voluntary allegiance to a unit which does not possess this privilege of adding to its own numbers comes near to being a contradiction in terms. It would be well, therefore, not to press too hard here the power of appointment vested in the regional board, and to recognise that in practice whenever there is no strong case to the contrary the choice of its personnel should rest with the hospital management committee itself.

Filthy Rivers

THE progressive pollution of *our rivers is* an evil which Parliament will have a chance to check when the Rivers Boards Bill, embodying the recommendations of the Central Advisory Water Committee, is at last introduced. The Rivers Pollution Prevention Act of 1876 largely failed of its purpose because the Minister of Health, the authority who decides what constitutes pollution, must be satisfied that there are practicable means of rendering an effluent harmless and that these means will not inflict material injury upon the industry concerned. Section 8 of the Salmon and Freshwater Fisheries Act of 1923 authorises proceedings against any person who knowingly permits to be discharged into waters containing fish any matter to such an extent as to be injurious to fish or to the food of fish. The proceedings can be taken by a fishery board or by any person who obtains a certificate from the Ministry of Agriculture and Fisheries stating that he has a material interest in the affected waters. But fishery boards have not been rich enough to afford costly legal proceedings. Moreover, where there is pollution from several sources—as, for instance, at Tynemouth—it is scarcely possible to prove that injury to fish is due to any one pollution. At Tynemouth, where the entirely untreated sewage of Newcastle and Gateshead and other large towns turns some 30 million gallons of filth into the tidal reaches per day—a mass which cannot get away to sea in a single tide but must move up and down the estuary for several tides before it is cleared—the tidal water is not a "stream" within the meaning of the Act.

Facts of this nature are brought out in a pamphlet entitled "Pollution" which the British Field Sports Society has just published. It contains a study by Mr. H. D. TURING (formerly angling editor of the *Field*) of the condition of the Trent, Tyne, Eden, Ribble, Lune, Wyre, and Severn, and a report by Mr. G. M. KING (of the Dee Fishery Board) upon the Welsh Dee. These statements, in non-technical language, may help to educate the public and the legislature. It is the appalling truth that the treated effluents from sewage and industrial works, when reasonable measures have been taken to prevent pollution, are turned into streams less pure than the ffluents. Even the present inadequate statutory provisions can work good results if only the law is nforced. The industrial revolution of the 19th entury ruined the Ribble. The salmon catch, from ods and nets in the river, was 15,000 fish in 1867. In ten years it dropped to 6000; in 1887 it was 2400; n 1897 it was 528 (sea-trout as well as salmon); in 1914 it was 280. Money paid as compensation under ocal Acts became available about 1930 for taking proceedings for breach of anti-pollution statutes. In 1931 the stock of salmon in the river was estimated 556 fish; in 1941 it had risen to 3263.

The pamphlet is mainly interested to show how ngling has suffered. But the story is not merely ne of oxygen deficiency in rivers. A 1945 report by fishery board on the state of the Lune has some rim hints of poisoned fish sold locally by unauthorised nders. The coast-line from Liverpool to Barrow, erhaps 150 miles in length, receives about 200,000 allons of crude sewage every mile every 24 hours, or bout 40 large buckets full every yard daily. "This," emarked the report, "is the cesspool that thousands f people bathe in during the hot summer months nd this is where our shrimps and prawns live and eed."

Intravenous Iron

When Pierre Blaud compounded his famous pill, 116 years ago, he used equal parts of potassium carbonate and ferrous sulphate, and the recommended dose yielded gr. 6–24 of ferrous carbonate daily. Unfortunately official "improvements" were less effective and the doses recommended were too small, so iron treatment suffered a partial eclipse The modern use of larger doses than were in vogue even 20 years ago has a solid basis of quantitative research. It is known that 5–8 mg. of iron is needed daily to keep a man in iron equilibrium. Leverton and Roberts[1] pointed out that women up to the menopause need twice to four times as much as men, especially during pregnancy when the daily iron requirement is 20 mg. or more. Young children need about 0·6 mg. per kg. body-weight. A recent survey by Bransby and Magee[2] shows that even the post-war British diet provides about 11 mg. of iron a day for adults, which is enough for men but not enough for women. The pre-war diet was probably adequate in iron except during pregnancy, when the intake was very often insufficient. It is not surprising, therefore, that microcytic iron-deficiency anæmia is common in this country.

The figures on which estimates of the amount of iron, and the dosage of iron preparations, required for the treatment of anæmia are based have been summarised by Goodman and Gilman.[3] An adult with 100% hæmoglobin has about 150 g. of circulating hæmoglobin containing 2·5 g. of iron; so that for each 1% hæmoglobin deficiency we must get into the body 25 mg. of iron. Now iron preparations given by mouth are only partially utilised, the proportion depending on the type of preparation and the dose. The best preparations are ferrous salts, about 15% of ferrous sulphate being utilised: the ferric salts are utilised less, and iron in organic combination is hardly utilised at all. The best method of administration is in small divided doses, for raising the individual dose above a certain optimum merely increases the amount excreted in the fæces and so diminishes the proportion utilised. A gramme of anhydrous ferrous sulphate contains 360 mg. of iron, which with 15% utilisation adds about 54 mg. to the circulating iron and so should give a rise of 2% hæmoglobin. Practical experience has shown that no advantage is gained by giving more than 2 g. (gr. 30) of ferrous sulphate daily, and this should produce a hæmoglobin increase of about 4% each day. These figures assume that the rate of utilisation is steady, and that the iron absorbed is quantitatively converted into hæmoglobin. The various workers in England and the U.S.A. who have studied the fate of ingested iron all agree that the amount of iron in the body is regulated by changes in absorption, since there is hardly any excretion of iron once it is absorbed. The amount of iron absorbed from a given dose depends on the state of the body's reserves: if they are depleted, iron is absorbed to make them up: if reserves are adequate, absorption is small. Hahn and colleagues[4] found that in anæmic dogs iron was rapidly absorbed, but in non-anæmic animals absorption was only about 1/70th of that in the anæmic ones. In following the route of the absorbed iron, earlier investigators got irregular results that suggested that a variable though significant proportion of the iron was not converted into hæmoglobin but deposited in the body stores. Recent work with radio-iron has however shown that absorbed iron is almost entirely converted into hæmoglobin within 4 to 7 days after ingestion and very little goes permanently into storage except in the presence of infective disease, when there is increased deposition in liver and spleen.[5]

So, for therapeutic estimates, we are justified in assuming that when we give iron to anæmic patients in optimal doses it will be absorbed according to the percentage utilisation for the particular preparation used and that the iron absorbed will be combined into hæmoglobin. But in patients with iron-deficiency anæmia it is often absorption that is at fault, and even when the anæmia is due to nutritional deficiencies poor absorption of iron may play a part in preventing the expected results being obtained. In some patients with a chronic microcytic anæmia it is very difficult to obtain any response to ingested iron, and it is useless to increase the dose of iron beyond the optimum. The theoretical answer to this problem is to give iron intravenously. Whipple and his co-workers have shown that such iron is almost quantitatively used for forming hæmoglobin. Vannotti,[6] who followed the fate of intravenously injected radio-iron (Fe^{52}) in rabbits, found that it is at first distributed all over the body in the plasma, and a certain amount is excreted by the kidney; during the next 3 days the plasma-iron falls steadily, but only a little iron is transferred to the red cells and most of it finds its way to the liver. The liver gradually releases this iron for combination into hæmoglobin, and from the 10th to the 30th day the amount of radio-iron in the red cells steadily increases, while that in the liver decreases. The iron was shown to be part of the hæmoglobin molecule, and not collected in the stroma of the erythrocytes, by preparing crystalline hæmin that was found to be radio-active. Some of the released iron passes to the bone-marrow, and its passage can be traced by a reappearance of radio-active iron in significant quantities in the plasma. After 30 days radio-iron appears in increased amounts in the bile and can be detected in the spleen; a myoglobin containing radio-iron can also be found; Vannotti considers that these findings are due to hæmolysis of red cells containing radio-iron. Ferrous and ferric irons show somewhat different time-relations in this metabolic sequence up to the 10th day but thereafter it makes no difference what the original dose consisted of. These experiments were done on normal rabbits; in anæmic rabbits the same metabolic sequence occurs, but much more rapidly; iron appears in the liver in a few hours and radio-active hæmoglobin can be detected in 2 to 5 days.

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[1] Leverton, R. M., Roberts, L. J. *J. Nutrit.* 1937, 13, 65.

[2] Bransby, E. R., Magee, H. E. *Brit. med. J.* 1947, i, 525.

[3] Goodman, L., Gilman, A. Pharmacological Basis of Therapeutics, New York, 1941, p. 1110.

[4] Hahn, P. F., Ross, J. F., Bale, W. F., Whipple, G. H. *J. exp. Med.* 1940, 71, 731.

[5] Greenberg, G. R., et al. *J. clin. Invest.* 1947, 26, 114.

[6] Vannotti, A. *Bull. schweiz. Akad. med. Wiss.* 1946, 2, 90.

We can thus be sure that iron injected intravenously into an anæmic patient will appear as hæmoglobin in a few days. But attempts to find an iron preparation suitable for parenteral administration have failed because serious toxic effects appeared long before an adequate amount of iron could be given. We have seen that 25 mg. of iron is needed to produce a rise of 1% in hæmoglobin; the maximal dose of the injectio ferri *B.P.* is 6 mg., so this amount would have to be given daily for nearly three months to produce a rise of 20% in hæmoglobin. Recently Goetsch et al.[7] tried injecting infusions of colloidal ferric hydroxide or ferric oxide intravenously; but although as much as 1 g. of iron could be given in this form, all the subjects suffered from unpleasant reactions during the infusion with nausea and sometimes more severe symptoms coming on an hour or two later. In 3 patients the infusion had to be stopped when only small doses (70–180 mg.) had been given. They concluded that the toxic effects were too severe for this method of treatment to be of practical use. In this issue Dr. Nissim claims that saccharated oxide of iron in a relatively concentrated 1% solution can be given rapidly without such toxic effects; as much as 500 mg. of iron in 50 c.cm. was given intravenously in seven minutes; or it could be given by infusion in the more dilute form of a 0·1% solution of saccharated iron oxide in 5% dextrose. Dextrose solution is used to wash any clinging particles of iron oxide away from the venepuncture site. He finds that a dose of 500 mg. of iron produces the expected rise of about 20% in hæmoglobin.

If these findings are confirmed, the problem of treating the patient who will not respond to iron by mouth is solved. A safe intravenous preparation of iron, capable of administration in doses that could be expected to produce an adequate rise of hæmoglobin, has long been needed, and this time success seems to have rewarded the investigator. But iron is so easily given by mouth that recourse to intravenous therapy should still be reserved for the refractory patient.

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7. Goetsch, A. T., Moore, C. V., Minnich, V. *Blood*, 1946, 1, 129.

Annotations

INSURANCE AGAINST STARVATION?

In the Harveian lecture printed at the front of this issue Mr. Walter Elliot delivers some shrewd strokes against Leviathan, which by all the rules should be mortally wounded. At the same time, and in speech in Parliament (p. 73), he joins in the B of the Calories which flared up again after Dr. Franklin Bicknell's assertion that England is dying of starvation.[1] Mr. Elliot's interpretation of the food-consumption figures will please many of his medical colleagues whose personal observations, or personal privations, lead them to reject official assurances that the nutritional state of the nation is as good as before the war. Like other interpretations, however, it is open to criticism, and has the defects of the data it interprets. Calories apart, it seems clear that a proportion of people in this country are not getting enough food to maintain full health, but it remains doubtful whether this proportion is larger or smaller than in 1939. Few would deny that the vigour of the population would be increased—psychologically if not physiologically—if means could be found to give everybody the generous quantities of meat, butter, and eggs formerly enjoyed by the middle and upper classes. On the other hand, our rationing system, with all its imperfections, has safeguarded the nutrition of children and has divided our resources equally enough to make real hunger very rare. We have more food, and distribute it more in accordance with need, than most of our Continental neighbours who offer better fare to visitors. For the present, as the *Economist* puts it, "England is starving to death, if at all, in a strictly Pickwickian sense."

The important question, however, is not so much whether we are starving today as whether we can avoid starving next year, or the year after next, when we cease to live largely on credit. In last week's debate in the Commons Mr. Strachey, as Minister of Food, reflected the optimism on which the Government seem to have lately decided. "I am perfectly sure," he said, "that this country need have no doubt whatever of its ability to obtain an ample food-supply in the coming year". thanks to the effects of drought after an exceptionally hard winter our own harvest prospects are poor[2]; yet no responsible minister could have been so emphatic without good reason. The reason, nevertheless, has not yet been explained; and displays of confidence do not in themselves get over the facts of a situation in which our annual excess of imports over exports is something like £700 million. In such a situation one would suppose that intensive production of food in these islands would be very seriously considered as a form of insurance policy—enabling us to use those immemorial words of comfort "at least we shall not starve." But with their eyes fixed on higher exports, and their feet tied by the difficulties of a wages policy that would induce workers to enter essential industries, the Government have not yet shown any sign of weighing the possible advantages of shifting more of our resources into agriculture; and we believe there should be more public discussion of the arguments again put forward by a correspondent in our Reconstruction column this week. It is true that, in time of scarcity, economy of all resources, both human and material, is very necessary; and obviously there are objections to growing food in Britain which can be bought cheaply abroad. These economic objections would immediately break down, however, if at any time we lacked the money to buy this foreign food. If in circumstances of great difficulty we are prepared to go on spending very heavily on maintaining military services against the risk of war, there is nothing extravagant in the idea that we should

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1. *Med. Pr.* May 7, p. 381.
2. See *Times*, July 7, p. 5.

necessary spend some money on maintaining agri-tural services against the risk of starvation—which ·· the whole appears less remote. These islands uire more than one kind of defence.

'or those anxious to see a healthier balance between an and rural life our correspondent's proposals have added interest. They would likewise have appealed, imagine, to Mr. Elliot's centaurs, who had unusual lifications for helping on the farm.

USION OF EDINBURGH MEDICAL SOCIETIES

EW centres outside London are large enough to tain a medical society designed, however modestly, ng the lines of the Royal Society of Medicine, with its arate sections for the various specialties. Last year, wever, a comparable scheme was advanced for nchester[1]; and there is news of a similar movement Edinburgh, where the councils of the Medico-irurgical Society and other local societies are nsidering amalgamation.

Edinburgh has four principal societies: the Royal edical Society, with an undergraduate membership, ich with a history of 210 years is the oldest medical ciety in the country; and three graduate associations the Medico-Chirurgical Society, the Obstetrical ciety, and the Clinical Club. The case for amalgamating e three last has been put by Prof. Edwin Bramwell,[2] o holds that the Medico-Chirurgical Society, in underking by its general constitution to meet the needs of th specialist and general practitioner, satisfies neither. amwell's suggestion is that the society should form edical and surgical sections, but that combined meetings held to discuss subjects of common interest; that the inical Club should be invited to join as a third section d the Obstetrical Society as a fourth. To those who int to the Medical Society of London which, with a nstitution similar to that of the Edinburgh society, ntinues to fulfil an active and useful rôle, he replies ith reason that the London society offers the attractions a centrally situated house, with hall and library; at it draws members from the whole London area; nd that many members are also fellows, and may ttend sectional meetings, of the Royal Society of edicine.

An invigorated society would, as Bramwell says, be n added attraction to postgraduates visiting Edinburgh; nd fusion of the three groups is likely to appeal as a ep towards a society worthy of Edinburgh's ancient undation.

TREATMENT OF OSSEOUS METASTASES WITH TESTOSTERONE

HALF a century ago it was realised that cancer of he breast was associated with activity of the ovaries; nd their removal was suggested as a remedy. Ovarictomy was sometimes followed by improvement but the esults did not seem good enough to establish this as practical method of therapy. Occasionally the growth n the breast itself regressed but metastases appeared o be beyond control. At that time radiography was not ar enough advanced to show accurately the presence or xtent of metastases in bone.

The hormonal treatment of mammary cancer still lemands careful consideration. It has been proved hat the growth of mammary cancers in mice can be revented, or at least delayed, by removing the ovaries n early life; and the disease does not arise in animals ubjected to the continued application of testosterone n sufficient quantity. In both instances the output f œstrogen would be curtailed by the treatment and his probably accounts for the reduced incidence of ancer. However, once a mammary cancer has developed its continued growth is not as a rule inhibited by androgen. Such facts do not prove that androgens are useless remedies for mammary cancer; and Adair[1] contends that testosterone, though not a cure, may sometimes bring considerable relief to women with cancer of the breast when bone metastases are present. Adair records his experience with 200 patients treated in this way. He injects 100 mg. of testosterone propionate three times a week for eight to ten weeks. In most cases of mammary cancer, he says, no benefit is derived from this treatment other than the temporary feeling of well-being which testosterone ordinarily produces. On the other hand, a most striking improvement is obtained if osseous metastases exist, the pain and lack of sleep they cause being quickly relieved, while the rarefied areas seen in the affected bones by radiography become normally dense once more. At the same time the level of calcium in the blood falls and the level of alkaline phosphatase rises.

These results from an authoritative source lead at once to a comparison with the good effects which follow castration or the administration of œstrogen in prostatic cancer with metastases in bone. It is hoped that further reports on this kind of treatment in appropriate cases of mammary cancer will soon be forthcoming.

INHIBITIONS OF THE RUSHCLIFFE COMMITTEE

A LETTER in the *Times* of July 2 drew sharp attention to the discrepancy in the rates offered to trained nurses willing to undertake part-time work and the current rates for a “ char.” For a char the minimum rate asked is 2*s*. 6*d*. an hour, but when a trained State-registered nurse offers her part-time service in a hospital she is offered 2*s*. 3*d*. in accordance with the Rushcliffe scale. It seems obvious that the rate for part-time nurses should be raised to a level appropriate to a woman of professional status who has undergone a long training: and a sessional fee, or something of the kind, should be substituted for a rate per hour.

The payment offered to part-time nurses is not the only bone of contention. Sir Ernest Graham-Little recently suggested in the House of Commons that one of the main causes of the maldistribution of nurses is the flat uniformity imposed on hospitals in regard to rates of pay—a point which has been made in our columns more than once. The great teaching hospitals, which have always had, and still have, waiting-lists for nurses, are now required to offer exactly the same pay as the struggling local-authority unit with half its wards closed for lack of nursing staff. The Rushcliffe policy of uniformity has swept away all the differentiation which formerly helped to secure a better distribution of nurses. The memorandum issued by an authoritative group of doctors in the municipal health services[2] urged that a lifting of this ban, even if only within agreed limits, might go far to improve matters. In the case of student nurses, for example, hospitals suffering from shortage of staff would be at once permitted to increase the allowance from the present £55 for the first year rising in the second and third years, to a flat £100 per annum throughout the three years of training. The scales proposed by the Rushcliffe Committee are not adequately related to the situation we have to meet. What is the trouble? And what is the prospect of some action being taken promptly to remedy it? The trouble seems to be, as far as the outsider can diagnose it, that the industrial representatives on the committee would willingly see nursing recruits paid on a scale comparable with the earnings of girls of the same age in industry; local-authority representatives hesitate to authorise a heavy rise in the expenses of the employing hospitals, even though it be only until the appointed day; while the

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1. See *Lancet*, 1946, ii, 19.
2. Bramwell, E. *Edinb. med. J.* 1947, 54, 129.

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1. Adair, F. E. *J. Amer. med. Ass.* 1947, 84, 719.
2. See *Lancet*, 1947, i, 687.

nurses' representatives are anxious to maintain the professional standing of nurses and fear that pay at industrial rates would once and for all stamp entrants to nursing as hospital servants rather than professional students. This fear is perhaps less justified than it was twenty years ago, and is likely in the course of a few years to become groundless. In the future most students will probably be subsidised during training at rates appropriate for a modest standard of living, and nurses will take their place beside medical students in this respect. At present the particular difficulty about part-time rates of pay seems to turn on the belief that the interests of the whole-time staff would be prejudiced by an increase in the part-time rates, which are now calculated as a proportion of the pay of the whole-time staff. There might be substance in this objection if upward movement of the rates of the whole-time staff had to be ruled out of account; but when it is patently only a matter of time before all-round increases are granted, objections on this ground lose their force.

Surely the time has come for the Minister to accept outright the financial responsibility which will be his in any event after the appointed day? Let him accept responsibility not merely as now for 50%, but for 100% of the cost of any increases which meet with his approval. This would at any rate eliminate the complicating effects of local-government finance on what is certainly a matter of national urgency.

COMPENSATION FOR THE TUBERCULOUS NURSE

It is possible for a nurse to become infected with tuberculosis from an outside source; but where she develops the disease after being in daily contact with some 20 or 30 cases of open tuberculosis the probability is that her illness is a direct result of her work, and Dr. A. Lisle Punch has cogently urged the need to consider her legal right to compensation.[1] Under the existing law two ways are open to a nurse who seeks compensation. She may claim in negligence (and possibly, we may add, for breach of statutory duty on the part of the hospital authorities who employ her). But a claim in negligence is hard to establish, and Dr. Punch believes that few nurses do in fact develop the disease as a result of negligence. She may also claim under the Workmen's Compensation Acts; but here she must not only prove that her disability is a direct result of her work but also that she met with an accident—i.e., she must establish an occasion, or series of occasions, on which she became infected. To show how uncertain the nurse's rights are at present Dr. Punch cited two cases in which he has given evidence. In both the court accepted the view that the applicant contracted the disease as a result of her occupation. But in the first the judge found himself unable to award her compensation because he held that she had failed to prove an accident. In the second the judge awarded her compensation on the grounds that every time the nurse entered a ward tubercle bacilli assaulted her lungs, and in his view each of these assaults constituted an accident within the meaning of the Act. Dr. Punch, while reluctant to express an opinion as to which of these findings was the sounder law, holds that unless we can reassure nurses as to their right to compensation we shall not persuade them to take up tuberculosis nursing. He admits the possibility of a nurse contracting the disease outside the hospital (a contention which has also been put forward in cases of nurses working in infectious-diseases hospitals); but he argues that the overwhelming probability that she has become infected in the course of her work should be sufficient to ensure her obtaining compensation.

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A BRITISH CANCER JOURNAL

The first number of the new *British Journal of Cancer*, official organ of the British Empire Cancer Campaign, was published in March. The journal, a quarterly, is the first in this country to be devoted solely to cancer.

The need for a specialised journal, which had been growing for some time, became acute during the war years. The synthesis by Kennaway and Cook of the carcinogenic chemicals some ten years previously stimulated an enormous amount of research here and in other countries. Their discoveries were followed by several in America dealing with pure-line breeding and hybridisation of mice with a high incidence of mammary cancer, and by Bittner's disclosure of the tumour agent in mouse's milk. An outlet for the volume of work had to be found in the two British journals of general pathology and bacteriology, the American journals of cancer research, and a variety of other publications. Thus, for the lack of special journals, the papers were widely scattered; according to Prof. E. L. Kennaway, writing in 1941, contributions to cancer research in the British Empire alone were dispersed in some sixty journals and annual publications.

The new journal may help to concentrate some of this vast literature. With a pleasing pale green cover, it has a similar format to the *Journal of Experimental Pathology and Bacteriology*, and is published by the same firm, Messrs. H. K. Lewis. Microphotographs, in their familiar frames of mourning, are very well reproduced. Rapid publication of new work is aimed at—a gratifying feature in a subject where experiments may take two to three years to complete, all data a long time to collect, and therapeutic trials at least five years to evaluate. Authors represented in the present issue must feel themselves generously treated after the severe war-time restrictions and rationing of space.

STERILISATION OF CONTAINERS

Many substances for injection are supplied in glass ampoules with gummed labels attached, and a correspondent justly complains that such containers are difficult to sterilise since boiling is usually not permissible owing to the nature of the contents. Gummed labels are certainly unsuitable for this purpose, and instructions for use or identifying marks should be etched on the surface, as is the practice of many manufacturers.

The sterilisation of containers presents other difficulties which are not so simply overcome. The ampoule has an easily cleaned surface and its contents are used once only at the time of opening, so it is less subject to criticism than the rubber-capped bottle whose contents are frequently sampled. In less austere days rubber-capped bottles could be supplied with a detachable cap containing an absorbent pad which was kept moist with an antiseptic solution. Today such containers are not often seen and the cap must be cleaned and wiped with an antiseptic before each puncture. Ampoules, on the other hand, can be stored in antiseptic solutions, such as 0·5% formalin or 1 : 1000 biniodide of mercury. But

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[1] *Med.-leg. Rev.* 1946, 14, 39.

nurses' representatives are anxious to maintain the professional standing of nurses and fear that pay at industrial rates would once and for all stamp entrants to nursing as hospital servants rather than professional students. This fear is perhaps less justified than it was twenty years ago, and is likely in the course of a few years to become groundless. In the future most students will probably be subsidised during training at rates appropriate for a modest standard of living, and nurses will take their place beside medical students in this respect. At present the particular difficulty about part-time rates of pay seems to turn on the belief that the interests of the whole-time staff would be prejudiced by an increase in the part-time rates, which are now calculated as a proportion of the pay of the whole-time staff. There might be substance in this objection if upward movement of the rates of the whole-time staff had to be ruled out of account; but when it is patently only a matter of time before all-round increases are granted, objections on this ground lose their force.

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Special Articles

THE OPERATION FOR CONGENITAL COARCTATION OF THE AORTA

A PATIENT'S EXPERIENCE

H. T. VAN DIGGELEN
M.B. Cape Town

No description of the symptoms of congenital coarctation of the aorta is necessary. Mine was a classical case, complete with well-developed collateral arteries over the back and abdomen, chronic headaches, large pulsations in the neck, and no pulsations in the legs except a very weak femoral pulse. At 30 years of age my blood-pressure was 200/120 mm. Hg.

Treatment being imperative, it was decided to consult Dr. C. Crafoord, the Swedish thoracic surgeon in Stockholm. I had heard that he had operated successfully on 12 cases out of 13; so I travelled to Sweden, and Dr. Crafoord first saw me on Oct. 2, 1946, and arranged for my immediate admission to the Sabbatsbergs Hospital for a general investigation. This began on Oct. 4 and included:

(1) *General Physical Examination.*

(2) *Electrocardiography* at rest, after severe exercise, and after breathing a mixture of carbon dioxide and oxygen for 10 min. (I was almost in extremis after 7 min.).

(3) *Phonocardiography.*

(4) *Oscillography.*—For this an ingenious machine, perfected by Dr. B. Ejrup, of the Södersjukhus, was used. It is worked with compressed air and electricity and, using two Baumanometer cuffs on each limb, draws a continuous graph of the arterial pulsations and measures their amplitude and the blood-pressure before and after exercise. The exercise consisted of running up and down four flights of stairs eight times for each of the four limbs. I had visions of a burst aorta, but this was unfounded. The response to exercise showed enormous amplitude of the pulse and high blood-pressure in the arms; but in the legs hardly any pulse or blood-pressure could be measured.

(5) *Cardio-angiography.*—This is the most severe of all the examinations, but also the most interesting. The patient is placed in the X-ray apparatus in a sitting position, with a box in front of the præcordium which enables rapid changing of the X-ray plates. The cubital vein in the right arm is then dissected out under local anæsthesia, and a large metal cannula is inserted. By this means 50 c.cm. of an iodine preparation is injected as rapidly as possible, during which time about five X-ray plates are exposed while the patient tries to hold his breath. The sensation due to the iodine preparation is really terrible. One feels as though one is choking to death. The head feels like a balloon, and the entire body seems to be on fire. Luckily the effect passes very rapidly, and the experience was worth it, as I was able to see beautiful radiograms of the aorta showing the coarctation.

(6) *General X-ray examination,* including barium swallows.

(7) *Kymography.*

(8) *Miscellaneous*—dental, ears, nose, and throat, basal metabolic rate, rate of blood-flow, kidney-function test, urine, stools, and detailed blood examinations.

I was much impressed by the precision and efficiency of the Swedish doctors and nurses, who carried out each test with the greatest care.

Much of the preliminary investigation was extremely exhausting; the reason for it all was to find out exactly how much cardiac and respiratory reserve the surgeon could depend on during the operation, and so far as possible to determine the condition of the arterial walls; but it made me realise a little what patients have to suffer at times.

PREPARATION FOR OPERATION

On completion of the investigations on Oct. 8 Dr. Crafoord decided to operate at once. I had great confidence in him and the people about me, so I slept peacefully that night. On the morning of the 9th I was awakened with an injection of 'Omnopon' and scopolamine, and was still awake when wheeled into the theatre at 8.30 A.M. The injection must have had a good effect, as there was a complete absence of fear. Expecting an injection of 'Pentothal,' I received a rude shock when the anæsthetist began to anæsthetise my throat instead, and passed a closed-circuit intratracheal tube without the aid of any further anæsthetic. Luckily he had no difficulty in passing the tube, but the sensation was nevertheless ghastly, as suffocation appeared to be imminent, until I remembered that the tube was hollow. Thus reassured, breathing presented no further problem.

The sensation when the cyclopropane was turned on was quite pleasant, and very welcome unconsciousness ensued in a few seconds. The administration of the anæsthetic in this manner was an extra precaution to make certain that there would be no respiratory spasm. The only other anæsthetic used was curare. Afterwards there were none of the ill effects, such as vomiting, usually associated with long anæsthesia. The anæsthetic lasted for about seven hours, and the operation six hours, extra long anæsthesia being required for postoperative radiography.

POSTOPERATIVE COURSE

When "coming round" that evening I noted my rather shocked condition, but I was too weak and exhausted to care. The pain in the wound was intense. The incision followed, in an S-shaped curve, the course of the left fifth rib from its junction with the spine to the costochondral junction, and the rib had been removed. I had to lie with my weight on the wound, and no amount of soft pillows and rubber mattresses seemed to help.

Knowing a good deal about the subject I was at first terrified that the sutures in the aorta would pull loose, but one must experience this to realise what it means. To make matters worse I was told to force myself to cough every hour or two to clear the respiratory passages, as the left lung had been collapsed during the operation. As can be imagined, this intensified not only the pain but also the fear. The fear soon passed, however, when I was assured that the sutures would "hold until doomsday."

It was a great satisfaction to be shown the piece of aorta that had been excised. The specimen was about 1 in. long, and the stricture, which could plainly be seen, admitted a match-stick with difficulty.

Though there was no infection or any other complication, a full course of penicillin lasting sixteen days was administered to prevent the possible onset of pneumonia. Altogether I had 158 injections, including the morphine given during the first five days. These injections did not worry me particularly; they burned somewhat, but there is certainly no reason to become neurotic about them as some patients do.

The postoperative period was uneventful, but one or two nursing points may be of interest. For the first seven days I refused all food except frequent sips of milk and thus lost many pounds in weight.

With regard to bed-pans, knowing how abominable they are I refused to have a bowel action for the first six days. The result on the seventh day was disastrous, and I vowed never to use a pan again. On the tenth day I was allowed to get out of bed with the help of a nurse and sit on a portable bucket affair with a comfortable wooden seat. It had a lid which fitted over the seat after use and an ordinary bucket handle for carrying it. The seat was detachable.

The nurses earned my deepest gratitude by not forcing me to eat when I did not want to, and equally by not making me have an unnecessary bowel action, when to have had one would have caused me great discomfort.

Sitting up in bed as far as possible seemed to be the position of most comfort, as in this way much of the weight was taken off the wound. One cannot lie on either side, as this seems to cause undue strain on the place where the fifth rib should be, and thus much discomfort.

After three weeks I was able to get out of bed and walk about, and I left hospital at the end of four and a half weeks. Five days later I could walk three miles without any ill effects.

The blood-pressure dropped immediately after the operation to 155/95 mm. Hg in the arms, and rose to 120/80 mm. Hg in the legs. By Nov. 27 the pressure was 125/80 mm. Hg in the arms and 130/85 mm. Hg in the legs. I have been back at work now for five months and have none of the previous distressing symptoms. My blood-pressure is 150/80 mm. Hg, and there are good pulsations in the dorsalis pedis arteries. All the enlarged collateral arteries collapsed immediately after the operation. Dr. Crafoord has recently assured me that, after observing his other cases for the past two years, he feels sure that at the end of a year the pressure should become normal and remain so. There is no reason why this should not be so, but it takes time for the previously poorly used and underdeveloped arteries to adjust themselves to a full flow of blood.

TECHNIQUE OF OPERATION

Before I left hospital I was fortunate enough to witness one of these resections of the aorta, and it may be of interest if I mention a few of the main points.

The surgeon works with a highly trained team of three assistants besides an expert theatre staff. The muscles are cut between clamps with a diathermy knife. Any large arteries that remain uncoagulated are then tied off before the clamps are removed. This prevents a great loss of blood from the cutting of the many enlarged collateral arteries. By removing the fifth rib a perfect exposure is obtained.

The most difficult procedure is to dissect out the aorta and the right and left intercostal arteries, especially those on the right. This must be done thoroughly, as the aorta must be well mobilised so that the cut ends can be sutured together without tension after a good inch has been cut out. The intercostal arteries are not tied off, but are preserved, which makes the task twice as difficult.

The remains of the ductus arteriosus must also be divided. The aorta, which takes an S-shaped bend below the subclavian artery in these cases, then springs back into its normal position. Before being cut the aorta is manually compressed for 5 min. while the patient's reactions are carefully noted.

In most cases the left subclavian artery is greatly enlarged, and its junction with the aorta comes very close to the stricture. When the aorta is clamped, the upper clamp includes the base of the subclavian artery, and still there is very little space left for suturing between the clamps.

In suturing the cut ends of the aorta the histological structure is preserved as much as possible by opposing intima to intima, media to media, &c. The sutures should pass between intima and media if possible and not enter the lumen.

The clamps can be left on for a good hour if necessary, as the collateral arteries take care of the circulation.

It is most difficult to effect a watertight joint, and it was emphasised during the operation that one should practise on many dogs before attempting the procedure on a human being. It may even be found that at first some of the dogs will die, because of a leaking suture line.

I wish to express my gratitude to all the doctors and nurses in Stockholm who so ably saw me through the operation and convalescence, and by their kindness, consideration, and knowledge of English made my stay there such a happy one.

ASSOCIATION OF SURGEONS OF GREAT BRITAIN AND IRELAND

THIS association met in Oxford last week under the presidency of Sir Hugh Cairns.

Speaking before several hundred members at the annual dinner, held in the hall of Christ Church, Prof. GEOFFREY JEFFERSON, F.R.S., said that the meeting had done a great deal to revivify the association and "make us feel that it really does matter." Moynihan's wish had been that British surgery should never be defaced by the jealousies too often seen in Europe, and through his dining club and the association he had done much to prevent that happening. With growth in size the association had lost something of its original sociable intention, but it had gained by the opportunity for larger numbers to meet and hear what is going on. It was rather fun, he felt, that two specialists such as himself and the president should be proposing and responding to the toast of The Association: it was a sign that medicine, surgery, and neurology are really all one subject; and he believed that recruits to the specialties should be drawn in the proper way—from general surgery. The President—product of a marriage between Australian vitamins and Oxford culture—was a strong man both physically and mentally, with a relative contempt for financial ends. "And we shan't do far wrong when we praise men for that."

Sir HUGH CAIRNS agreed that the association should be grateful to its founders for their effort to promote friendship and interchange ideas among surgeons. At Oxford, he said, the clinical departments had emerged only nine years ago, at the bidding of the "Cowley father of modern medicine." "In this university institutions and departments don't mature quickly," but he hoped that the right conditions would develop within the next ten years. Some teaching schools put their emphasis on the needs of the patient, and some on the needs of the undergraduate student; but universities as a whole put it on research. At Oxford it was felt that the primary duty of a teacher is to create new knowledge, and the university atmosphere was one of criticism. The teacher must have his records, his table, his desk, his leisure. The day had not yet arrived when a surgeon could excel in the ward and the laboratory at the same time, but any attempt at standardisation should be resisted. After all, Lister's inaugural lecture had been on fermentation. Science had since become far more complex, but important advances could still be made by any surgeon prepared to be a perpetual student. "Let us mix our surgical types," said the president; "it is our English way."

Sir ALFRED WEBB-JOHNSON, P.R.C.S., proposed the health of The Guests, who included Dr. L. Bazy, Prof. René Leriche, and Prof. W. Noordenbos (newly elected honorary fellows), and Lord Nuffield. Sir RICHARD LIVINGSTONE, vice-chancellor of the university, replied to the toast. The surgeons from France and Belgium attending the dinner included Prof. H. E. F. Albert, Prof. R. Danis, Prof. J. de Formestraux, Dr. Lortat-Jacob, Prof. L. Mayer, and Prof. J. Morelle.

Prof. J. R. Learmonth, of Edinburgh, will be president next year.

NATIONAL (WAR) FORMULARY REVISED

A LARGE number of additions, alterations, and deletions will be made in the forthcoming third edition of the *National (War) Formulary*. The additions include, besides the newer drugs listed below, some that were in short supply during the war; it has been possible to replace the liquid extracts of colchicum, hyoscyamus, ipecacuanha, opium, quillaia, and stramonium by the corresponding tinctures.

ADDITIONS

Penicillin preparations.—Auristillæ, cremor, guttæ, injectio (aqueous), injectio oleosa, naristillæ, nebula, oculentum, *pulvis penicillini* et sulphathiazoli, solvella, trochiscus, and unguentum. The oily injection may be made with a basis containing beeswax and either arachis oil or ethyl oleate. When made with the latter solvent it is less viscous and easier to inject.

Vitamin preparations.—Capsula pluravit (containing vitamins A, B_1, B_2, C, and D), tabella nicotinamidi, tabella acidi ascorbici (now contains 25 mg., but the former 5 mg. tablet remains in the *Infants' Section*).

Hormones.—Tabella dienœstrolis, tabella hexœstrolis, tabella stilbœstrolis.

Sulphonamides.—Guttæ sulphacetamidi fortes et mites, pulvis penicillini et sulphathiazolis, tabella succinylsulphathiazoli, tabella sulphadiazinæ, tabella sulphadimethylpyrimidinæ, tabella sulphaguanidinæ.

Barbiturates.—Tabella butobarbitoni.

Among well-known formulæ now included are: cremor zinci and cremor zinci et ichthammolis; elixir cascaræ; suppositorium bismuthi subgallatis; tabellæ ferri phosphatis cum quinina et strychnina; tabella ferri phosphatis composita (sugar-coated); cremor zinci et olei ricini (*Infants' Section*); pulvis aluminis et zinci (sterilised and packed for each application).

There is a new tabella paludrinæ and an applicatio D.D.T., which is a solution of the chemical in solvent naphtha, emulsified as a water-miscible emulsion with emulsifying wax—one of the new emulgents.

ALTERATIONS

Most of the alterations represent improvements in the presentation and preservation of the preparations, as experience has shown to be necessary. In some cases names have been made more precise. Liquid extract of liquorice has been added to the haustus paraldehydi, which will prevent confusion with the pure drug. In lotio calaminæ it is not clear why the altered formula should contain the cumbersome quantities of calamine 1 oz. 90 gr. and zinc oxide 175 gr. in 8 fl. oz., nor why the imperial ounce should be thus used, when in other preparations, such as cremor zinci, the quantities are made up to the apothecaries' ounce, 480 grains.

In the *Infants' Section* the doses of several powders and tablets have been reduced.

DELETIONS

The preparations omitted include the following misturæ: arsenicalis, calcii lactatis, ergotæ, ferri arsenicalis, ferri perchloridi, ferri salicylatis, hydrargyri perchloridi, and quassiæ cum rheo.

EX-SERVICE NURSES

FURTHER opportunity for ex-Service men and women with qualifications as first-class nursing orderlies to become State-registered nurses after an intensive course of one year, instead of the usual three years' training, is announced by the Ministry of Health. Twenty-six shortened courses have been in operation throughout the country since last autumn; they are being taken by 738 candidates—511 men and 227 women. Of 164 who sat the preliminary examination last February, only 2 failed completely. When the present students take their final examination next October there will be vacancies for other ex-Service men and women to take this shortened course.

Men are paid at the rate of 92*s.* a week, with a deduction of 30*s.* a week to cover board and lodging, or 20*s.* in the case of a married man with home responsibilities. Women students get £90 a year, with free board and lodging or a living-out allowance of £80 a year if they are living at home. Examination fees for students are paid, and there is provision for free medical treatment and fares. Men and women may be given accommodation at the training centre or they may live in their own homes or quarters near the course. Only those with the rank of a nursing-orderly or nursing-member class I, leading sick-berth attendant, or leading aircraftwoman or leading aircraftman in the trade of nursing orderly who have had at least two years' ward experience under trained nurses are eligible. Men and women with these qualifications who are still in the Forces should apply through Service channels. Others should write to the secretary of the Ministry of Health, Whitehall, S.W.1.

Modern Care of Old People

VII

RESEARCH AT ST. JOHN'S HOSPITAL, BATTERSEA

THE process of ageing is being studied in various centres nowadays, notably by Prof. F. C. Bartlett at Cambridge and Dr. J. H. Sheldon at Wolverhampton. It is astonishing how little is known even about the common illnesses of the old—" the forgotten diseases," as they have been justly called. At St. John's Hospital, Battersea, Dr. Trevor H. Howell is making studies of such common conditions as chronic bronchitis and rheumatism.

BRONCHITIS

The old people admitted to the chronic bronchitis wards of this hospital answer a full questionary about the development of their illness; their sputum is measured daily, and examined bacteriologically every week, and their response to all the usual expectorants is studied systematically. The blood-count, hæmoglobin, blood-sedimentation rate, alkali reserve, blood-urea, and circulation rate are studied in every case, not because they are likely to be abnormal but because regular studies of them in old age have never been made. Similar investigations are made in a control series of old people who are not bronchitic; and the chests of both groups are examined radiographically, so that it will be possible to assess the pathological against the normal findings in old age. In the post-mortem room the morbid anatomical changes in the old, and especially in their lungs, are being examined; and an outpatient clinic for chronic bronchitics has just been opened which should bring a much wider range of patients under review. This long-term piece of research may be expected to fill many gaps in our knowledge.

STUDIES OF INCONTINENCE

Another investigation being made at this hospital has yielded unexpected results. Using the cystometer, Dr. T. S. Wilson began a study of the incontinent bladder. With this method the bladder is infused and the pressure in it measured by a water manometer. The original aim was to discover at what stage of distension the bladder was liable to contract. The first case, an old man, had frequent contractions of considerable amplitude—pressures up to 120 cm. of water registering on the manometer—with no apparent control or previous desire to micturate. After the infusion the patient announced that he thought he had better control of his water; and a subsequent infusion showed that the contractions were now occurring at a later stage of distension than they had done the first time. Again the patient noted improvement after the infusion; and study of a group of patients has shown that such slow distension of the bladder can be a very successful form of treatment for incontinence, especially in old men. The bladder becomes capable of holding more urine, and the nerve-endings seem to become less irritable. Desire to micturate, often lost in these cases until the bladder contraction has already begun, returns and precedes the contraction by several minutes, thus giving the patient time to get to the closet. The result has been that several old men who had been incontinent, and therefore miserable, now have good control of micturition, and the ward atmosphere has become much more cheerful in consequence.

RECOVERING MOVEMENT

At this hospital there is, in any case, no sign of institutional apathy. The patients are alert and interested, as always happens where treatment is active and the nursing staff keen. Hemiplegics are got on to their feet early—in one case within a week of the stroke—and so never develop contractures. The physiotherapist demonstrated a slightly different type of walking machine from that seen at the West Middlesex—a type in which the patient s steadied and supported by crutch bars under the armpits, and is obliged to walk upright instead of leaning forwards.

Arthritics, even those who have been in bed for many years, after being admitted to this hospital as hopeless cases, are responding to active treatment—to injection of fixed joints with procaine and lactic acid, to regular physiotherapy, and to occupational problems which can only be solved by making use of the stiff joints. They are getting up, walking, making pleasant and useful things with hands that had seemed beyond all use, and recovering their spirit as their physical powers recover.

Occupational therapy is well developed, and even old contracted limbs can often be brought back into limited use when set to the appropriate task. The nursing staff have responded, as usual, to a keen medical staff, and take the same pride in the progress of the patients, and have the same stern professional standards about the revention of bedsores, as nurses at the West Middlesex.

Reconstruction

THE NATIONAL SITUATION

A Positive Policy for Food[*]

FROM A CORRESPONDENT

THE Government have given no hint that they ppreciate the urgency of a drive to increase production of food at home to the level required to reduce materially ood imports from abroad. With their eye on the law of diminishing returns they still seem to believe in the danger of pushing food-production to the point where we should be paying too heavy a price. While giving moderate encouragement to the farmer by the Agriculture Bill, they pin their faith to an export policy which is to give us the wherewithal to buy food abroad as of old, and to the hope of a world food surplus. In other words, they seem to be banking on unlikely success with exports, or on a fall in world prices for food. Such a fall may occur; but to bank on it exposes our whole economy to the hazards of a world market in food which shows little sign of reverting to its old pattern, and involves us in a one-sided bargain in which the food-exporting countries have the upper hand. With every other nation determined to regulate its economy in its own interests, the hope of abundant cheap imported food grows fainter every day, and common sense demands that we adjust to the changed conditions before it is too late.

Before the war we produced about 40% of our own food; and if we are to increase this 40% to about 80% a far greater effort is needed. It means something like a doubling of the productive resources devoted to agriculture. The incentives must be stepped up, and priorities at present afforded to the export industries modified accordingly.

INCENTIVES TO FOOD-PRODUCTION

Knowledgeable people agree that we could achieve a great increase of food-production at home; but they differ as to the relative urgency of the measures needed to bring it about. By some first place is given to the need for more man-power on the land, by others to the need for capital and mechanisation, and by others to the failure to provide houses for farm workers. The differences as to means must not obscure the overriding need for greater monetary incentives than we are at present giving.

Take the problem of man-power. One-eighteenth of our man-power is at present engaged in agriculture and allied pursuits. Despite accessions there is still a steady leakage to the towns. The anxiety as to what is going to happen when the German prisoners go is a striking commentary on the wage level. It is true that the minimum wage of the farm worker has been raised from 35s. a week in 1939 to £4 10s. a week today, and that many farm workers get, with their cottages and other perquisites, more than this. But the wage structure of agriculture is still such that it cannot compete with the towns. Our young men, mixing with their urban fellows in the Forces, discover that in the towns they can find work at rates that make the farm worker look foolish: £5 a week minimum for the raw hospital porter, £6 or £7 for a capable man in a multitude of commercial and industrial undertakings. Is it surprising that we are short of labour on the land?

Or take capital for mechanisation and for the many other items that make for efficiency. A great change is in full swing, and everywhere the tractor is replacing the age-old methods of cultivation. But whereas in most industries the age of mechanisation occurred when profits were available for the purchase of machinery, in agriculture the climax of the change has coincided with an era of unprecedented taxation. The farmer is not exempt from income-tax, or from the incidence of purchase-tax on much that he has to buy from the towns. A great brake is thereby applied to the process in this country—far greater than elsewhere—just at the time when it is most desirable for us to speed up the transition. The physical shortage of equipment for mechanisation is bad enough, but when on top of it there is the pressure of taxation at present levels the farmer is doubly handicapped.

Or take housing. Is not the difficulty here quite as much a matter of money and of the traditional wage and status of the farm worker as of physical shortage? We hear a great deal of the need for houses for farm workers: and often of course it is true that the houses simply do not exist where they are required. But as often as not the trouble is seated deeper than this. No-one can travel about the countryside without realising that comfortable little houses exist almost everywhere—at any rate in Southern England—which are eminently suitable for the farm worker but which are otherwise occupied. The simple fact is that other members of the community, even week-enders, have slipped into the houses with which the countryside is dotted. The tradition of the labourer's cottage is strong in agriculture, and is a reflex of his traditional wage. If we increase his wage to a figure comparable to that of the small shopkeeper or municipal employee, he will be able to compete with others. More, he will be given the strongest of all incentives, the hope of possessing a home and a garden of his own of which he may be proud.

It is mainly a matter of money. For over a century our agriculture has been the victim of the industrialisation of England and of the cheap food from abroad, which is now at an end unless the export drive suddenly achieves a measure of success quite beyond the bounds of practical probabilities. The remedy is clear and straightforward. The proportion of our resources devoted to agriculture must be increased, and the reward to the farmer for his produce must be stepped up until a new equilibrium is attained which enables him to pay wages fully equal to those of other occupations (and a little higher, until that equilibrium is attained); which provides a margin permitting of mechanisation, and experimental mechanisation at that; and which, besides this, offers an incentive to able men to go into farming and make a success of it. In other words the cost of food to the community will have to go up.

FOOD PRICES AND THE SUBSIDIES

If food producers are to have more money, we must either have higher prices to the consumer or we must contribute heavily through subsidies. A rise in the cost of food to the consumer does not square with our present policy of redistributing the national income, and we shall therefore have to face a continuance of, and perhaps even a temporary increase in, food subsidies, which at present amount to nearly £400 million, a sum equivalent to 3*s.* in the £ income-tax.

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[*] Two previous articles appeared on March 15, p. 340, and May 17, p. 686.

The nature and effect of the existing subsidies is as yet little understood. The popular view is that they represent a helping hand extended by the community to the farmer, for which he ought to be grateful. Nothing could be more mistaken: no view of the subsidies which fails to couple them with the control of prices can begin to approximate to the truth. The fact is that, whereas the old laws of supply and demand still operate over the greater part of our economy, we have imposed a system of price control on both imported and home-grown food. So far as the farmer is concerned, the principal effect—far transcending the subsidies—has been the elimination of his right to sell to the public at prices dictated by the relative scarcity of his produce to other goods. Having deprived the farmer of this right, the State has had to rectify the situation by giving the farmer subsidies which to some extent compensate him for the loss of profit. The subsidies are therefore properly seen as but the reflex of the control of prices. The farmer would certainly be better off with a free market and no subsidies—at any rate in conditions such as those which now prevail when there would be no danger of the market being flooded with cheap food imported from abroad.

But this is not the whole story. The price-control-cum-subsidy structure is essentially an emergency measure, and the level of prices to the consumer which it is designed to secure presupposes a return to the conditions of 1939—i.e., the resumption of imports of food from abroad on something like the old scale and at something like the old prices. Only in such circumstances can it be ended, unless some other radical change comes to the rescue. If the loss of our foreign assets and the fading prospects of the export drive preclude such possibilities, we are thrown back on our own resources. What hope is there then of dispensing with the subsidies, and so freeing the Exchequer of a burden which is throttling incentive all along the line?

Fortunately there is in progress another radical change which holds out hope and which might offer the basis for a rational policy—which may, indeed, over a decade or so, bring the cost of food-production at home into line with the level of prices that the consumer can be asked to pay. Great technical advances are being made in agriculture. One has only to list the implications of the biological and biochemical sciences to realise their immense potentialities. The still new science of genetics as applied to plant life and seed-production is in its infancy. The work of Sir George Stapledon and others in the improvement of grass has yet to revolutionise the produce of our marginal land. Artificial insemination of livestock is being developed with great rapidity. The work on the control of virus diseases and insect pests being done at Rothamsted and elsewhere is likely to result in a dramatic increase in the yield of our fields. These possibilities are not far-fetched and idle dreams.

How then does this prospect affect the food subsidies? Surely, within a fairly long period, say ten years, we may reasonably expect the cost of food-production to have been markedly reduced—perhaps sufficiently to offset the increases in the reward to the farmer now needed to step up our agriculture.

A DOUBLE POLICY

Some attempt, however tentative, to suggest the shape of a positive programme seems to be called for. A double policy seems to be indicated. First, an immediate and substantial increase in the subsidies for home-produced food for the next two or three years, to carry us over the immediate period of transition—designed to bring the maximum effect in increased production. They should not, for instance, be frittered away in petty reliefs to the consumer such as the recent reduction in the cost of the weekly ration of cheese from 1½*d.* to 1¼*d.*). Secondly, a progressive scaling-down of the subsidies by something like 10–15% per annum over the next eight or ten years, designed to give the community the advantage of the technical progress in agricultural methods. Let the subsidies rise to a total of some £500 million for say the next two years, and thereafter decline over the following decade by some £50 million per annum. It is a heavy burden on the Exchequer, and some saving may be possible on the side of the bill which relates to imported food. But at least such a programme offers the prospect of a steady lightening of the burden.

For the policy to be successful a closer integration between the Ministries of Food and Agriculture seems to be essential. In our present circumstances it may be necessary that the Minister of Food should tour America buying up what he can; but in the longer run it will be necessary to see that control of imports is vested in the Ministry responsible for the control of prices of home-grown food. Internally, too, there is room for study of the effects of subsidies upon production, since much of the subsidy money is now poured away irrespective of its uneconomic effects in encouraging production unsuited to the locality. The system is too simple; the pattern of food-production, on the other hand, is complicated, and there are subtle inter-regional relationships which a simple flat-rate system brushes aside. If the subsidies have come to stay with us yet awhile, the improvised war-time methods must be overhauled, and the whole scheme subjected to a detailed review in which the views of the agricultural experts must prevail over the political anxieties of the Ministry of Food.

The prospect as a whole contains much that is grim. A long period must elapse before a new balance is attained, and our much-vaunted industrial expansion may meanwhile suffer some check. But it is a big canvas, and there is much in the picture besides occasion for gloom. There is a story told of Mr. Churchill in the dark days when France was crumbling in 1940. Colleagues round the Cabinet table drew long faces, and a gloomy silence settled upon the meeting as the prospect of battling on alone was examined from one angle and another. "For myself," said Mr. Churchill rising from the table, "I find it rather stimulating." This surely is the attitude we need to face a future which holds out no prospects of the continuance of imported foods purchased with the interest on our foreign investments, and which certainly involves an upheaval of many of our accepted ideas.

The end of England as a great industrial exporting country? No; for if we continue to equate our exports with our imports of raw materials, as we did before the war, we shall still be carrying far more than our proportion of international trade.

There is in sight a better balanced community, and an end to the drift to the towns with all its dubious social consequences. For 150 years past voices have been raised to protest against the spoliation of England, and the desolation and poverty of our rural community. Is it now at long last true that we have topped the curve of the graph? Will not the change bring with it a healthier, happier, and more independent Britain, fitted to show the world how to enjoy the benefits and at the same time to curb the consequences of the industrial revolution?

In England Now

A Running Commentary by Peripatetic Correspondents

I HAVE just finished reading the fiftieth biography since I started taking notes on them two years ago; they include biographical records like Agate's *Ego* and Arnold Bennett's *Journals*, both of which show a self-satisfied sun moving serenely in an extremely small orbit. Quite a lot of my time has been spent on the "bought biography," commissioned by the family or by the subject himself, and little more than an expanded synopsis from *Who's Who*. The same may be said of the "Life" by wife, son, or sib; these should be treated as detective novels, the reader making deductions from what the too diabetic pen left out. Even from these one can get clues that lead to the soul—e.g., A. J. Balfour's father died (from tuberculosis) when he was seven, but he couldn't remember him; Lord Melchett took a first in poker at Cambridge; Parnell was much puzzled over *Alice in Wonderland*; "A curious book," he said after a long and serious study. The short scholarly biographies like Lee's Shakespeare or Colvin's Keats have been the most satisfying; when I sat down with Morley, Rosebery, Carlyle, or Garvin my bowels could move neither with hatred nor compassion, there was too much flatus. The hostile mocking biography is usually by a detached alien—Macaulay, Ludwig, Maurois. Sometimes, however, the alien is hypnotised by his subject: Boswell by Johnson, Sorley Brown by T. W. Crosland.

I liked noting physical characteristics: Thomas Hardy couldn't bear to be touched; Wallenstein had a hypersensitive ear; Clifford Allbutt was a visual thinker; Donald Macalister, a senior wrangler, was almost certainly a word and figure thinker; Gordon had no ear for music, but how I sympathise with "A social engagement hung over him like the sword of Damocles"; Havelock Ellis in his *Life* shows himself blind to his own mainspring—the rigid curtailment of his own sex life producing a team of books on sex; Captain O'Shea got "measles" every time he was in financial trouble. I must say I do like to know what my man dies of: Henry Kingsley's cancer of tongue, Flecker's tubercle, Wells's healed tubercle and diabetes explain much. Sometimes one can watch one's subject helping to kill himself—Parson Woodforde by over-eating, Bonar Law by over-smoking, Inchcape by over-bossing. The ideal biography would start with a chromosomatic map and end with necropsy reports and slides, at least half the book being devoted to the first three years, from which the rest must logically follow.

Although our conscious minds do not recognise that great qualities and vices must spring from their opposites—courage from cowardice, sociability from loneliness—yet the subconscious has known this for some million years and refuses to let a too sickly or too bitter mess go to the stomach of memory, tossing it back to the word-strutting consciousness. The only thing I can remember about Northcliffe's life is that he could not bear to get sand between his toes, which makes him laughable but human. That is where most of the clerical biographies fail—Randall Davidson, Lionel Ford, Percy Dearmer, but not so much Dick Sheppard who is more spotty—they lack blacking and lovableness.

* * *

I can remember the late Mr. Griffiths at Addenbrooke's saying "Give her air! Any fool can give chloroform: it takes an anæsthetist to give air." Sitting over a mask giving chloroform or ether in the old days was a very different business from the modern methods. At one time the surgeon could tell the days of the week by the effect the different anæsthetists had on the colour of the patients: Pink Monday was quite different from Black Friday. In those days the surgeon watched the anæsthetist anxiously, and the anæsthetist watched the surgeon intently because he hoped one day to become a surgeon himself. Later, with the extended use of machines which delivered a regular supply of anæsthetic, the anæsthetist became chronically bored. You still see some of these anæsthetists reading their journals during operations; I have heard of one who even wrote a book while supervising a machine-given anæsthetic. Still later a generation of anæsthetists arose who were really interested in their job. The first crop were fascinated with their new machines and were not satisfied until they had invented some gadget and got their names attached to it. But after a time they really got to know why and how the things worked. And now the surgeon can concentrate on the operation without having to keep an eye on the colour of the patient and be prepared to leap on his chest directly his guts stop moving up and down.

* * *

Lucy was a private, A.T.S. She had been in for 16 months. Her actual service, if you added together the intervals when she condescended to return from her frequent A.W.O.L.'s, was about 8 months. Lucy's junior commander thought her "personal habits dirty." This, for a start, was intriguing. I speculated idly on whether Lucy picked her nose or went in for more spectacular vicissitudes. Then I came, lower down in the report, to the words "loose morals." Big stuff, eh? And the M.O. thought she was "a thoroughly bad lot." Hard words, partner.

And what had Lucy to say for herself? We gathered Lucy's dad had been a nasty old man "who must have had a guilty conscience, for he always seemed to think I was up to no good." Lucy was an independent girl and joined the A.T.S. "not because she liked the King but to see Life." Now we were getting warm. Forgiving Lucy's sad deficiency in patriotism, we asked for details. Lucy looked as coy as her layers of rouge and lipstick would allow. "Of course, I'm a married woman now," she sighed. "And a thoroughly respectable one too." we ventured. She rose to the bait neatly. "Well, I know they say I'm a prostitute but it's all due to a misunderstanding, you know." "Oh yes?" we said, mustering all our sympathy. "You see," she went on, "one day I was walking down a street at home—it did have rather a bad name. And suddenly a man, a detective I suppose, came up to me and gave me a bit of paper and said I had to call at the police-court on Saturday. You can imagine how surprised I was!" We nodded our head vigorously. "Well, when I got to the court the old man—I suppose he would be the judge—looked me up and down and said, 'Do you plead guilty to street-walking?' So I says to myself 'Well, I wasn't exactly running,' and like a twerp I says to him, 'Yes your lord.' Then he says, 'I fine you £5 for being a common prostitute.' Me! Common!" We shook our head deprecatingly. "I didn't see much use arguing when he had the police on his side, so I let it go at that. But when I got back to camp there was the whole story up in Part II Orders just like in the *News of the World*, with my name and all. Just imagine! And ever since then none of the girls in the camp would speak to me and all the men kept coming up to me on the quiet and saying, 'What about it?' And so I thought if they were going to give me a bad name I might as well live up to it. I couldn't help it, could I?"

When Lucy had gone I pondered over her story and tried to find a moral. I can only think I must warn my wife that if a strange man tries to give her a piece of paper on the street she should curtsy and say, "Thank you, but I have a piece of paper, and I've got a previous engagement for Saturday anyway."

* * *

I phoned the hospital (and not a little one either) on a Sunday at about 7 P.M. to arrange for the transfer of a case. After a while an educated voice answered. I asked if I could speak to the porter-telephonist; he was afraid not. Then to one of the sisters, or to Dr. S, the resident? Embarrassedly, the voice told me that at this time of a Sunday evening *all* the staff went off to their meal, the phone was switched to one of the floors, and a patient had to answer it. Well, well, in that case could he possibly summon someone responsible, as the transfer was urgent? The patient was charming. "If you wait while I get my other crutch," he said, "I will go and fetch Dr. S." And in a quarter of an hour the doctor arrived.

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SIGNIFICANCE OF GLYCOSURIA

SIR.—In your annotation on the incidence and significance of glycosuria (June 28) you state that "every case f glycosuria requires full investigation." Should such a course be generally adopted the laboratory services would be severely strained. I can see little to be gained by doing a glucose-tolerance test on an adult who gives history of loss of weight, polyuria, and thirst, and who n an ordinary diet excretes sugar and aceto-acetates in his urine. He is a diabetic whatever the test may show. Surely these time-consuming tests are only required n doubtful and obscure cases. Would it not have been better if your annotation had read "every case of *ymptomless* glycosuria . . ."?

W. W. WALTHER
Pathologist with charge of Diabetic Clinic.
Queen Mary's Hospital for the East End, London, E.15.

THE STUDENT AND THE ALMONER

SIR,—Dr. Beryl Harding's letter in your issue of une 21 brings the recommendations of the Goodenough eport (chapter 11) once again to the fore. Already n certain hospitals experiments in teaching by the lmoners' department are being carried out. The nstitute of Almoners is bearing in mind the development of this important function in its consideration of he almoner's work, and of training for future almoners.

Institute of Almoners, Tavistock House (North), London, W.C.1.
M. STEEL
Secretary.

NURSES FOR THE ELDERLY

SIR,—In your summary of Dr. Elliott's remarks on the ursing problem in Kent you give the population of the dministrative county as 125,000. I think it is clear that nought has been omitted from this figure which should be in the vicinity of 1,250,000. Given a population of one and a quarter million upon which to draw, the arget of 2000–3000 part-time nurses should be quite ealisable.

Presumably the main reason why the Gloucestershire scheme worked in Gloucestershire was because those n charge of it intended that it should work. At present the recruitment of part-time nurses is held up by bureaucratic inefficiency. The publicity campaign is half-hearted and the ridiculous pay anomalies make women feel that the authorities are not serious about the scheme. Thus under the scheme as at present applied a part-time nurse may be willing to work more than 30 hours a week; but in Kent she is not permitted to do so, whereas in London she may do so but will receive less money than if she had worked 30 hours! As a result many women-hours which could be got from part-time workers are not utilised though offered. This situation gives volunteers the impression that their services are not in fact urgently required and undoes the positive effect of the propaganda for more nurses. The campaign to restaff the hospitals can only be successful if it is conducted by people who are convinced of the possibility of success and who are given authority to eliminate anomalies which prejudice the success of the scheme. This may involve slight additional expenditure but this should not be a real difficulty in view of the fact that according to Dr. Elliott's report already in 1946 the Kent County Council has registered its desire to spend £580,000 on building works for hospitals and institutions for the chronic sick—a sum of which only a fraction can have been spent to date.

Unfortunately, although our hospitals have at last been divorced from the poor-law, the poor-law attitude of mind is still with us.

St. Mary Cray, Kent. BRIAN H. KIRMAN.

***We are obliged to Dr. Kirman for drawing attention to our error.—ED. L.

SIR,—May I make the following comments on your annotation of June 28?

1. I feel your statement that the recruitment of some 2000–3000 part-time nurses out of a population of 125,000 is not an outrageous figure is going to mislead a very large number of people who do not know what the facts are. Our population at mid-1946 was 1,380,310; but even so, after a three-months campaign, we have managed to recruit only about 150 part-time nurses, making a total of 207. These nurses are recruited to the service of the public-health and public-assistance committees and only a proportion are, of course, available for the chronic sick. The campaign was discussed in detail with the nursing administrators and with representatives of the Ministries of Health and Labour. We also studied the Gloucestershire scheme on the spot. Nothing has been left out that was suggested to us. Incidentally, I think it is time that greater regard was had to the fact that these part-time schemes are all very well so long as other authorities are prepared to train assistant nurses, but it is useless to continue to expect any scheme of part-time nursing to meet future needs without making adequate provisions for training. Otherwise we are merely "scraping the barrel" and our future will be worse than our present.

2. I agree with everything you say about the need for a high standard of nursing for the chronic sick: but, when there are said to be 89,000 vacancies in London and S.E. England for female labour, I feel I must ask where these nurses are coming from to nurse the elderly sick. I welcome everything you have written about improving the lot of these unfortunate patients, but in spite of all that is done in Middlesex I understand that they still have a waiting-list for these patients which may be as long as ours. Our list is now 823 and there are urgent cases in front of me from which I would quote the following descriptions: "revoltingly filthy," "lying in her own fæces." The point which I think is forgotten is that these patients are not lying in their beds being cared for, but are all too frequently living in the most appalling conditions, receiving casual attention from friends and neighbours. Possibly, similar circumstances would be revealed on examination of the Middlesex waiting-list.

While, therefore, I agree with you as to what is ideal, I believe we must face the fact, or what I regard as a fact, that there are not enough women in the country to provide the ideal service that you postulate, and that in present conditions—which I do not think are likely to alter—it is only by some scheme such as I have outlined that we are going to relieve the appalling hardships that are now befalling many elderly and helpless people.

With regard to the experience at the West Middlesex Hospital, I think we shall be blinding ourselves to the existence of a current evil, which needs urgent attention, if too sanguine a view is formed through overmuch emphasis being placed upon the long-term possibilities inherent in the special steps taken at selected establishments. The active treatment of cases selected as likely to respond to it should, of course, be encouraged by every possible means, but we are fast reaching a state of affairs wherein any such cases may be refused admission to chronic-sick wards as not yet representing the urgent necessity warranting immediate attention. This, I admit, is a most sorry state of affairs, but its existence is really the main fact upon which my original article attempted to focus attention. If we are to turn all our establishments into specialist chronic-sick units, as at the West Middlesex, leaving those cases clearly not able to benefit therefrom to shift as best they may—and maybe to die as quickly as possible—then, I am afraid, we are well on the way to that "deterioration of ethics" which I referred to in my original article.

3. I am sorry that you do not comment on my conclusion in the penultimate paragraph of my article that there will not be a sufficient number of young people in the community who will be available to nurse the aged sick. If my view is not true, or is unduly pessimistic, someone should be able to reply to me and tell me where the women that are needed as nurses are now working and whether these particular fields of work can and will be divested of labour at the present juncture. Nothing that I have yet seen in THE LANCET or elsewhere gives me any faith that under present conditions some scheme can be introduced which will make a sufficient labour force available to permit us to staff our empty beds and to admit our 823 patients in any reasonable period of time. That bitter fact is, to my mind, the crux of the question.

County Hall, Maidstone.
A. ELLIOTT
County Medical Officer.

Letters to the Editor

APPEARANCE OF PROTRUDED DISKS

SIR,—In common with Mr. Charnley (June 28) I was rather surprised at some of the statements about patients with protruded intervertebral disks made by Mr. Burns and Mr. Young (May 10). At the same time I am impressed by everything that these two authorities state.

With one exception all my cases have been operated on in the crouching position, which resembles that adopted by the Moslems when praying. It was not fair of the wit at a meeting of the Royal Society of Medicine to say that this position, advocated by Pridie, resembles that of a rabbit about to spring off. In this position the lumbar spine is flexed, and so it is possible that the apearances are different to those seen when the patient is operated on in the prone or semi-prone position.

In my series the common protrusion has been that which I liken either to the tip of a little finger or to half a pea. In only one case was it pedunculated. The site is almost invariably anterior to the origin of the lumbar or sacral nerve from the dural tube, and in quite a number of cases the nerve has been firmly bound down to the protrusion. Sometimes the protrusion projects upwards between the nerve and the dural tube and sometimes it is on the outer aspect. In one case there were two protrusions, one on each side of the central strong ligament, and if one had not adopted Burns's advice to remove the whole of the fifth lamina one of them would have been missed. In one solitary case the protrusion was a loose body in the complete sense of the word "loose." This patient had been manipulated by me for sciatica about four years previously, and presumably the manipulation had shot the disk substance out; when I removed it, it was lying posteriorly to the spinal cord, and he is lucky not to have had a paraplegia as a result of the manipulation. It may be thought that it is impossible so to displace a piece of intervertebral disk. I admit that this thought was in my mind until I operated on a patient in the acute stage and discovered that the nucleus pulposus had burst through not only the annulus fibrosus but also the overlying ligamentous tissue. When encountered it resembled the appearance usually found only after incising this fibrous tissue; it was teased out in one piece.

The other type of protrusion which I have encountered is that in which the whole of the posterior portion of the nucleus fibrosus is pushed backwards. This is the type where, as Burns says, a very considerable mass of tissue must be removed. In one of these cases there had been some erosion of the posteriorsurface of the body of the bone.

I would like to support Burns and Young's statement that the diagnosis in cases of lumbo-sacral pain depends on the spinal rather than the neurological signs. My localising sign is the appearance of the disk in a straightforward radiogram. The radiologists do not agree, but in my experience it is an extremely accurate indication of which disk is affected.

To those pessimists who say that not every case is cured by the operation I would urge that they make sure that the postoperative treatment has been satisfactory and that no complications have arisen during the operation. In one of my cases I damaged the dura overlying the nerve and it subsequently became adherent to the
second operation the adhesions were
oved, and at the same time the
ntradurally with complete
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anæsthesia within a few
sed the adhesions which
symptoms.

W. SAYLE CREER.

MATISM

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c conditions

There is a voluminous literature to show that change of climate, and particularly damp cold, predispose t rheumatic disease of certain kinds. It can also be shown that the physical state of the atmosphere in a big city may be quite unlike that outside it in the open country Yet the temperature and barometric readings may b identical. The other factors require elucidation.

Colchester. G. C. PETHER.

A RECORD LOW HÆMOGLOBIN

SIR,—A hæmoglobin level of 12% is mentioned b Dr. Karani and Dr. Szekulesz in a letter (June 7) unde the title of "a record low hæmoglobin?" May I point t a paper on ancylostoma anæmia by A. G. Biggam a myself[1] where a hæmoglobin of 10% (Sahli) is recorded Such levels are not unusual in ancylostomiasis and a quite compatible with life.

The explanation advanced at the time was that increa in blood-volume partly compensated for this extre anæmia,[2] but later M. M. Fikri and I[3] found that i Egypt the blood-volume was not increased in cases o ancylostoma anæmia.

Cairo. P. GHALIOUNGUI.

PNEUMOTHORAX AFTER THYROIDECTOMY

SIR,—The communication by Mr. B. R. Billimoria (Jun 21) opens with the statement that injury to the apica pleura is a recognised complication of thyroidectomy Is this true, or is it one of those statements which hav appeared in textbooks and have been copied withou question?

The greatly enlarged thyroid is common in this are of England, and in operating on over 450 goitres I hav found that about 1 in 5 has some extension below th clavicle or sternum. There is never any difficulty i freeing the enlarged lower pole as the areolar tissu is fine and soft; a gentle sweep with the finger combine with traction from above is usually sufficient, and I doubt if this is likely to damage Sibson's fascia. I thin the probable explanation of the reported case is to b found in the article by H. J. Barrie,[4] to which attentio was later drawn by A. P. M. Page.[5] Barrie showed that i is possible for bilateral pneumothorax to occur by a entering the areolar tissue in the superior mediastinu via the wound or drainage tube. It is often possible if respiration is slightly obstructed, to see the areola tissue around the great vessels fill with air, and this ca continue after the operation via the drainage tube, unless Barrie's simple remedy of covering the tube with gauze impregnated with soft paraffin is adopted The following case, which occurred in 1938, is somewhat similar to Billimoria's.

During the course of an operation under intratrachea gas-oxygen and rectal bromethol for a small goitre, weighing $2^1/_2$ oz., causing mild toxic symptoms in a young woman, cyanosis appeared and persisted despite an increase in the supply and pressure of oxygen. Bubbling in the wound was noticed, but this was considered to be due to increased inspiratory effort and it was disregarded. On her return to bed the patient's cyanosis became alarming. Dr. T. A. Hunter, of Plymouth, examined the chest and found a left pneumothorax, confirmed by X-ray examination; and when this was removed by aspiration the patient quickly recovered. Radiograms of the chest before and after operation showed healthy lung fields, and the patient is well at the present day.

There seemed to be two possible explanations at the time: injury to the pleura or rupture of an emphysematous bulla. I was quite certain that I had not injured the pleura as the dissection did not approach it. The other cause seemed unlikely because there was no recurrence after the air had been removed. On reading Barrie's communication the explanation of this nearly fatal complication seemed to me clear, and since then I have made it a routine practice to cover the wound with gauze soaked in soft paraffin.

Plymouth. EDRIC WILSON.

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1. *Lancet*, 1934, ii, 290.
2. Boycott, A. E. *Ibid*, 1911, i, 717.
3. *Ibid*, 1937, i, 800.
4. *Ibid*, 1940, i, 996.
5. *Ibid*, 1941, ii, 383.

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The work on the control
pests being done at Rothan
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fields. These possibilities are
dreams.

How then does this prospect a
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may reasonably expect the cost
have been markedly reduced—perhap
the increases in the reward to the
to step up our agriculture.

A DOUBLE POLICY

Some attempt, however tentative, to su
of a positive programme seems to be

the fact that two years after the end of the war everybody was suffering from the effects of strain. He therefore asked for an extension of food for certain classes of heavy workers, and that more should be done to see that all children entitled to priority milk actually received it. He also hoped that the age-limit for priority eggs could be extended beyond two years. Anyone who had travelled extensively, Dr. Guest thought, could say that, with the exception of the United States of America and Canada, every country had a lower standard of food than we had. Child and maternal health statistics and the general health and vigour of the country showed that we were now probably better fed than we were in the inter-war period and much better fed than we were at the end of the last war.

Dr. BARNET STROSS suggested that as we were at present consuming in our tea ration three times the maximum dose of caffeine, a little diminution by way of drinking more water or even beer would not do us any harm. The food problem was a world problem, he continued, and ours was only part of it. If our meat supplies were down by 9%, Europe was short by 40%. We must refuse to be misled by the importance of calories alone; obviously it was quality that counted. The reason why our national health had improved was that we had been compelled to eat less animal protein, and we were therefore eating more summer fruit and leafy green vegetables, despite the high prices. Recently we had been consuming more liquid milk and the quality of our fats was much better, because the vitaminisation of margarine gave great protective value, and was better than normal butter today—though he admitted he preferred butter, for the tyranny of the palate is not easily overcome. The use of wholemeal grain and a greater consumption of potatoes meant that our diet today was healthier, even though it was not fuller and was obviously more monotonous.

Lieut.-Colonel W. ELLIOT declared that the Minister of Food had explained his schemes, but at the back of everyone's mind was a haunting fear how long finance for them would continue. The dollars would run out before Christmas and there would be a gap to be closed. Full employment had already brought the consumption of this country above the point at which full activity could be maintained. Colonel Elliot agreed that our health record had been excellent, but we must remember that these figures reflected the physical condition but not the energy output of the people. The whole nation was working on a too narrow surplus of energy intake over output and found difficulty in putting out the long and sustained effort on which the future of the country depends.

Dr. E. SUMMERSKILL, in reply, said that the only valid criticism which emerged from the debate was that there was a world shortage of food. Our standard compared favourably with most European countries, for full shop windows were no real indication of the standard of living of the masses. The only method of arriving at a valid conclusion was by examining a country's rationing system to priority and non-priority consumers, ascertaining whether it was functioning effectively, and discovering the extent of the black market. We should be proud that in Britain these things could stand inspection, although she did not claim that our methods were perfect. The Ministry recognised that there were certain vulnerable groups which needed special rations, and they had done their best to distribute rations as fairly as possible among those sections which were thought to need them most.

QUESTION TIME

Administrative Machinery for the Act

Replying to a question, Mr. A. BEVAN made the following statement: Section 22 (4) of the National Health Service Act, 1946, enables me to make regulations requiring local health authorities of counties in which schemes of divisional administration are in force under the Education Act, 1944, to make corresponding schemes of divisional administration with respect to the care of children under five. My object in seeking that power from Parliament was to safeguard continuity in the health services for children. On careful re-examination I have come to the conclusion that the making of regulations would entail disadvantages, and that continuity in the health services for children can be secured, and secured more adequately and efficiently, in another way.

There would be disadvantages for two reasons. In the first place many of the areas of divisional administration, which have naturally been selected by reference to educational considerations, are not so well adapted to the administration of health services. Secondly, the arrangements for infant care under section 22 cannot, without loss of efficiency, be separately administered from the arrangements for the care of expectant and nursing mothers or from those concerned with infant health, like health visiting and vaccination and immunisation.

I believe that continuity and the maintenance, which is so desirable, of local interest can best be secured by subdividing all counties (except those where, either on account of the small size of the county or of other local considerations, decentralised administration for the whole or part of the county would be inappropriate) according to local health requirements. In each subdivision the county health committee would use its powers under the Act to appoint a subcommittee on which the councils of county districts comprising the subdivision would be represented, and to which would be delegated the day-to-day administration in the division, not only of the child care services specified in section 22 (4) but also of other services under part III of the Act. Under the county medical officer, executive charge of those services in the division will normally be taken either by an existing assistant county medical officer, preferably one who is also M.O.H. of one or more of the districts constituting the division, or by the M.O.H. of one of those districts who would be appointed to the staff of the county medical officer. There is, moreover, a limited number of non-county boroughs and large urban districts which, besides being " excepted districts " under the Education Act, house an unusually high proportion of the total population of the county, and possess exceptionally well-developed public health (including school health) services. Such a borough or urban district would ordinarily become an area of health administration separate from the surrounding districts, and the county health committee would in these cases appoint, for that borough or urban district, a subcommittee of which half or more of the members would be members of the borough or urban district council, and to which day-to-day administration would similarly be delegated. The M.O.H. of the borough or urban district would then be appointed, by agreement with the borough or urban district council, in a part-time capacity to the county medical officer's staff. Both in these areas and in the subdivisions which I mentioned earlier the county council as local health authority would retain, unimpaired, its responsibility for policy and finance.

I have consulted the associations of local authorities on this proposal, and they have informed me that they are in agreement with the principle on which it is based. I do not, therefore, intend to exercise my powers to make regulations under section 22 (4) of the Act.

Sir HENRY MORRIS-JONES asked the Minister of Health what was the present position in regard to the various bodies, lay and medical, which were to be set up under the terms of the National Health Service Act, 1946.—Mr. A. BEVAN replied: The 14 regional hospital boards have been constituted by an order which contains the names of the members, and it will be for the boards themselves in due course to appoint hospital management committees. The designation of teaching hospitals is at present under consideration, after which the boards of governors of those hospitals will be constituted. About 60 executive councils have so far been constituted, and their appointment is being announced locally. Local medical and pharmaceutical committees have been provisionally recognised in all areas, and local dental committees in practically all, but I have not the names of the members of all these bodies. The arrangements for the appointment of ophthalmic services committees, the Tribunal, the Medical Practices Committee, and the Dental Estimates Board are under consideration. On the establishment of health committees by local health authorities, I would refer to the reply given on June 26.[1] Suggestions are under consideration for appointments to the Central Health Services Council, which will in due course be consulted on the constitution of standing advisory committees.

Tuberculosis in the Army

Mr. H. USBORNE asked the Secretary of State for War how many men had been discharged from the Army, suffering

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[1] See *Lancet*, July 5, p. 37.

Parliament

ON THE FLOOR OF THE HOUSE

Mr. Dalton's statement on the import programme set the tone of debates for the week. The Government are maintaining food imports at the same level as last year, but there is the possibility of cuts. On Tuesday Mr. Strachey was accused, unfairly as it seemed, of using the technique of his famous R.A.F. broadcasts in the different sphere of food. Many Opposition members are revelling in gloom, and in a debate on shortages one Conservative M.P. almost prophesied the end of the England we know because we have sunk into an abyss of economic disaster. This was a bit far-fetched even for the other gloomy Opposition M.P.'s—fresh from an excellent meal in the members' dining-room.

The food debate showed clearly that while it is just as possible to make controversy out of calories as out of economic statistics, it is probably easier to nail down the inaccuracies. Members who referred to Dr. Bicknell's recent article on *Dying England* were somewhat embarrassed when Mr. Wilfrid Roberts gave a further quotation from the article suggesting that some countries in Europe seemed to be managing better than us because they "are not under such a uniform iron control as we are, and have recovered from the war because it is healthier for two-thirds of the nation to eat well and be fit and for one-third to starve." I hasten to add that even the most extreme right wing of the Opposition is not likely to adopt this inverted type of food and health plan for presentation to the electorate.

In the debate emphasis was laid on the improved standard of health we have achieved on our restricted diet. It seems fairly generally agreed that, compared with European countries who were involved in the war, our nutrition stands high. Nor is there any doubt that this high level of food-supply will be maintained. Indeed it is possible, indeed almost probable, that the food of priority classes such as young children and nursing mothers will be improved, and special attention will be given to the diet of heavy workers. But if we want to be sure of variety in our food we shall have to increase the supply of our own home-grown fruits and vegetables. A target of 100% increase in the produce of allotments and private gardens was proposed, and the Minister was asked to give such modest private growers some little extra financial incentive to produce, and to put their produce in the village shop.

The Bevin-Bidault-Molotov conference on the Marshall hint—for there is no plan until we people in Europe make it—has broken into two parts. There is hope, however, that the Economic Commission for Europe may form a bridge, for the commission is an organ of the United Nations and the Soviet Union is part of it. Thus the United Nations again may help to achieve easier and better international coöperation and understanding.

MEDICUS, M.P.

FROM THE PRESS GALLERY

Good Housekeeping

The debate on food in the House of Commons on July 1 took place, as Mr. J. S. C. REID in opening the discussion for the Opposition pointed out, under the hadow of the Chancellor's statement that drastic measures would be necessary to close the gap between our imports and exports, and that the possibility of urther cuts in food could not be ruled out. People deserved, Mr. Reid thought, to be given the facts of the ituation without reserve or equivocation. Would Mr. Dalton's statement affect our purchases from the terling area or from soft-currency countries? Did it mean that in future we were going to refuse all offers rom hard-currency countries of foods which were neither taple foods nor raw materials for agriculture, such as eeding-stuffs?

Too many controversialists were going about, Mr. Reid continued, insisting that this was a well-fed nation. Their stand-by was that now there was equality in the ountry, but no claim could be less true. He had yet o see a survey which showed that people who did not ave access to canteens and restaurants were consuming more than 2400 calories a day. A canteen meal might represent anything from 600 to 1000 calories, and the disparity between those who ate at home and those who could use canteens and restaurants was therefore as great as between Sir John Orr's top and bottom classes. But calories told only half the story. They had received undue prominence, he suggested, because unlike quality they could be measured numerically. Weight for weight there were more calories in bread than in steak, but he did not think many people would voluntarily make the exchange. In conclusion, Mr. Reid charged Mr. Strachey with bad housekeeping, lack of foresight, and a failure to face facts.

Mr. J. STRACHEY replied that if bread had not been rationed when it was the condition of the country during the last winter would have been as grave as his critics periodically predicted. Defending bulk buying, Mr. Strachey said it was an integral and indispensable part of the general policy by which the available foodstuffs were secured and distributed equitably to the people of this country, for it would be difficult to maintain the rationing system if at one point the foodstuffs did not come into Government ownership. Bulk buying also made it possible to stabilise prices and to play our part in those irksome but beneficial systems of international allocation. *The real case, however, for* bulk buying was that it enabled us to use the long-term contract which was the best instrument at our disposal for increasing the amount of food which we could find to buy in the world.

People spoke as if the Ministry of Food were unaware of the trials and difficulties of the housewives. Actually, Mr. Strachey claimed, those difficulties were better met by the efforts of the Ministry than by any words of sympathy, however eloquent. Today British housewives had the assurance of being able to take the staple articles of food out of the shops, and for the poorer housewives that was a new assurance. He admitted it was hard that two years after the war there were still the irksomenesses of shortages and rationing systems, but the Government were determined not to remove the difficulties from a few housewives; they would only remove them when they could remove them from all.

In this country, Mr. Strachey continued, people were getting between 2880 and 2890 calories a day, which was a good deal better, as Professor Marrack had lately shown in the *Times*, than the lower-income groups received before the war. Lieut.-Colonel Elliot believed that he secured some political advantage by alleging that the figure was 2325. That, said Mr. Strachey, was what the figure would be if no-one ate in catering establishments. Using this completely false figure Colonel Elliot alleged that the nation was gravely undernourished and less cautious supporters alleged that the nation was starving to death. This figure of 2325 came from the National Food Survey which had been in operation long before Mr. Strachey came into office. Their comparable figure in 1941 was 2360; for 1942 it was 2253 and for 1943 it was 2315. So they reached the inescapable conclusion that if we were slowly starving to death today we were starving to death a little more quickly when Lord Woolton was minister of food. According to calculations based on the Orr report the average level for the whole population before the war was 2275 calories. Mr. Strachey did not suggest that 2890 was a highly satisfactory level, but it was a good level in comparison with previous periods. He did not believe in a dead level of food intake for all; but at any rate the difference in intake today was largely according to need, instead of according to class.

Summing-up, Mr. Strachey said that there was no food crisis and there would be none between now and the next harvest. We had stocks of sufficient supplies in the major foodstuffs to see us through until the fruits of the 1947 northern hemisphere harvest were gathered. Looking still further ahead there was no need whatever for the people of this country to feel that they would find it difficult or impossible to obtain, partly from at home and partly from abroad, the food which they needed.

In the debate Dr. HADEN GUEST said that supposing next winter was as bad as the last, how would the Government fortify the health of the people? One of the principal difficulties at present, he thought, was not food, which he considered to be extremely good, but pneumonia (primary or influenzal), 342; cerebrospinal fever, 57; poliomyelitis, 56; polioencephalitis, 11; encephalitis lethargica, 2; dysentery, 66; puerperal pyrexia, 94; ophthalmia neonatorum, 62. No case of cholera, plague, or typhus was notified during the week.

Both cases of smallpox were notified in Staffordshire—one at Bilston and the other at Willenhall.

Deaths.—In 126 great towns there were no deaths from enteric fever, scarlet fever, or diphtheria, 7 (0) from measles, 9 (4) from whooping-cough, 76 (8) from diarrhœa and enteritis under two years, and 7 (1) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 272 (corresponding to a rate of 29 per thousand total births), including 27 in London.

Obituary

WILLIAM GOUGH

M.B. LOND., F.R.C.S., F.R.C.O.G.

Mr. William Gough, emeritus professor of obstetrics and gynæcology in the University of Leeds, died on June 29 at the age of 71. He received his medical education at Leeds, and after taking his M.B. Lond. with honours and a gold medal in physiology in 1900 he was appointed senior house-surgeon at the Leeds General Infirmary and later senior resident anæsthetist to the Women and Children's Hospital there. Settling in consultant practice in Leeds he took his F.R.C.S. in 1903, and in due course was elected to the staffs of the Infirmary and the Women and Children's Hospital. He also served as honorary medical officer to the Leeds Maternity Hospital. At first lecturer in gynæcology in the university he was later appointed to the chair from which he retired in 1936. Always greatly interested in pathology, he ran the Yorkshire Pathological Laboratory for several years. A foundation member of the Royal College of Obstetricians and Gynæcologists he was appointed to the council in 1937, and during the blitz he came to London regularly to attend its meetings. He was elected a vice-president in 1942, and in 1944 did valuable work as chairman of the examination committee.

"Gough's bent," writes a colleague, "was more towards gynæcology than obstetrics. He had an excellent general surgical training and was an exceptionally rapid and skilful surgeon. Completely ambidextrous in his surgical work, he used knife or needle equally well with either hand. He resented perhaps more than most the arduousness of obstetrics, and he was a very conservative exponent of the obstetric art. Bedside teaching did not appeal to him, but it was possible to learn a great deal from him by watching him at work in the theatre. He said little, but when he spoke it was to the point. An astute clinician with excellent judgment, he was strikingly fair-minded."

In 1905 he married Miss Agnes Innes Crane Fraser, and she survives him with one son and four daughters.

WILLIAM FIELDING ADDEY

M.D. LOND., F.R.C.P.

Dr. W. F. Addey, consulting physician to the East Suffolk and Ipswich Hospital, died at his home at Otley on June 20. Between his schooldays in Manchester and his student days in London he spent some years on the Continent, where he learned to speak German and French fluently. He took the Conjoint qualification from University College Hospital in 1899 and graduated M.B. with honours in medicine the following year. After holding house-appointments at his own hospital and at Queen Charlotte's he took his M.D. in 1902. For a time he acted as assistant surgeon at Croydon General Hospital, while practising with a group of doctors headed by Dr. Parsons-Smith. But on his demobilisation in 1919 after two years' service with the R.A.M.C. he settled in practice at Ipswich. He was specially interested in electrocardiography, and his published work included papers on heart-block and the treatment of heart disease. In 1935 he was elected F.R.C.P.

A colleague writes: "Addey was a physician of the old school, who relied chiefly on his clinical acumen and a routine investigation for his diagnosis, but he was always ready to make use of modern aids. Active in all he did, his hobbies were yachting, music, and travelling, and his keen sense of humour and charming Victorian manner endeared him to all. His mortification was great when his beloved Paris fell, and the war years took a heavy toll, so that it was no surprise when three years ago he was obliged to give up work. After a gallant struggle, followed by a long and tiresome convalescence, successfully overcome, he hoped to carry on again, but it was not to be. He died suddenly and peacefully reading a book, and his picturesque figure will no longer grace our meetings."

His widow survives him with two daughters. He was 75 years of age.

HERBERT HENRY MILLS

M.D. LOND.

When the Insurance Act was introduced Dr. Herbert Mills was one of the few who from the first took an active part to secure its working, and in his book *Politics from Within* Lord Addison writes:

> "In the struggle to which we were committed two men, Dr. H. H. Mills of Kensington, and Dr. Lauriston Shaw, one of the physicians of Guy's Hospital, stand out in my recollection as prominent for courage and ability. The opposition and opprobrium which these high-minded men endured, although they were by no means alone in this respect, was shameful and discreditable to the last degree. If ever men deserved well both of the profession and the public these two did. Their endeavour was to prevent the profession being committed, with all the misfortunes to itself and to the public that would certainly have ensued, to a refusal to coöperate with the State in a great endeavour."

Dr. Mills himself went on the panel, to the great surprise of most of his Kensington patients, and served on the advisory council of the National Insurance Act, and the London Insurance Committee. He was elected president of the West London Medico-Chirurgical Society in 1931, and was also a fellow and member of the council of the Medical Society of London, a member of the council of the Röntgen Society, and a medical referee for the Prudential and other insurance societies.

Dr. Mills, who had qualified from the Westminster Hospital in 1891, continued practising until three days before his death on July 1, at the age of 78, from pneumonia and heart-failure. He leaves a widow and one daughter, Dr. Hermia Mills.

FRANCIS ELLIOT FOX

B.A. CAMB., M.R.C.S.

Dr. Fox, who died on April 27, was medical superintendent of Brislington House, Bristol, a private mental hospital which has been owned and administered by his family for several generations. His father, Dr. Bonville Fox, died when he was a boy, and the succession from father to son was further delayed by service in the 1914–18 war. On leaving Winchester F. E. Fox joined the Army, where he reached the rank of captain. While stationed in Persia towards the end of the war he received grave head injuries, but he made a good recovery and was able in 1919 to go up to Cambridge to begin the study of medicine. From Caius College he went to the London Hospital and qualified in 1924. After holding a clinical assistantship at the London and a house-appointment at the Bethlem Royal Hospital, he was for a time assistant medical officer at Peckham House before he returned to Bristol to take up the work for which he had trained. In 1940 he published in the *British Medical Journal* a paper describing his clinical experience with electrically induced convulsions.

A man of fine presence and kindly bearing, "Sonny" Fox (as he was affectionately called by his many friends) was capable both in professional and public affairs. He was a member of the Bristol city council and for many years chairman of the Frome Conservative and Unionist Association. His chief hobby was gardening, and at Brislington House he made a beautiful garden even more beautiful. He married in 1940 Ethel Mary Skuse, who survives him with one son.

from tuberculosis, between September, 1939, and June, 1945; and June, 1945, and the present time, respectively.—Mr. F. J. BELLENGER replied: The figures are as follows:

	Pulmonary	Other sites	Total
September, 1939, to June, 1945 (inclusive)	16,625	3103	19,728
July, 1945, to April, 1947 (inclusive) ..	4114	549	4663

Egg Priority for Children

Dr. HADEN GUEST asked the Minister of Food what were the present arrangements for supplying eggs to children up to two years of age; and how many eggs were supplied per child for the months of October, November, and December, 1946.—Dr. SUMMERSKILL replied: Children between the ages of six months and two years receive a priority supply of eggs at the rate of three a week, and all other children receive one egg at each ordinary allocation. During the last three months of 1946 each child in the priority class received approximately thirty-nine eggs, and other children received approximately eight eggs each.

Future Level of the Meat Ration

Colonel A. WIGG asked the Minister of Food if he was yet able to make a statement about the future level of the meat ration.—Dr. SUMMERSKILL replied: It will, unfortunately, be necessary to reduce the canned corned meat ration from 4*d.* to 2*d.*, thus returning to 1*s.* 2*d.* total meat ration from July 13. When the meat ration was raised to 1*s.* 4*d.* last July, the Minister said he hoped that it could be kept at that level throughout 1946, and possibly into the early months of 1947. We have, in fact, maintained the 1*s.* 4*d.* ration for 6½ months of this year. The reasons that it has now to be reduced are, primarily, the falling home production caused by this year's severe weather and heavy slaughtering last autumn, and a temporary factor, the abnormal growth of feed in recent weeks, which has led farmers to delay the sale of fatstock until later in the year. If home supplies had been normal we should have been able to raise the carcase meat ration by 2*d.* when we reduced the canned corned meat ration—which we always knew we should have to do sometime this year. It is impossible to say at present how long the ration will have to remain at 1*s.* 2*d.*, nor how much of it will have to be issued as canned corned meat; the position is bound to be difficult for several months. The House may be assured, however, that we shall make the most determined efforts to restore it to 1*s.* 4*d.*

Rehabilitation of ex-Service Pensioners

Mr. H. HUGHES asked the Secretary of State for Scotland how many rehabilitation centres for members of the Forces there were in Scotland; where they were situated; and if he would make a statement on their work and progress.—Mr. WESTWOOD replied: Provision is made by the Ministry of Pensions for the medical rehabilitation of ex-Service pensioners at their hospital in Musselburgh, and the Ministry also have arrangements for the treatment of ex-Service pensioners at a hospital in Glasgow where similar provision exists. I understand that all patients in the Ministry's hospital whose physical condition permits undergo a course of medical rehabilitation in a fully equipped centre as part of routine treatment and that very satisfactory results have been achieved. I am also informed that the Ministry of Labour and National Service are taking steps to establish a centre near Glasgow for industrial rehabilitation at which special provision will be made for ex-Servicemen.

Death Certificates

Mr. J. A. SPARKS asked the Minister what precautions were taken to secure that the cause of death certified upon a death certificate was correct; and, in view of the evidence at the recent coroner's trial at Southport, what steps he proposed to take to ensure that death should not be certified from wrong or false causes.

Wing-Commander N. J. HULBERT asked the Minister if he was aware that the law now permitted medical practitioners to issue death certificates in respect of near relatives; and if he proposed to introduce legislation to amend this practice.—Mr. BEVAN replied: The position under the Births and Deaths Registration Acts and Regulations is that a registered medical practitioner who is otherwise competent in the circumstances of the particular case to give a certificate of the cause of death is not precluded from doing so by reason of relationship to the deceased, and it is not open to the registrar of births and deaths to reject a certificate on that ground. The duties of the registrar include the duty to report to the coroner before registration deaths in certain specified categories including any which he has reason to believe to be unnatural, or accidental, or attended by suspicious circumstances, or the cause of which appears to be unknown. I do not at p contemplate amending legislation on any of these matters.

Mr. H. HUGHES: Will the Minister consider introducing a provision whereby death certificates shall be countersigned by an independent medical practitioner?—Mr. BEVAN: I do not contemplate any amendment of the law at present.

School Meals and Milk

Mr. S. SWINGLER asked the Minister of Education how many gallons of milk per month were distributed to, and how many meals per day were served in, schools in England and Wales during the first quarter of 1947, by comparison with the same quarter of 1939.—Mr. TOMLINSON replied: I regret that comparable quarterly figures are not available, and that the returns obtained in February, 1947, were rendered unreliable by the severe weather. For the year 1946 the monthly consumption of school milk averaged 3,54[illegible] gallons, including the consumption at the independent schools, which were admitted to the scheme in 1942. The average monthly consumption in the year preceding the war was approximately 2,250,000 gallons. The daily number of children having dinner at grant-aided schools in October, 1946, was 2,252,000, and the corresponding figure in 19[illegible] before the outbreak of the war, is roughly estimated at 250,000.

Doctors' Panels

Mr. S. HASTINGS asked the Minister of Health how many doctors undertaking service under the National Health Insurance Act had approximately the maximum number on their lists; and how many within 500 of this maximum.—Mr. BEVAN replied: I regret that the desired information is not available.

Public Health

Smallpox

Barnsley.—After an interval of four weeks the sixteenth case was detected and removed to hospital on June 30; the diagnosis has been confirmed by the recovery of variola virus on egg culture. The patient is a woman, aged 62, vaccinated in infancy and during the 1914–18 war. She is suffering from a modified attack commencing on June 24, with a discrete rash appearing on June 28. The source of infection is at present undetermined.

Bilston.—A schoolboy, aged 10, was removed on July 2 as a suspected case. A rash had appeared on the previous day. He had been vaccinated on June 23. The diagnosis is still unconfirmed.

Poliomyelitis

Notifications for the week ending June 28 show a further increase to 56, compared with 44 in the previous week and 8 in the corresponding week of 1946. The disease is widely scattered over the country, some three dozen sanitary districts being involved.

Polioencephalitis

Polioencephalitis notifications have also jumped to 11 from an average of 2 to 3 a week. It is not yet known whether this rise is merely a reflection of the increased incidence of poliomyelitis or whether there is in fact a prevalence of encephalomyelitis and encephalomeningitis distinguishable from anterior poliomyelitis and resembling the series of cases described by Jennings.[1] An increase in cerebrospinal-fever notifications to 57 may have some significance in this connexion. Perhaps more information on this subject would be forthcoming if practitioners ceased to restrict notifications of polioencephalitis to cases believed to be manifestations of anterior poliomyelitis.

Infectious Disease in England and Wales

WEEK ENDED JUNE 28

Notifications.—Smallpox, 2; scarlet fever, 91[illegible]; whooping-cough, 2052; diphtheria, 182; paratyphoid, 10; typhoid, 10: measles (excluding rubella), 937[illegible] coördinating board at Ministry level could do much to promote civil-aviation medicine; one of the board's tasks would be to ensure suitable first-aid arrangements at airports.

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[1] Jennings, G. H. *Lancet*, 1947, i, 471.

SCOTTISH EXECUTIVE COUNCILS

ORDERS made by Mr. Joseph Westwood, Secretary of State for Scotland, fix the areas to be served by the 25 executive councils which are to be set up under the National Health Service (Scotland) Act, which comes into operation next year on July 5. Glasgow, Edinburgh, Dundee, and Aberdeen are each to have their own council, as are the counties of Angus, Ayr, Caithness, Dumfries, Dunbarton, Fife, Inverness, Lanark, Orkney, Renfrew, Ross and Cromarty, Sutherland, and Zetland. The remaining twenty counties are grouped under 8 executive councils, the combinations being Aberdeen and Kincardine; Argyll and Bute; Banff, Moray, and Nairn; Kirkcudbright and Wigtown; Midlothian, West Lothian, East Lothian, and Peebles; Perth and Kinross; Roxburgh, Berwick, and Selkirk; Stirling and Clackmannan. According to the Department of Health for Scotland appointments to the councils will be made in a few weeks' time. Members are to be appointed partly by the local authorities and the doctors, dentists, and chemists in each area, and partly by the Secretary of State. The councils are to be responsible for administering the family-doctor service and dental services for the general public, and for arranging for pharmaceutical supplies in connexion with both medical and dental treatment.

University of Cambridge

On June 17 the degree of M.D. was conferred on M. S. M. Fordham.

University of London

Mr. D. W. Logan, D.PHIL., has been appointed principal of the university in succession to Mr. Harold Claughton, who is retiring at the end of the year. Dr. Logan has been clerk of the university court since 1944.

University of Birmingham

On July 4 the degree of M.D. was conferred ex officio on Prof. William Melville Arnott, Prof. Thomas McKeown, and Prof. J. M. Smellie, and the degrees of M.B., CH.B. on Dr. J. J. Elkes. The following degrees and diplomas were also conferred:

M.B., Ch.B.—M. G. FitzGerald (with second-class honours); J. W. Baker, J. B. Binks, C. W. Bird, D. G. Boyle, F. A. J. Bridgwater, Philippa H. Cadbury, A. E. Caines, A. M. Clark, C. P. Cotterill, G. A. Dalton, Deryk Darlington, C. J. C. Davey, Jean M. Evans, Sheila Fairclough, Margaret L. Fallon, G. E. Faulkner, O. P. Gray, D. A. Hanson, F. G. Isaacs, W. C. Lees, W. H. McIlveen, Beryl W. Marson, F. W. Millard, A. L. Mintz, J. C. E. Pougher, L. W. Robinson, P. W. H. Robinson, Barbara Shaw, N. K. Shinton, M. J. Simpkiss, Geoffrey Slaney, A. J. White, Rose A. J. Whitelaw, Margaret D. Wigley, *Jacqueline Domenet, *Ruth W. Towler.

D.P.H.—Edith M. M. Alexander, Joyce M. Allen, R. J. Calvert, Frances M. Earle, Herbert Geuter, J. R. Gibson, D. M. I. Harmar, A. F. Morgan, E. C. Ostler, W. R. Perry, R. G. Record, B. D. Robinson, F. A. Smith, Margaret M. Timpany.

C.P.H.—T. F. H. Duffell, F. E. Fletcher, Evan Williams.

* In absentia

University of Durham

At congregations held on July 1 and 2 the following degrees were conferred:

M.D.—P. B. Crone, W. A. S. Falla, *J. H. Middlemiss, Charles Neubauer, *S. G. Siddle, *Paul Szekely, Mary D. Taylor.

Ph.D. (in Medicine).—*Shujaat Ali.

M.B., B.S.—J. P. Anderson, Anthony Ashcroft, G. M. Bell, *S. A. Biggart, Joan Bride, Sheila M. Cameron, D. J. Cawthorne, Lucy E. Coates, Rowland Cowley, Jacqueline Elliott, L. H. Field, Peggy Foster, J. B. Fox, Jan Glaser, D. L. Golightly, A. C. Griffith, W. P. Haigh, Anthony Hand, Bernard Hayes, Catherine V. Johnston, Jessel Josephs, A. R. Kirby, H. F. Lake, T. K. Lamballe, *D. B. Leaming, Elizabeth U. Lee, M. F. Levy, F. I. Locke, Lorna M. McLeod, *Keith McKay, Margaret A. Nattrass, A. O. Odulate, Margaret J. Parbrook, *R. T. Parr, David Refson, A. A. Reid, M. C. Robson, A. L. Rowe, J. N. S. Simpson, Patricia M. M. Smith, A. H. Snaith, *W. E. Suffield, Sonia H. J. Sumner, Evelyn Swangren, Anastasia Swinburne, Helena C. W. Wardle, D. G. V. Whittingham.

* In absentia.

University of Dublin

On July 2 the following degrees were conferred at the School of Physic, Trinity College:

M.D.—W. P. Griffin, Philip Jabkovitz, H. D. McGorry, L. L. Nel, A. E. B. de Courcy Wheeler.

M.Ch.—G. E. Nevill.

M.B., B.Ch., B.A.O.—H. A. Adams, A. D. H. Browne, C. R. Deuchar, Marion T. Gaston, M. V. Graham, E. R. Haynes, Evelyn M. Holberton, Monica A. Jackson, A. J. F. Kilpatrick, Fenwick Kirkpatrick, G. B. Leitch, E. A. McColl, J. M. McCormick, R. M. Peet, Marjory A. Pollock, M. S. Strong, Elizabeth M. Wann, Ruth R. Watson, J. L. Wilkinson, Ian Wilson.

University of Manchester

At recent examinations the following were successful:

M.D.—S. B. Rampling.

M.B., Ch.B.—P. D. Fowler, Muriel Lister, Letitia E. Woodvine (with second-class honours); Barbara Anderson, Margaret Bagshaw, Mary L. Barrett, Kurt Benger, J. I. Bentley, Peter Brooks, D. L. Chadwick, Elizabeth H. Clow, Sheila A. Costello, P. J. Croxford, Leslie Dawson, Jack Dubberley, R. D. P. Eaton, George Fairclough, Maurice Feingold, J. R. C. Flett, S. F. Gilbert, Ruth Goodier, Bernard Goodman, K. S. Holt, Christine M. Hope, Thelma B. Hoyle, A. K. Karfoot, D. P. Keirby, N. P. Lancaster, William Lees, D. C. Lindars, G. P. Love, H. G. Lowe, V. T. Mason, J. G. Mathie, H. L. Matthews, I. O. Miller, G. N. L. Mulliner, Alan Murphy, Jack Nagington, J. A. Nightingale, L. M. Norburn, John Rimington, S. L. Royce, Margaret E. R. Stoneman, D. B. Stott, C. H. Thompson, J. T. L. Unsworth, G. W. Waters.

D.P.M.—H. A. Cole, Robert Cotter, R. C. Cunningham, Samuel Falk, I. McD. Kerr, M. G. McColl.

University of Aberdeen

On July 3 the following degree and diplomas were conferred:

M.D.—L. D. M. Gavin.

D.P.H.—James Cramond, Alma C. Dickie, J. L. T. Dickie, J. S. Hamilton, R. B. Killoh, A. W. McBain, Robert McDonald, Alexander Mair, W. H. P. Minto, R. G. Murray, G. M. Reid, G. S. Riddell, A. G. Scott, E. T. Shennan, A. A. Shivas, W. D. Swinney, W. L. Walker, J. H. Wood.

University of Glasgow

Dr. J. N. Davidson has been appointed to the Gardiner chair of physiological chemistry in the university in succession to Prof. G. M. Wishart, who has been appointed director of postgraduate medical education in the university. Professor Davidson has held the chair of biochemistry in the University of London at St. Thomas's Hospital medical school since last year.

Royal College of Surgeons of England

Election to the Council.—On July 3 Mr. R. J. McNeill Love was re-elected and Mr. A. Lawrence Abel and Mr. J. B. Oldham were elected members of the council. Sir James Walton, who also received the requisite number of votes, is prevented by the terms of the 1947 charter from taking his seat as he has already served for 16 years. There will, therefore, be a vacancy until the next election. The result of the poll was as follows:

	Votes
R. J. McNEILL LOVE (Royal Northern)	839
[SIR JAMES WALTON (London)	835]
A. LAWRENCE ABEL (Princess Beatrice)	637
J. B. OLDHAM (Royal Liverpool United)	629
A. DICKSON WRIGHT (St. Mary's)	609
H. W. SYMONS (General Infirmary, Leeds)	557
H. C. EDWARDS (King's College)	478
L. CARNAC RIVETT (Middlesex)	356
M. F. NICHOLLS (St George's)	277

In all 1563 fellows voted: in addition 6 votes were found to be invalid.

King's Physicians

The King has appointed the following to be his honorary physicians for a period of three years:

Dr. James Boyd, chief M.O., ministry of health and local government and ministry of labour, Northern Ireland; Sir Allen Daley, M.O.H. and school M.O., London County Council; Dr. A. M. Fraser, M.O.H., Inverness (Highlands and Islands Medical Service); Sir Walter Haward, D.G.M.S., Ministry of Pensions; Sir Wilson Jameson, chief M.O., Ministry of Health and Ministry of Education; Dr. Norman Tattersall, P.M.O., Welsh National Memorial Association.

Royal Society of Medicine

Colyer Prize.—Applications for the next award of this prize should be submitted not later than Oct. 1, 1947, to the prize committee at 1, Wimpole Street, London, W.1. The award is offered for the best original work in dental science completed during the previous five years by a dental surgeon educated at any recognised dental school in Great Britain or Northern Ireland, who has not been qualified for more than five years.

Petrol Rationing Periods

The Ministry of Fuel and Power have decided to extend from four months to six months the rationing periods for supplementary allowances of petrol for private cars and certain other vehicles. For medical practitioners the next rationing period will cover the six months from Oct. 1, 1947, to March 31, 1948. This will be made clear in a printed letter which will accompany the issue of coupons in September. The change has been made for the convenience of business and professional car users and to secure staff savings in the regional petroleum offices. It does not mean that in future a four months' allowance will have to last for six months.

Appointments

BLACKWOOD, WILLIAM, M.B. Edin., F.R.C.S.E.: asst. pathologist, National Hospital for Nervous Diseases, Queen Square, London.

DOBBIN, MURIEL, M.B. Glasg.: M.O. for maternity and child welfare, Bermondsey.

GIBSON, G. H., M.B. Glasg., D.P.H.: deputy county M.O.H., Leicestershire.

HALPERIN, RACHEL, M.B. Lond., D.P.H.: deputy M.O.H., Guildford.

JAY, J. W. W., M.R.C.S.: asst. radiologist, Bradford Joint Hospitals Council.

KIPLING, M. D., M.R.C.S., D.T.M. & H.: asst. port M.O., Liverpool.

PHILPS, F. R., M.B. Lond.: asst. county M.O., Salop.

PICCIOTTO, L. G., M.R.C.P., D.M.R.: asst. radiotherapist, Mount Vernon Hospital and the Radium Institute, Northwood, Middlesex.

REES, HARLAND, B.M. Oxfd, F.R.C.S.: surgeon, St. Peter's Hospital for Stone, London.

RICKARDS, A. G., M.B. Lpool: pathologist, Royal Lancaster Infirmary.

SHILLITOE, A. J., M.B. Lond., M.R.C.P.: pathologist, Kingston-upon-Hull health department.

VARLEY, J. F., M.B. Camb., M.R.C.P.: physician, Southlands Hospital, Sussex.

WHETNALL, EDITH, M.S. Lond., F.R.C.S.: director of deafness aid clinic, The Royal National Throat, Nose, and Ear Hospital, London.

Queen Mary's Hospital for the East End, London:

Asst. Obstetric Surgeons:

BARNS, H. H. F., M.B. Lond., F.R.C.S., M.R.C.O.G.

SPIERS, B. G., M.B. N.Z., F.R.C.S.E., M.R.C.O.G.

The Hospital for Sick Children, Great Ormond Street, London:

BONHAM CARTER, R. E., M.B. Camb., M.R.C.P.: physician to outpatients.

KEITH, DOROTHEA, M.B. Belf.: house-surgeon.

LAURANCE, B. M., M.R.C.S.: house-physician.

STREET, F. N., M.B. Sydney, F.R.C.S.: house-surgeon.

TIZARD, J. P. M., B.M. Oxfd, M.R.C.P., D.C.H.: resident medical registrar.

WINCE, W. H. D., M.B. Lond.: house-physician.

Selly Oak Hospital, Birmingham:

CLARKE, G. R., M.B. Birm., F.R.C.S.E.: chief asst. surgeon.

GUEST, I. A., M.D. Camb., M.R.C.P.: chief asst. physician.

HOBBES, T. H., M.B. Lond., D.A.: anæsthetist.

JACKSON, W. P. U., M.B. Camb., M.R.C.P.: chief asst. physician.

LEASK, A. R., F.R.C.S.: chief asst. surgeon.

MCCUTCHEON, JANE, M.B. Glasg.: resident asst. anæsthetist.

NEVILLE, MARY, M.B. N.U.I., D.OBST. R.C.O.G.: chief asst. gynæcologist and obstetrician.

PHILIP, W. M., M.B. Lond., M.R.C.P.: chief asst. physician.

WHITE, J. R. A., M.B. St. And., F.R.C.S.E.: chief asst. surgeon.

General Infirmary, Burton-on-Trent:

JOHNSTONE, R. D. C., M.D. Lond., M.R.C.P.: visiting physician.

MACMAHON, JAMES, M.B. N.U.I.: casualty officer.

West Riding, Yorks:

M.O.H. and divisional M.O.:

PROCTER, R. A. W., M.C., M.B. Camb., D.P.H., D.T.M. & H.

REEVES, A. J., M.B. Dubl., D.P.H.

Births, Marriages, and Deaths

BIRTHS

AMBROSE.—On July 1, in London, the wife of Dr. Gordon Ambrose—a daughter.

FORSYTHE.—On June 29, the wife of Dr. Kirk Forsythe—a son.

FOSTER.—On June 26, at Ryde, Isle of Wight, the wife of Surgeon Lieutenant A. O. Foster, R.N.—twin sons.

GEARY.—On July 3, in London, the wife of Dr. H. V. Geary—a daughter.

MAYNE.—On June 27, the wife of Dr. A. H. Mayne—a son.

PRIDIE.—On June 27, the wife of Mr. Kenneth Pridie, F.R.C.S.—a son.

WILSON.—On June 29, in Glasgow, the wife of Dr. R. B. Wilson—a daughter.

MARRIAGES

EVANS—MORE.—On May 31, at Ipswich, Gordon M. Hylton Evans, M.R.C.S., to Hannah Mary More, S.R.N.

ILLINGWORTH—REDHEAD.—On July 3, Ronald S. Illingworth, M.D., to Cynthia Mary Redhead, M.B.

KENNON—HUGHES.—On June 28, at Wrexham, Robert Warton Kennon, M.B., to Joan Margaret Hughes, M.B.

RYDER—RODEN.—On June 28, at Bristol, Michael H. Ryder, M.R.C.S., to Edith Stéphanie Roden.

WALTERS—LARGE.—On June 30, in London, Geoffrey Alexander Bagot Walters, F.R.C.S.E., to Daphne Large.

DEATHS

BERRIDGE.—On July 5, at Enderby, near Leicester, William Robert Morpott Berridge, M.R.C.S., aged 80.

BLAKEMORE.—On July 6, at Ipoh, Malaya, William Leslie Blakemore, M.B. Birm., D.T.M. & H., D.P.H.

CLEVERTON.—On July 2, at Bel Royal, Jersey, Thomas Charles Albert Cleverton, M.R.C.S., aged 67.

DAVIES.—On June 24, at Mooi River, Natal, William Thomas Frederick Davies, C.M.G., D.S.O., M.D. Lond., aged 86.

GOUGH.—On June 29, at Leeds, William Gough, B.SC., M.B. Lond., F.R.C.S., F.R.C.O.G., aged 71.

MACKENZIE.—On July 4, at Naze Hill, Samuel Ridley Mackenzie, M.D. McGill, aged 85.

MAYLARD.—On June 27, at Peebles, Alfred Ernest Maylard, B.S. Lond., F.R.S.E., aged 92.

MILLS.—On July 1, Herbert Henry Mills, M.D. Lond.

Notes and News

WORLD FEDERATION OF CLINICAL PATHOLOGISTS

A WORLD federation of societies devoted to clinical pathology will, it is hoped, be brought into being as the result of a meeting of the European Association of Clinical Pathologists held at Cambridge on June 27. At this meeting the European Association reconstituted itself as a World Federation of constituent bodies. Dr. S. C. Dyke, president of the European Association, occupied the chair; members of interested societies in Czechoslovakia, France, Great Britain, Norway, and the U.S.S.R. attended. The meeting appointed a committee composed of Dr. Dyke as chairman, Dr. W. H. McMenemey and Dr. J. Ungar as joint secretaries, and Dr. R. Cruickshank (London), Prof. Raoul Kourilski (Paris), and Dr. F. Pick (Prague) as advisory members, for the purpose of calling a meeting of delegates from as many interested associations as possible in Paris next November during the meeting of the French Société de Biologie Clinique, with a view to formulating a constitution and electing officers.

The aims of the World Federation will be: (1) to develop clinical pathology, defined as the application of pathology and its allied sciences to medicine; (2) to have regard to the scientific and professional status of those engaged in its study and practice; and (3) to foster international amity and goodwill. The constituent bodies composing the federation will be societies devoted to the advancement of clinical pathology. All members of such constituent bodies who are qualified medical practitioners or university graduates engaged in the study and practice of clinical pathology will ipso facto become members of the federation; in addition individual membership will be available to all who are eligible for membership but are unable to form or belong to a constituent body. It is intended that all constituent bodies shall throw their meetings open to members of all other constituent bodies, and it will be a first aim of the federation to encourage a free intermingling of its members at all meetings of the constituent bodies. It is proposed that the federation shall hold a general conference at least once in every three years at the same time and place as the summer meeting of one of its constituent bodies. It is hoped that the first conference may be held in the summer of 1948.

The Czechoslovak Association of Clinical Pathologists through its president, Prof. H. Sikl, the French Société de Biologie Clinique through Prof. R. Kourilski, and the Association of Clinical Pathologists of Great Britain through its secretary, Dr. McMenemey, have signified their readiness to join the federation. It is hoped to gain a world-wide membership, and societies throughout the world devoted to clinical pathology are invited to communicate with the joint secretaries of the federation committee: Dr. W. H. McMenemey, Pathological Department, the Royal Infirmary Worcester, or Dr. J. Ungar, Glaxo Laboratories, Greenford, Middlesex.

B.O.A.C. MEDICAL SERVICE

AN account of the medical branch of British Overseas Airways Corporation was given by Air Vice-Marshal Sir William Tyrrell, the medical director, at a press conference in London on July 8. The principal aims, he said, are safety, regularity, and comfort; and one of the first tasks is to humanise air transport. The medical service of a civil airline should be an intimate service in which the doctor has leisure to study the air-crews or ground-technicians for whom he is responsible; and the doctor must come to be regarded not as a "career-cutter" but as seeking to help air-crews to achieve their full expectation of life and to retain their economic independence. In accidents the human element is paramount; and the doctor's job should be to penetrate unobtrusively into the lives of pilots so that he can judge of their fitness to fly. Eventually the doctor may be allowed to use his intimate knowledge to stand down, in conjunction with the executive branch, any member of an air-crew, without ignominy or effects on the man's career; but this essential improvement calls for great increase in the size of the medical service. To retain their alertness flying personnel, like athletes, must discipline themselves. Sustained self-discipline of this sort is not easily achieved, and certainly regulations will not achieve it. It calls for an inspired executive and medical service and for first-class flying personnel; but it can come really only from within the individual and the corps of individuals, and for its attainment a corps d'élite spirit must be fostered. A central

THE EDUCATION OF PSYCHIATRISTS *

AUBREY LEWIS
M.D. Adelaide, F.R.C.P.
PROFESSOR OF PSYCHIATRY, LONDON UNIVERSITY

Alan Gregg recently said that the Rockefeller Foundation had spent most of its funds for psychiatric development in subsidies for the teaching of medical students and the training of young recruits to psychiatry because the recruitment, selection, and training of psychiatrists is of cardinal importance to any and every activity in this field. This, I think, is what most of us believe, but we have not acted on this belief; and if we mean now to make good training our chief immediate aim, we shall be forced to traverse some awkward country, throwing away goods that we have prized, and learning to distrust and redraw some of our time-worn maps.

The university is the institution in which higher education lives and develops. In emphasising the place of the university in the training of psychiatrists I may seem to run perversely against the tradition of clinical instruction and hospital experience, in which the university played little or no overt part; but the influence of the university, the sun of the educational system, warms and refreshes clinical teaching in psychiatry, as in other branches of medicine.

STUDENT OPINION

Who are to be taught, and to what end are they to be taught? To the first question there can be no steady answer because every year the training of medical undergraduates is changing, especially in what they learn about psychiatry; and it varies much from place to place; yet this is what decides the knowledge and outlook to be expected of new entrants into the specialty. Upon it, also, and upon the credit of psychiatry as medical students learn to judge it through their training, depends the type of man and woman who will want to enter the psychiatric field. Unless psychiatry is well taught, and the conditions for teaching it well are provided in medical schools, there can be no hope that the abler students and those best suited to study and practise psychiatry will be attracted to it sufficiently. Eloquent appeals; arguments, however useful and true; enticements, whether in the form of material prospects in pay and promotion or as alluring chances for doing good and advancing knowledge—all these will, I believe, have little (or only adverse) effect in enlisting good recruits unless medical students see for themselves during their course that psychiatry is an absorbing field of medicine, one which gains the devotion of people whom students respect and would emulate.

Though the outlook of medical students is already becoming more favourable, no doubt in response to effective teaching, it is still commonly asserted in this country that medical students form a poor opinion of psychiatry and psychiatrists. They say the same in the United States, and at Yale Professor Kahn and his associates tried to discover how things really stood, by getting their students—who had just sat their final professional examination—to answer a detailed opinion-questionary, of the multiple-choice type. I have been able, through the generous coöperation of Dr. E. B. Strauss and Dr. Henry Wilson, to obtain and analyse voluntary and anonymous replies to almost the same questionary from 75 final-year students of two large London medical schools. Like the Yale students they show a more friendly and appreciative attitude towards psychiatry than some would have expected.

That it was not only the favourably disposed who answered is shown by the replies to several questions—e.g., that which ran: "Do you intend to become a psychiatrist?" Of the 75, 26 said they had never thought of doing so and 23 more said emphatically that they strongly rejected the possibility. To the question whether they would refer a relative or friend with signs of a psychiatric disorder to a psychiatrist, 16 said they were rather uncertain whether they would or not. But in their answers to questions of a less directly personal flavour their attitude was more favourable. Rather more than half of them gave psychiatry as one of the fields (out of fifteen branches of medicine listed) in which a man going into general practice most needed to be trained; 47 would call a psychiatrist for a case of asthma that was difficult to treat; 55 liked their work with psychiatric patients; 46 considered the average psychiatrist's knowledge of general medicine adequate; 30 thought psychiatrists could be often, or very often, of assistance to physicians and surgeons in their clinical problems, and the rest (45) thought that psychiatrists could sometimes be of such assistance; 44 thought that psychiatrists on the whole had a better understanding of the life problems of the patient than had other physicians, and only 2 that psychiatrists had less understanding of such problems; 38 believed that what psychiatrists do frequently helps their patients, and 31 more believed that it is sometimes beneficial (only 4 thought it sometimes or often harmful); 11 were certain, and 41 disposed to believe, that psychiatrists have valuable techniques to teach other physicians and medical students; 31 felt fairly certain that they understood themselves better after their course in psychiatry, and 51 were disposed to say that after it they could understand the general problems of patients better.

Moreover, they were dissatisfied with the amount of clinical experience they had had in psychiatry: 61 said they had not examined enough psychiatric patients, and 35 wanted more guidance and advice in their work with such patients.

To one question, however, the answers were chastening: 22 of these keen young observers were fairly certain, and 21 others inclined to think, that there are more odd and peculiar people in psychiatry than in other medical specialties: only 2 considered there are fewer oddities in our ranks than in the other specialties. But (apart from this curious lapse in discernment) it seems safe to infer from the replies of the 75 students that psychiatry is not now a laughing-stock or a closed book to the bulk of medical students but a serious and on the whole respected branch of medicine.

THE ALL-PURPOSES PSYCHIATRIST

How are psychiatrists chosen? Selection is impossible unless there are more applicants than vacancies that must be filled. This has hardly been the case with us. Nor could we truly say that we know the qualities desirable and detectable in the fledgling psychiatrist, apart from those that we would seek for in the fledgling pædiatrician or the fledgling neurologist, or indeed in any good doctor: we could, of course, exclude some unsuitable people—stupid, immature, cruel, or leaden—but the positive goal, the ability to recognise peculiarly suitable people, is still outside our grasp. Guiding the right medical student, therefore, into psychiatry will seldom be a deliberate act by his educators, who have sized up his qualities, but often the unintentional, happy outcome of livening his interest and helping his aspirations until he catches fire and knows thenceforward that he would like most to work in one of the rooms in this rambling, rising house of psychiatry.

Since there are so many rooms, specialisation within the specialty has been urged upon us, to follow a brief common training. This is at best a premature suggestion: unfortunately it has also in some cases been our over-hasty practice; the ill effects are now constantly bothering us. Every psychiatrist, surely, must have a good all-round training; and such a programme as that proposed by the Royal College of Physicians would make this possible, so far as a programme can.

The aim of the training is an all-purposes psychiatrist. When he is asked to treat a child, to report on a criminal, to explain the origins of a strange symptom, to supervise a

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* Presidential address to the section of psychiatry, Royal Society of Medicine, Sept. 26, 1946.

Kent Pædiatric Society

On Saturday, July 26, at 3 P.M., at the County Hospital, Farnborough, Prof. Lionel Penrose, F.R.S., will speak to this society on Genetics in Relation to Pædiatrics.

Faculty of Radiologists

At the annual general meeting of the faculty, held in Birmingham on June 27, Sir Leonard Parsons was elected an honorary fellow.

Society of Lincoln's Inn

The first Bennett prize of £100 has been awarded to Dr. A. L. Banks, a senior medical officer of the Ministry of Health, who is also a barrister of Lincoln's Inn, for his essay on the Jurisdiction of the Judicial Committee of the Privy Council.

British Empire Nurses' War Memorial Fund

The Queen attended a garden party at St. James's Palace on July 8, when she received contributions collected for this fund which has now reached a total of £45,800. The Royal College of Physicians and Viscountess Mountbatten have also each given a travelling scholarship for nurses.

Postgraduate Federation

A Royal Charter has been granted to the British Postgraduate Medical Federation of the University of London, and a supplemental charter to the British Postgraduate Medical School, Hammersmith, which will henceforth be known as the Postgraduate Medical School of London.

Oliver Memorial Fund

The trustees of this fund will make a first award of £50 to a British subject for original work done during the past five years on blood-transfusion. Applications and communications drawing attention to suitable candidates should be sent to Mr. F. W. Mills, National Provincial Bank Ltd., Holborn Circus, E.C.1, before Sept. 30.

Association des Médecins de Langue Française

This association is holding the 26th French congress of medicine in Paris from Oct. 16 to 18 under the presidency of Prof. A. Lemierre. The subjects chosen for discussion include genetics, the anti-histamine drugs, and pulmonary cysts. The secretary of the congress is Prof. L. Justin-Besançon, 38, rue Barbet-de-Jouy, Paris VII.

International Congress of Surgery

Those who wish to attend the XIIth congress of the International Society of Surgery, which is to be held in London from Sept. 14 to 20, should inform the secretary, Mr. H. W. S. Wright, 9, Weymouth Street, W.1, not later than July 31. Applications for membership of the society may of course be made at any time.

Society of Apothecaries

At a recent meeting of the court of assistants with Dr. C. Thackray Parsons, the master, in the chair, the following representatives were appointed: Central Midwives Board, Dr. J. P. Hedley; British Postgraduate Medical School governing body, Sir Cecil Wakeley; Central Council for District Nursing, Mr. George Wynn-Williams; XIth International Congress of Pure and Applied Chemistry, Prof. E. C. Dodds, F.R.S., and Dr. Roche Lynch; Commission Internationale Permanente pour la Médecine du Travail: the Master.

The following were clothed with the livery of the society: Edward Leslie Moll, Philip Willcox, Frank Cook, Henry James Drew Smythe, and Archibald Gilpin. The honorary freedom of the society was bestowed upon Sir Stanley Hewett. The following were admitted to the freedom of the society:—by redemption: Evan Arthur Williams, Nicholas Bickford, Gerald Fitzmaurice Keatinge, Guy Blackburn, William Bentley Purchase, Robert Wilfred Scarff, Noel Gordon Harris, Patrick Butler Adamson, Oliver Broadgate Brears, George Wynn-Williams; by servitude: John Stewart Dismorr. Peter William Monckton Copeman was bound apprentice to William Sydney Charles Copeman for four years.

The mastery of midwifery, honoris causâ, was conferred upon Sir Allen Daley, Sir Eardley Holland, and Sir William Fletcher Shaw. The diploma in industrial health was granted to A. Bell, and the diploma of L.M.S.S.A. to the following:

J. A. Archer-Hall, M. G. Allen-Marsh, A. G. Lewis, G. R. Hollings, R. P. K. Sen, R. D. C. Hart, P. Sattin, F. W. P. Clutterbuck, A. R. Ellerker, J. S. Lambe.

Diary of the Week

JULY 13 TO 19

Monday, 14th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
3.45 P.M. Prof. T. Nicol: Applied Anatomy of the Alimentary Canal.
5 P.M. Dr. N. F. Maclagan Liver Efficiency Tests. (Second lecture.)
MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1
8.30 P.M. Mr. F. A. Williamson-Noble: Contact Lenses. Dr. G. B. Dowling: Athlete's Foot. Mr. A. Dickson Wright: Pruritus Ani.

Tuesday, 15th

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.1
5 P.M. Prof. P. C. P. Cloake: Treatment of Disseminated Sclerosis by Artificial Pyrexia and Prolonged Administration of Arsenic. (First Humphry Davy Rolleston lecture.)
ROYAL COLLEGE OF SURGEONS
3.45 P.M. Prof. J. Kirk: Anatomy of Cerebrospinal Fluid.
5 P.M. Prof. E. C. Dodds, F.R.S.: Hormones.
ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
5.30 P.M. General meeting of fellows.
SOCIETY FOR THE STUDY OF ADDICTION
4 P.M. (Westminster Hospital, Horseferry Road, S.W.1.) Prof. F. L. Golla: Alcohol and the Neuroses. (Kelynack lecture.)

Wednesday, 16th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Dr. M. Kremer: Visceral Sensation.
5 P.M. Dr. E. K. Dawson: Mammary Cancer—its Genesis and Spread. (First lecture.)
TUBERCULOSIS ASSOCIATION & TUBERCULOSIS SOCIETY OF SCOTLAND
2.45 P.M. (Dept. of Zoology, King's Buildings, West Mains Road, Edinburgh.) Dr. H. A. Pattison: Rehabilitation in the U.S.A.
4.45 P.M. Mr. Holmes Sellors: Assessment of the Results of Thoracoplasty.
9.15 P.M. Dr. H. P. Tait: Edinburgh Medical Men at the Time of the Resurrectionists.

Thursday, 17th

ROYAL COLLEGE OF PHYSICIANS
5 P.M. Professor Cloake: Treatment of Disseminated Sclerosis. (Last Humphry Davy Rolleston lecture.)
ROYAL COLLEGE OF SURGEONS
3.45 P.M. Dr. E. L. Patterson: Ductless Glands. (First lecture.)
5 P.M. Dr. Dawson: Mammary Cancer. (Second lecture.)
6.15 P.M. Prof. J. G. Turner: Movements of Teeth. (Charles Tomes lecture.)
ROYAL SOCIETY OF MEDICINE
5.15 P.M. *Experimental Medicine and Therapeutics* and *Medical Society for the Study of Venereal Disease.* Dr. Earle Moore, Dr. G. L. McElligott, Dr. E. M. Lourie: Treatment of Syphilis with Penicillin.
TUBERCULOSIS ASSOCIATION & TUBERCULOSIS SOCIETY OF SCOTLAND
9.30 A.M. (Edinburgh.) Dr. H. Van den Berg: Control of Results in B.C.G. Trials.
11 A.M. Dr. J. G. Scadding: Pneumonias Associated with Epidemic Respiratory Infections.
2 P.M. Dr. V. Reilly: Pathology of Amyloidosis.
3 P.M. Dr. W. M. Borthwick: Genito-urinary Tuberculosis.
4.45 P.M. Prof. V. Monaldi: Endocavitary Aspiration in the Treatment of Pulmonary Tuberculosis.
BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck Street, W.1
8 P.M. Mr. J. Lawrence: Application of Artificial Radio-activity to Biology and Medicine. (Mackenzie Davidson lecture.)
ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland Place, W.1
3 P.M. Dr. I. W. Magill: Modern Anæsthesia. (Bengué lecture.)

Friday, 18th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Dr. Patterson: Ductless Glands. (Second lecture.)
5 P.M. Prof. S. L. Baker: Fracture Callus.

Saturday, 19th

TUBERCULOSIS ASSOCIATION & TUBERCULOSIS SOCIETY OF SCOTLAND
9.30 A.M. Mr. Norman Dott: Skeletal Traction, Surgical Decompression in the Management of Pott's Paraplegia.
11 A.M. Dr. A. MacLean, Dr. B. R. Clarke: Causes for the Breakdown of Discharged Quiescent Cases.

BLOOD ENZYMES AND ACTIVITY OF PENICILLIN ESTERS.—The work by Stedman, Stedman, and White to which Dr. A. Compton referred in his letter on June 28 was published in the *Biochemical Journal*, 1933, 27, 1055.

"NISIN."—With regard to the inhibitory substance, known as nisin, discussed by Mr. Mattick, PH.D., and Mr. Hirsch in THE LANCET of July 5, Messrs. Burroughs Wellcome & Co. (The Wellcome Foundation Ltd.) inform us that 'Nizin' is their registered trade name for a preparation of zinc sulphanilate which is used as an astringent and antiseptic for local application.

should be sufficiently light to enable them to study their cases thoroughly . . . they should be encouraged by group discussions to share their problems and experiences, they must have ready access to libraries . . . above all they must be guided and supervised throughout their period of training."

These desiderata of specialist training cannot be forthcoming at any and every mental hospital—least of all those with a small admission-rate or a propensity to entrust the junior members of the staff with the care the least responsive patients.

THE SPECIALISING CLINICS

Hospitals are more easily seen as elements in the postgraduate educational system than are the diverse voluntary clinics and institutes. Many of these have stimulated some kind of psychiatric activity neglected before their advent, while others have afforded certain educational services at a high self-imposed level; and however we view some of their claims and their divagations from the middle road, everyone must recognise that psychiatry owes them benefits. They are as anomalous educationally as they are in relation to organised health services. But calling something an anomaly is different from calling for its removal or repudiation. On the contrary, the valuable features of these clinics and centres n which a still disputed theory and practice are taught make it desirable that appropriate links should exist for mutual advantage I hope) between certain of them and the postgraduate teaching institute of the university.

THE FOUNDATIONS OF TEACHING

Besides clinical teaching (which will include neurology n particular) there must be some laboratory experience in psychology, in biochemistry and electrophysiology, and n neuropathology. The first of these is a large topic in itself, intrinsically complex and made more difficult by uncertainty as to how much psychology the medical student will learn, what departments of psychology there will be in our universities, and what provision for psychological research and teaching in our psychiatric hospitals. Psychiatry cannot thrive if it is not soundly based on psychology, which is as important to it as physiology; yet no-one would think psychiatrists believed this if he overheard some of them deriding experimental psychology or saw them abasing themselves before a psychological test result as though the Sibyl had spoken.

Finally, psychiatric education must include organised experience of healthy people of all ages and in many environments. How to get this and to keep a sensible proportion between the attention given to it and that given to the more traditional clinical material will be a crux. Joint field-research with psychologists and anthropologists may provide one medium of training. The question is connected with the need for psychiatrists to play a part in the health service for university students, where it exists. This means of demonstrating mental hygiene in action lies so obviously at the door of the university psychiatric clinic and has such patent educational value, if sensibly applied, that it should be striven for, in spite of the obstacles and the many reasons for sober restraint in developing it. It is demoralising for a psychiatric institute to preach mental hygiene, or any other principles of professional conduct, if it does not practise them when it might.

DUTIES OF THE UNIVERSITY

What is the relation of the university psychiatric institute and hospital to all this? Is it to be a school through which pass all the psychiatrists in training in the region clustered around it, or is it to concentrate on the training of a much smaller number to fit them for posts as teachers and research-workers. There can be little doubt about the answer. The Goodenough Committee pointed out that the primary problem in psychiatric education is to build up an adequate supply of teachers. The training of such people, if it is to be as thorough as the furtherance of psychiatry and its relief from its present straits would demand, will absorb the major energies of any university postgraduate schools of psychiatry that may be set up. If schools of this kind are in due course created outside London and Edinburgh, parallel to the undergraduate psychiatric departments, they would still be insufficient to provide the larger part of the training of all recruits to psychiatry.

I say this with a full awareness naturally of the part which the Maudsley courses have played in the training of psychiatrists about to take the diploma in psychological medicine. If the training of psychiatrists could consist chiefly of lectures, demonstrations, and the kind of superficial tuition in case-taking and treatment which can be given to numerous "clinical assistants," then the postgraduate schools could provide the bulk of the training for most or all psychiatrists-to-be. But the training of psychiatrists—even the least ambitious of them—clearly cannot continue to rest on so flimsy and outworn a basis, which, clinically, did little more than supply the deficiencies of undergraduate education in psychiatry, and on the theoretical side practised the vices of spoon-feeding and fact-cramming, which are inescapable in such compressed mass teaching.

There is no need to doubt that the last state of those who were thus prepared for the ordeal by examination was nevertheless often better than the first, and that much positive good has been done by "D.P.M. courses"; but they do not answer the needs of psychiatry at its present stage of development. Although lectures and demonstrations will, of course, be a valuable part of psychiatric teaching in the future, they are educationally of less account than supervised work in clinic and laboratory, seminars or discussions, guided reading, and tutorial sessions—all of which take up so much more teachers' time. Indeed there is a direct conflict of purposes: courses of the D.P.M. type become the bane of genuine psychiatric education if they occupy pupils and teachers alike to the exclusion of studies and work more appropriate to the complex task of psychiatric training.

Postgraduate institutes have therefore the choice of spending most of their energy on contributing all they can to this quasi-universal training, or husbanding their resources for the training of the honours men.

A third choice might lead them to concentrate on some division of psychiatry—for example, the forensic or mental deficiency—and to aim at teaching this on an intensive, or extensive, scale. But the more intensive, the more restricted to a select group; the more extensive, the more it will be of the universal spread-the-butter-thin type; so that what seemed a third choice is really a variant of the two main choices.

Between these two no true compromise seems to me possible: and I am convinced that it is intensive training that the university department should choose as its direct business.

This choice does not shut out the university school from the wider field of psychiatric education: its aim is to increase the influence of the university upon all such education, but that influence can be exercised indirectly and through systematic exposition of aspects of psychiatry and of its basic sciences which can be well taught to classes, rather than by the lowering of standard which necessarily accompanies the clinical teaching of large heterogeneous groups. It is wasteful to put the honours and the pass men in the same class.

I am assuming that, in future, teaching and mental-health services will be so related that the part-time teachers will be much more numerous than in the past, will be drawn from all branches of the mental-health service, will be available for postgraduate as well as undergraduate pupils, and will share in the work of the university clinic. It will be the primary concern of course of insulin, to diagnose a high-grade defective, or to avail himself of the results of psychological tests, he should not have to choose whether he will excuse or hide his deficiencies; he ought not to be nonplussed and as much off his own ground as if he had been called to deliver a baby. His all-round training is not designed to make him a sciolist who thinks he can answer every question, but to put him in the way of getting the experience that will give him scientific grounding, standards, and a sure frame of reference, and will fit him for the general practice of psychological medicine as our times require it.

The psychiatrist, like other specialists, must acquire knowledge, a technical skill, and an attitude fit for what he has to do: he cannot, for example, dislike human beings with a Swiftian rancour, he cannot view his patients' conduct censoriously or be indifferent to their motives and feelings, any more than he can afford to be clumsy in carrying out therapeutic measures or in getting patients to talk to him freely. He may, it is true, become an administrator, or a psycho-analyst, or a forensic expert, or even a professor—very diverse activities, but all requiring the broad training.

I do not believe that it is wise at the beginning of the psychiatrist's training to decide in what field his strength and interests will lie, and thenceforward to put most weight on that: time enough when he has boxed the psychiatric compass. Perhaps in a few exceptional cases now, and generally in that happy day when psychiatry will be taught to medical students with all the thoroughness and amplitude we could wish, it will be possible to curtail or amend the graduate's broad training, using elective courses and individual plans of study: but the time is not ripe for such economy.

You may be disposed to quarrel with my frequent use of the word "training," as though a psychiatrist were an athlete or a circus elephant: and to remind me that I had chosen to speak of education. By the time a man enters on the postgraduate study of psychiatry, his general education should be able to look after itself and should gain from all his experience: if it cannot, the horse is out, and it will be idle to close the stable door by formal teaching. John Locke said, on a similar occasion, "I have seldom or never observed anyone to get the skill of reasoning well, or speaking handsomely, by studying those rules which pretend to teach it." The whole of the psychiatrist's postgraduate studies should train him in reasoning and understanding—what Thomas Lewis called the vital flame in education. And surely example and steady guidance, rather than precepts and "a course," are the best corrective for defects in that general education which should fit a man to combine the scientific and the humane temper in his studies, as the psychiatrist needs to.

Coming from this high ground to the uneven plain where doctors are taught to be competent specialists, I see only two methods as essential there—well-supervised practice (in hospital, laboratory, school, or clinic), and contact with more informed minds wherever these may be found—in books, seminars, educational films, lectures, and case-discussions, and on less formal and didactic occasions.

If the mind of the lecturer, of the author of the textbook, or the conductor of the seminar is dull and petrified, the student carries away no spoils, but only examination-fodder: or if the teacher's mind, versatile and specious, throws out false speculations like sparks, luckless is the student who comes under its spell. Equally unrewarding is clinical work that is not supervised: hence comes the waste of zeal and the naïveté to which attention has been drawn by our critics. Walter Bagehot said that the self-taught and original man is dogmatic, decisive, and detestable. I think it might be said that the clinically self-taught and unoriginal psychiatrist is in danger of being feeble and frothy, and diligently futile.

Clinical teaching must be the core of the psychiatrist's education: "taking cases," studying and treating individual patients, arranging and digesting the findings, formulating the problem, relating it to what may be learnt elsewhere than in the company of the patient—this is the body of psychiatric opportunity.

A recent writer, Karl Menninger, lists the devices that serve the ends of psychiatric education: assigned and recommended readings; the study and care of selected cases; systematic group conferences; individual weekly conferences or control sessions for at least nine months on individual cases under treatment; seminars and didactic [illegible] subjective experiences—e.g., by being psycho-analysed, doing psychological tests, formulating one's autobiography. list could be extended: educational films, demonstrations, the preparation of essays, carrying out a small original investigation, training in laboratory methods, "field studies" of normal children and adults, participation in the work of courts, remand homes, prisons, homes for the aged, personnel departments in industry, social agencies; domiciliary visiting; and so forth. But the essential "device" is clinical practice carried out under suitable direction.

There is much proper emphasis nowadays upon preventive psychiatry, extramural psychiatry, social psychiatry, psychiatry apart from the patient who wants to be treated for an illness: it is clearly necessary that these aspects shall be studied and pursued vigorously. But if they are not to become chimeras fed on catchwords and flighty pretensions, buzzing in a vacuum, then psychiatrists who follow them need clinical training with patients of every sort, just as much as do those of us who pursue more familiar therapeutic aims.

THE USE OF HOSPITALS IN TEACHING

The mental hospitals, which were long the sole, and always the main, training-ground for psychiatrists in this country, have produced so many learned and able men, famous for their contributions to medicine, that it seems impertinent to question their teaching methods. But when the diploma in psychological medicine was introduced, many voices declared the glaring faults of so-called training which consisted in letting psychiatrists learn by doing, undisturbed by any regular instruction. Outstanding improvements have softened the charges then made, but it is still true that in many, if not most, mental hospitals the junior doctors serve an apprenticeship which flouts some of the principles of professional education. I think most of those who have examined candidates for the diploma in psychological medicine would wish the methods of training in mental hospitals improved.

The solution of this problem surely lies not in trying to turn every mental hospital into a postgraduate teaching hospital, but in selecting certain mental hospitals in each region, designating them as having teaching responsibilities for the men and women who begin their psychiatric career in that region, and ensuring that they have the staff and organisation requisite for this. I assume that the new regional organisation will permit the regional authorities to insist that entrants into the mental-health service of the region shall serve during their training years in the designated hospitals. The entrants are not likely to quarrel with this; objections are more likely to come from mental hospitals which do not enjoy the staffing and other advantages of the training hospitals: but these non-teaching mental hospitals will benefit in the quality and experience of the men who come to them after $2^1/_2$ or more years novitiate in the training hospitals.

The designated hospitals would, of course, have outpatient and children's clinics connected with them, and the trainees would have opportunities for learning about mental deficiency and domiciliary psychiatry. The hospitals would, in brief, command all the clinical material needed for training: but this by itself would be of little avail. Sir Francis Fraser has lately repeated the familiar truth that—

> "more is required than clinical material and the usual hospital equipment. The duties assigned to the candidates

profit by taking part in them. One of the chief blems of the postgraduate institute is not to reconcile earch with teaching, but to preserve for both the ditions favourable to them against clinical and adminiative encroachments—what Sir Thomas Lewis has led "the crippling routine which the care of numbers patients renders inevitable," "attendance at comtees, and numerous additional chores." The responsities of each university medical school in assisting development of the National Health Service in its ion will for the next few years throw a further burden the psychiatric in common with other departments—ecessary burden, but one not easily to be carried if full obligation to teach and study disease is being uldered as it ought. A professor, like the bishop of om Hugh Latimer preached, cannot be two men: "hath his office, a flock to teach, to look unto; and erefore he cannot meddle with another office, which ne requireth a whole man: he should therefore give over to whom it is meet, and labour in his own siness."

For kindred reasons, it might be desirable that it should l to the associated non-university training hospitals d clinics, rather than to the postgraduate institute, conduct courses for refreshing the knowledge of alified psychiatrists or of general practitioners, and for ucating special sections of the public. There will, lare say, be far more teaching to be done than teachers do it: we psychiatrists shall need to agree on our ching provinces, therefore, in a condominium, and will l no temptation to scramble for sovereign rights and e power of veto.

Child psychiatry and psycho-analysis—igneous topics ese. As for child psychiatry, I see no valid division the training of psychiatrists which could depend on e age of the patient, and I have no doubt that presently e psychiatry of the old will likewise become a prominent rt of our branch of medicine. The chief problem in spect of children is how to ensure that the psychiaist shall have a good knowledge of general pædiatrics quivalent to his knowledge of general medicine) without lding to the length of his training: and the second oblem is to place the main period of experience with ildren at the most suitable stage of the psychiatrist's ree years of all-round training, before he devotes mself more exclusively to that or any other division of ychiatric study and practice.

Psycho-analysis is an older and thornier educational oblem. It would be absurd to state the arguments offer a tentative solution here. It can be assumed at for a good while to come, at any rate, psychiatrists ll be free to choose whether they will be psycho-analysed not, and that those who teach psycho-analysis will be ee to choose whom they will analyse, and when. But is unseemly that a postgraduate institute, if it holds at psycho-analysis may be valuable in the training of me psychiatrists, should shut itself off from that ork, or profit by it without taking responsibility for , as we have profited—and how much we have profited -by the bold and enlightened educational effort of merican and European centres of psychiatric training, t which so many of us, in the last thirty years, have een nourished or polished. Means must be found, erefore, whereby those pupils of the postgraduate stitute for whom psycho-analysis is judged a useful nd necessary part of their training should be able to et it under university auspices, just as we aim to provide t home as wide and good a training as the best foreign hools afford. Not of course that we want to forgo e advantages of study abroad (a year of such study hould be almost obligatory upon "honours men") or want the university institute to take over—if it ould—all the functions and convictions of the Institute f Psycho-analysis.

The last, and the most practically urgent, question to consider is the determination of the criteria, and the means, through which approval may be given to non-university hospitals and clinics at which doctors can learn psychiatry. At the present time this is attended to, in a blithe and blanket fashion, by the examining bodies which grant a diploma in psychological medicine. The Goodenough Committee propose that—

> "any hospital outside a medical teaching centre that is used for pre-registration house-appointments should be specially approved for the purpose by a university. . . . A university, after approving any hospital, should notify the General Medical Council and that body from time to time should publish a complete list of approved hospitals"; specialist trainees should obtain practical experience "particularly in the hospitals approved by the various universities for the purpose of pre-registration house-appointments."

This is well enough as far as it goes, though naturally it does not allow fully for the peculiar distribution of psychiatric cases. It does, however, put the onus of approval on the universities, and since it is proposed elsewhere in their report that the award of a diploma in psychological medicine should be solely vested in the Royal Colleges, the committee evidently decided that the bodies which should grant or withhold approval ought to be not the diploma-giving but the education-giving institutions. This is rational, and puts the primary duty of approval in the hands of those qualified to judge the fitness of the hospitals and clinics in their region. It could only be exercised fairly if minimal criteria of approval were laid down, and some open method of inspection and appraisal used.

* * *

It is hard to tell how soon it will be possible to come at the full means for realising aims now generally agreed upon by all of us. To realise these aims I think we must get away from the D.P.M. outlook, as I may call it, in psychiatric education. At its worst this outlook has created psychiatrists who are bare empirics, and teachers of psychiatry who are like the sophists that Aristotle denounced—"they used to suppose that they trained people by imparting to them not the art but its products."

What are its outstanding faults? Too many examining bodies have made a uniform standard almost impossible, and a high standard quite impossible. The psychiatrist has been encouraged to nibble at many branches of knowledge instead of studying them, and has often come to regard the experts in these—for example the psychologist—as rivals or subordinates, as technicians, as academic playboys, as masters of strange and efficacious arts, as anything but scientists and collaborators on whom he intelligently depends. His training has not saved him, in psychopathology, from a weak syncretism. Therapeutic effort has prospered at the expense of therapeutic discrimination.

Perhaps I lay too much of this at the door of the "D.P.M. outlook"; these things may bespeak wider faults than inhere in the D.P.M. course and examination: and we have now in any case the promise of a better system of psychiatric education, and a better D.P.M., likely to advance psychiatry greatly. But, mindful of much public misunderstanding of what psychiatrists can do and what psychiatry stands for, we can heed the assurance of a Victorian, "Depend upon it, there is only one way of really ennobling any calling, and that is to make those who pursue it real masters of their craft, men who can truly do that which they profess to be able to do." If the education of the psychiatrist does that, and produces men capable of adding to the knowledge that will advance psychiatry, then, whatever its shortcomings, it will have deserved well of our generation.

the university postgraduate clinic to find and train the men and women of outstanding promise—future administrators, psychotherapists, consultants, whole-time teachers—psychiatrists of every name and bent—who will have through their knowledge and achievement *something valuable to pass on to others.*

What I am proposing is perhaps open to the objection of privilege: you are pretending to separate sheep from goats (it may be resentfully said) with your "honours men" and "pass men," trying to skim off the cream, favouring smooth Jacob before homely Esau, reserving the honey for the queen bees (who may turn out to be drones). But in fact many psychiatrists seem to take a view of the training needed and attainable by most of those who practise our specialty that is far below anything implied or intended in what I have said. They hold that the clinical requirements laid down by the R.C.P. committee are far too exacting: many, for example, agreed with Sir Laurence Brock when he said in the twentieth Maudsley lecture that it would be disastrous to regard as psychiatrists only those who have taken a five years' course of preparation and training; and there was at one time support for the proposal to have a not very exacting common diploma for the bulk of psychiatrists, and a higher, more specialised, one for the illuminati. I hold, against such views, that psychiatry requires a high level of all-round training in everyone who practises it, and I would strongly oppose a two-level diploma: though I hold, equally strongly, that during professional training, as in every educational system, there is need to take account of those differences in endowment, interests, and probable achievement of students which psychologists and psychiatrists realise better than any.

A three-year or five-year period of training would not, of course, be spent wholly within the university clinic and laboratories: just as the postgraduates who receive their nuclear clinical training in mental hospitals and attached outpatient departments would come to the university for certain lectures and studies, so the postgraduates of the university hospital would go to certain mental hospitals and other places for parts of their training.

What has the university clinic or institute to offer, that it can claim the chief place in the education of psychiatrists? First, I answer, the qualities that mark it off from the technical school. Vocational training is, of course, essential for the doctor, but by itself can produce a medical craftsman, not a physician, and least of all a psychiatrist. Students should find in the university clinic the ferment and the opportunity which Flexner had in mind, I think, when he said that medicine can be learnt but cannot be *taught.* The *postgraduate* student, bringing his own passion and energy, learns there to respond to the vigorous and often creative impact of other minds. Anyone who has worked in an active university clinic knows how much he owed to the congregation of fellow-students, to their ardent, critical, lively, disputatious, reflective, eager minds.

More material advantages the university clinic also offers—its libraries and laboratories, its easy contact with other university departments, its facilities for research, its right to select and restrict its patients for the purposes of teaching or research: these are indeed solid advantages, but I see no reason why they should not be at the disposal also of those who pursue postgraduate studies in mental hospitals and other non-university institutions and clinics. And it is not in these material advantages that we find the true virtue and promise of the university clinic.

UNDERGRADUATE TEACHING

The relationship of the postgraduate to the undergraduate school will have to be considered. Where, as in London, there is an entirely separate po institute of psychiatry, and more than one un school with psychiatric beds, and appointments for physicians and registrars, the problem is very from that which confronts the professorial ps unit with undergraduate teaching as its chief duty, no postgraduate institute alongside it: is such a to take the main responsibility for the postgr teaching of psychiatry in its region? The G Committee appeared to think this course d *they would encourage the assumption of* such bilities by the teaching school and its associated "to the fullest possible extent consistent with primary educational responsibility for the training undergraduate students." While the benefits of are patent, it seems a much less suitable pla psychiatry than for most other specialties, because of the shortage of teaching staff in the existing or undergraduate departments of psychiatry, and the tively large number of entrants who will be required each year by the mental-health services: their instruction would be a drain on the teaching energy and of the medical-school staff, which would conflict much with their primary obligation to the undergr even if desirable as an objective, it would be hard to into practice generally during the critical decade us. In that time it would surely be better to mainly upon the parallel non-university complex selected mental hospitals and clinics to which I referred as the inevitable and proper adjunct of postgraduate institute of psychiatry, where that Where the postgraduate institute does not exist, advisory and adjuvant functions towards the non-university specialist hospitals could be carried by the undergraduate department. There will of course, be a small number of men receiving graduate *training in that department* through and staff appointments.

SOME RECIPROCITIES

Then there is the relationship of the psychiatric institute to the university department of psychology. A psychological laboratory seems an essential part of any active psychiatric institute—a psychological laboratory, that is, not merely to meet the clinical needs of diagnosis and treatment, but with teaching research in the front of its activity, staffed accordingly, and in the closest touch with the main university d ment of psychology. I can see no ground for here, but only for mutual aid. No doubt the medi school would take a hand in the postgraduate of psychologists, especially for purposes close to medicine while the department of psychology might undertake some of the necessary psychological education of psychiatrist, wherever the necessary admin adjustments could be made.

The kinship between psychiatry and the social sciences raises similar issues, to be similarly handled by fraternal interchange and reciprocal increase. The truth is for its various purposes the psychiatric institute be able to take its problems, and its requests for aid teaching, to any of its sister departments: stati genetics, pharmacology, industrial medicine, anthropology, pædiatrics, psychology, and many more, as the occasion demands.

As to the relationship of the teaching psychiatric hospital to the treatment of the sick, it is now well stood that it is the duty of the teaching unit to select cases for its particular needs, rather than to accept and sundry; equally it is its duty to treat the pati it accepts, in the most thorough, skilled, and effec way. The interdependence of teaching and resea is generally recognised. Research projects mor provide indispensable education for those at a ive-sixths of what appears to be his normal stomach, with the likelihood that the ulcerated part of the duodenum will be left. Cannot surgery offer some less adical operation than gastrectomy, with all its attendant isks and disabilities—some operation which can give at east as good a chance of permanent cure? It is contended that vagal resection is a safe and effective lternative to gastrectomy, and we have tried it in 0 cases with results which are so far promising.

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Rationale.—Patients with duodenal ulcer are typically subjects with hypermotile hypersecreting stomachs. Evidence has been adduced by Berk et al. (1942a and b) that they also fail adequately to neutralise acid in the duodenal bulb.

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Recent investigations by one of us (H. D. J.) on nocturnal gastric secretion have shown that during sleep the acidity reaches very high levels, sometimes twice as high as those attained with histamine injection. Dragstedt (1947) states that the volume of secretion in duodenal-ulcer patients is excessive, and Bollman and Mann (1932) have shown that even in normal people neutralising power tends to tire if acid secretion is over-prolonged.

Since at night there is no food in the stomach to stimulate secretion by hormonal action, Dragstedt assumed that this secretion was neurogenic, and he found that vagal section in dogs reduced the volume of resting secretion to less than half and would considerably lower its acidity (Dragstedt and Ellis 1930).

The paramount factors in the establishment of chronicity in duodenal ulceration appear to be hypermotility plus a failure of adequate neutralisation of acid in the duodenum, and the object of vagotomy is to reduce both the motility of the stomach and the quantity of free hydrochloric acid leaving it, so making neutralisation easier.

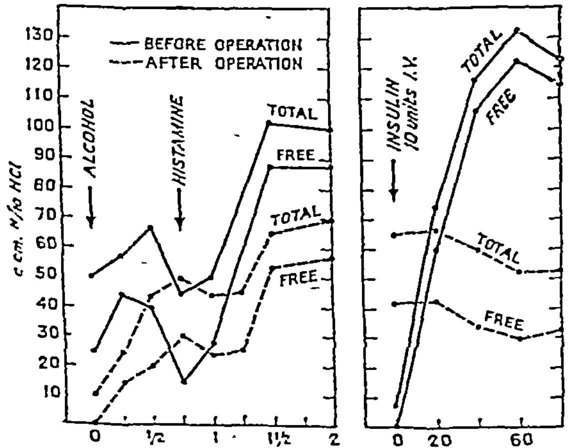

Fig. 2—Free HCl and total acid with alcohol, histamine, and insulin test-meals, before and fourteen days after vagal resection, in a man aged 46 with nine years' duodenal ulcer.

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Vagotomy does not affect the response to ingested food, which is under hormonal control, but the mealtime secretion is well buffered by the food and is relatively harmless. The fasting night secretion is the real danger, and, as Dragstedt (1945) showed, vagotomy considerably reduces its volume and to a variable degree its free acidity.

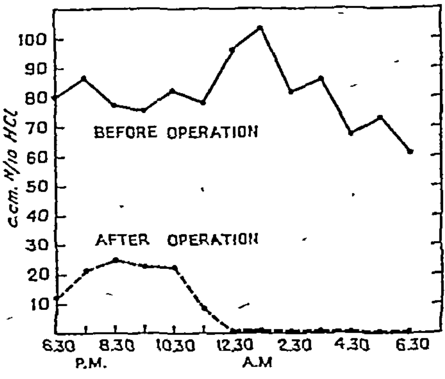

Fig. 3—Free HCl in hourly samples of spontaneous gastric secretion during sleep, before and fourteen days after vagal resection combined with gastro-enterostomy, in a man aged 20 with seven years' duodenal ulcer with pyloric stenosis after perforation.

Coffee and tea have a well-marked stimulating effect on gastric secretion, and peptic ulcers of the chronic type have been produced by the injection of caffeine in animals (Merendino et al. 1945). More recently Roth and Ivy (1945) have demonstrated that at least part of the effect of caffeine is central, mediated through the vagus.

It is reasonable to suppose, though difficult to prove, that the vagus is the pathway along which emotional factors influence the stomach, and it is well known how closely emotional upsets are related to the onset of ulcer symptoms. Wolf and Wolff (1944) have observed, through a gastrostomy opening, that feelings of resentment are accompanied by hyperæmia and turgidity of the gastric mucosa and increased secretion. More recently Wolf (cited by Andrus 1947) has observed that after vagotomy the stomach loses this capacity to flush with anger.

Section of the vagi also reduces gastric and duodenal motility and abolishes the excessively rapid emptying often found in cases of duodenal ulcer, thereby giving more time for neutralisation, buffering, and physical adsorption of hydrochloric acid before it leaves the stomach.

As Patterson and Sandweiss (1942) have shown, duodenal ulcer distress is felt only when the duodenum is actively contracting, and it is probably by the prevention of spasm that vagotomy gives immediate symptomatic relief. Abolition of spasm is also likely to be an important factor in the rapid healing of the ulcer which is practically always observed.

There is some evidence that ulcer distress is itself a stimulus to further secretion; hence a vicious circle is established of hypersecretion-ulceration-pain-hypersecretion. Vagotomy breaks this circle in two places, by relieving painful spasm and by cutting the neural pathway for reflex hypersecretion.

Dragstedt (1945), Moore et al. (1946, 1947), and Ruffin et al. (1946) have analysed series of 39, 37, and 30 patients submitted to vagotomy, all specially selected for intractability. The follow-ups are relatively short, but the results may fairly be described as promising.

Side Effects.—Vagotomy has been done a great many times in the course of other operations, such as gastrec-

VAGAL RESECTION IN THE TREATMENT OF DUODENAL ULCER

I. M. Orr
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From the Department of Surgery, British Postgraduate Medical School

The incidence of chronic and recurrent ulceration of the duodenum is increasing fast and unchecked and is already a problem of national concern.

Tidy (1941, 1943) has emphasised this by comparing the numbers of discharges from the Army for peptic ulceration in the two world wars. The figures for comparable periods showed a 300-fold increase for the late war. Tidy also states that the death-rate from this disease has increased several times over since 1918, in spite of a considerable improvement in the treatment of its dangerous complications.

Bashford and Scott (1935) reported that, among Post Office workers proved to have duodenal ulcer, over 30% were subsequently absent from work because of this complaint for more than a month per year, the average for all cases being fifteen days per year.

Avery Jones (personal communication) estimates that over 5% of men in industry and transport now have duodenal ulcer. This is equivalent to a labour force of many thousands permanently idle, or a loss of earning power of several million pounds a year. This morbidity and loss of working hours is formidable enough, but the damage to morale and human happiness can only be guessed.

Allen and Welch (1942) have estimated that among hospital outpatients 20% of the duodenal ulcers are intractable or relapse under medical care, and that of these a quarter perforate, a quarter have operations for obstruction, and half come to surgery for hæmorrhage or intractable pain.

WHAT HAS MEDICINE TO OFFER ?

While it is admitted that 20% of duodenal ulcers are surgical problems from the start, it is usually claimed that the other 80% can be healed by proper medical management. But at present hospital beds can be spared for only very few of these patients, and treatment at home is not often adequate. The healing of one ulcer is seldom the last incident in the disease. Thus St. John and Flood (1939), after carefully following 225 patients treated medically, found that 65% relapsed within two years.

The real problem in this condition is not so much one of healing a single ulcer as of preventing recurrence. The work of Greengard et al. (1946) suggests that enterogastrone may one day become an important prophylactic agent, and King et al. (1944) have had promising results in experiments with secretin ; but so far it cannot be claimed that a régime has been evolved which can control the tendency to relapse. Nor can one ignore the risks which go with recurring ulcers. Even in the young age-group of serving soldiers, Berk and Frediani (1944) found that already 7·6% had perforated and 17·7% had bled.

WHAT CAN SURGERY OFFER ?

Gastro-enterostomy.—Though many consider that gastro-enterostomy is still the operation of choice for a duodenal ulcer with long-standing pyloric stenosis, where the power to secrete acid is diminished, it is now beyond doubt that it is worse than useless in a high proportion of the typical ulcer patients with hypermotile and hypersecreting stomachs.

St. John et al. (1939) analysed a follow-up of 225 patients who had been submitted to gastro-enterostomy with an operative mortality of 10%. Of 121 patients traced in whom the indication for operation had not been pyloric stenosis, 69 were classified as unsatisfactory. Of these, 31 had new ulcers, 24 had bled, 14 had had further surgery, and 3 had died of ulcer.

According to the collective inquiry of the Association of Surgeons (1935) into over 2000 gastro-enterostomies, only 8·4% had proved or suspected recurrent ulcers ; but only three-quarters of the patients were traced, and the report does not tell us what criteria for diagnosis were adopted or how many patients had symptoms not regarded as due to ulcer. Further, a relatively low figure may be obtained by including many cases which would have been equally amenable to medical treatment.

Lewisohn (1945) reports 80% "failures" and 34% of gastrojejunal ulcers after gastro-enterostomy.

Gastrectomy.—*After such results surgeons,* led by Von Haberer, turned to gastrectomy as an alternative. The first resections were not sufficiently radical, and stomal ulcers continued to be common. It is now established that *all* antral mucosa must be ablated, as well as enough of the body of the stomach to cause achlorhydria, if anastomotic ulcers are to be prevented. The average gastrectomy for duodenal ulcer still seldom achieves achlorhydria ; and, as was brought out by the Association of Surgeons (1935), the postoperative level of acidity can be correlated with the incidence of subsequent gastrojejunal ulceration.

Reinhoff (1945) described 260 hemigastrectomies with only 5 deaths but with 32% of subsequent complications, including 11% of patients requiring further surgery, 9% of proved recurrent ulcers, and others with hæmorrhage and pain.

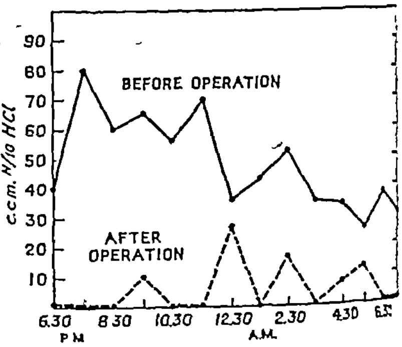

Fig. 1—Free HCl in hourly samples of spontaneous gastric secretion during sleep, before and fourteen days after vagal resection, in a man aged 35 with twenty years' *dyspepsia and proved duodenal ulcer*

Mage (1942) recorded 502 less conservative resections for duodenal ulcer which were followed in 8% of cases by gastrojejunal recurrence.

A well-analysed report is that of Allen and Welch (1946), who performed 190 elective gastrectomies for this lesion with an operative loss of 5 (2·6%). In 129 cases followed from one to fourteen years they found 3 proved ulcers, 3 patients with hæmorrhage, and 3 others with severe symptoms. There were a further 8 considered satisfactory but with moderate symptoms, and 23 excellent but not symptom-free. Altogether there were 10% of total failures and only 67% rendered asymptomatic.

Even though it excludes cases of acute hæmorrhage, the figure of 2·6% for operative deaths is low. The operative *mortality among over 2500* gastrectomies performed by Finsterer, Von Haberer, Burke, Schoemaker, Bruusgaard, and Balfour works out at 5%, and some of the most skilled operators, both in this country and abroad, have since reduced *their* mortalities to 1% or 2% ; but such results are exceptional, and it is unlikely that the average figure, though constantly improving, is yet less than 5%. Thus, though the results are better than *those* which followed gastro-enterostomy, gastrectomy is a more dangerous operation, for the former probably now carries less than a 2% risk in average hands.

Operative mortalities, further, do not give a complete picture of the formidable nature of gastrectomy, for in the series of Allen and Welch there were an additional 12% of patients who had more or less severe immediate postoperative complications, and the later "post-gastrectomy syndrome" is now a recognised clinical entity (Adlersberg and Hammerschlag 1947).

No wonder there is some hesitation in advising a patient with duodenal ulcer to submit to the removal of ve-sixths of what appears to be his normal stomach, ith the likelihood that the ulcerated part of the uodenum will be left. Cannot surgery offer some less dical operation than gastrectomy, with all its attendant sks and disabilities—some operation which can give at ast as good a chance of permanent cure? It is ontended that vagal resection is a safe and effective lternative to gastrectomy, and we have tried it in 0 cases with results which are so far promising.

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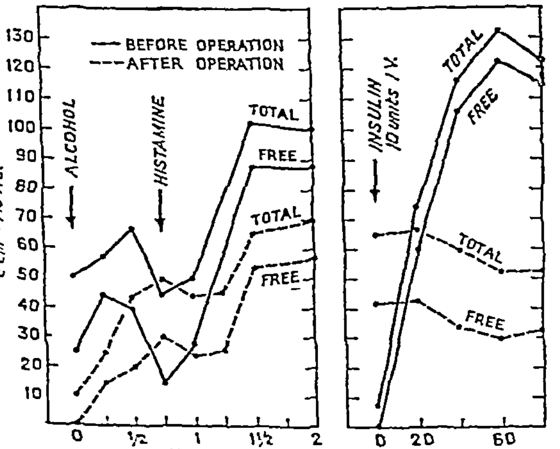

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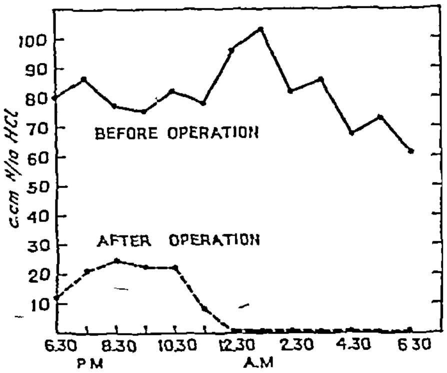

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Side Effects.—Vagotomy has been done a great many times in the course of other operations, such as gastrectomy or œsophagectomy, without any specific side effects being observed. Animal experiments show that the secretion of the pancreas is slightly reduced by vagotomy, but not to an extent comparable with the gastric effect (Crider and Thomas 1944). The secretion of bile appears to be unaffected (Boyden and Van Buskirk 1943).

The chronic constipation common in patients with duodenal ulcer is cured by this operation. One daily motion seems to be usual after vagotomy, but 3 patients in the series here published had transient diarrhœa which lasted two weeks.

The delay in gastric emptying after vagotomy is sometimes considerable, but this seldom causes any symptoms. Tone gradually returns, though exceptional cases have been recorded in which full recovery has taken several months. Hypermotility and hypersecretion do not appear to return, and the pathway for neurogenic activity, both secretory and motor, remains permanently ablated.

In the presence of hypermotility early pyloric stenosis may escape recognition, since it may do no more than reduce a rapid emptying time to one within normal limits. Reduced gastric tone after vagotomy has occasionally caused such an unsuspected stenosis to come to light.

It has recently been reported by Machella et al. (1947) that normal gastric peristalsis can if necessary be restored by the administration of urethane of β-methyl choline, either by injection or by mouth.

INDICATIONS FOR VAGAL RESECTION

(1) *Duodenal Ulcer.*—The ideal subject is the young patient with a long history of relapses, a clear anxiety factor, not too much scarring or penetration, and no psychopathic factor in his symptoms. Vagal resection is likely to be recommended for the difficult case in which it is felt that medical measures are not maintaining a tolerable and reasonable level of usefulness and enjoyment of life but hesitation is felt in undertaking gastrectomy. Winkelstein and Berg (1938) have advocated the combination of gastrectomy with vagotomy, and perhaps, if this is done, a more conservative resection may achieve the desired achlorhydria.

Vagal resection alone, however, is safe, and there seems to be no justification for taking the risks of gastrectomy without first giving simple vagal section a trial. *Gastrectomy is still in reserve if further treatment becomes necessary.*

(2) *Gastric Ulcer.*—In our view gastrectomy should continue to be the operation of choice for gastric ulcer, but the addition of vagal resection may be considered where high acid secretion has been found.

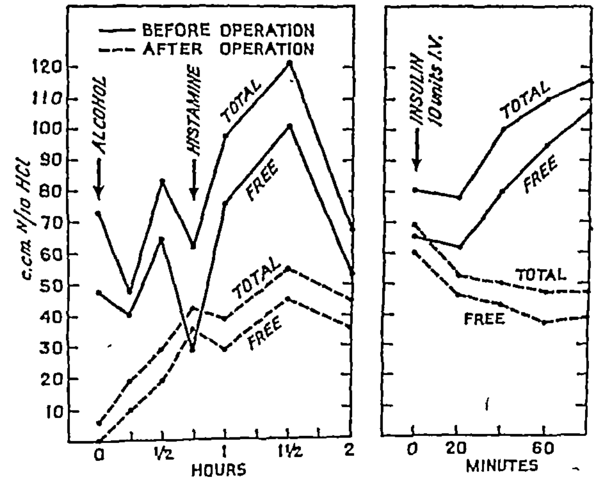

Fig. 4—Free HCl and total acid with alcohol, histamine, and insulin test-meals before and fourteen days after vagal resection combined with gastro-enterostomy, in same patient as in fig. 3.

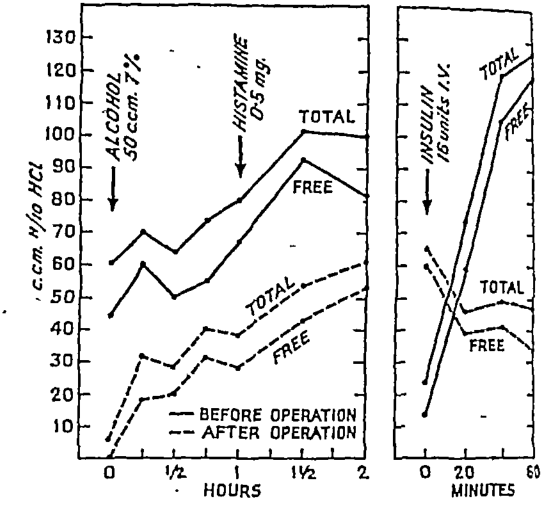

Fig. 5—Free HCl and total acid with alcohol, histamine, and insulin test-meals, before and four months after vagal resection, in a man aged 51 with twelve years' history of duodenal ulcer, showing a recovery of response to insulin.

(3) *Stomal Ulcer.*—Whatever else is done, stomal ulcer is a good indication for vagal resection as an added step. *Good results have been claimed in cases where vagotomy alone has been used.*

ANATOMICAL CONSIDERATIONS

The nerve-supply to the stomach is well described by Mitchell (1938, 1940), whose observations go to show that the vagi descending on either side of the œsophagus divide below the roots of the lungs into 2–4 main trunks lying close to the lower œsophagus. Branches from the left vagus pass to the right and from the right vagus to the left, forming a bewildering plexus. Our observations at operation show that from their main trunks small filaments pass into the muscular wall of the œsophagus above the diaphragm and travel to the stomach, so that section of the vagi below the diaphragm can never lead to complete vagal denervation of the stomach.

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Apart from the methods described by Latarjet (1921), Exner and Schwartzmann (1912), and Steirlin (1920), all of which aim at a partial denervation, there are three main approaches to the vagus. All three have been used by us with various degrees of success.

(1) *Subdiaphragmatic Vagotomy.*—As its name suggests, the first approach is made through the abdomen. The nerves are found close to the cardia and there divided. The method is described by Wertheimer (1922). Its advantages are that it is easy, it is safe, and it may be

ombined with other abdominal procedures if desired. Ve have used it in 15 cases and have found that complete agotomy was achieved in none. All our failures have ccurred in this group.

(2) *Transthoracic Vagal Resection.*—This is the method escribed and advocated by American writers. Dragstedt 1947) reports favourably on 140 cases, some of the tients having been followed for four years. Moore al. (1946) and Grimson et al. (1945) have also been ourably impressed by the results of this method, and many leading clinics in America it has almost entirely pplanted subtotal gastrectomy in the surgical treatnt of refractory duodenal ulcers. The approach is rough the bed of the left eighth rib. The nerves are ught in the cellular tissues below the lung roots and e stripped down to the hiatus in the diaphragm.

It is undoubtedly the method which affords the rgeon the best exposure and provides an opportunity perform the most complete denervation; but its sadvantages are considerable: it is a severe strain on e patient; convalescence is prolonged; and there are sks associated with pleural effusion, which may require spiration, and several cases of empyema have been ported. We have used it on three occasions when e effects of previous operative procedures within the domen would have made a transabdominal approach fficult. The cardinal disadvantage, however, is that e lesion in the duodenum cannot be seen and verified. he possibility of other abdominal lesions cannot e excluded; and, if it is necessary to combine the agal resection with some other operative procedure, ch as gastro-enterostomy, a second operation is quired.

(3) *Per-hiatal Vagal Resection from Below.*—It has een our aim in this investigation to evolve a technique roviding the completeness of the transthoracic resection ith the advantages of a transabdominal approach. he operation will be described in detail elsewhere. Its ssentials are exploration of the abdomen, mobilisation f the left lobe of the liver, enlargement of the hiatus n the diaphragm with mobilisation of the lower end of the esophagus, isolation of the vagal trunks at the level of he diaphragm, stripping of the vagi from the œsophagus pwards into the mediastinum and down to the cardia, nd finally removal of a length of nerve from all trunks. ther procedures can, if desired, be combined with the agal resection, and the possibility of other lesions ithin the abdomen excluded.

The technique is not easy. It demands perfect anæshesia, perfect lighting, and skilled assistance; but, hen it is performed by an experienced team, the strain n the patient is negligible and the postoperative course smooth and uneventful. The patient is allowed out of bed on the second day after operation, and invariably, if he has been suffering pain before operation, he is emphatic that his pain has gone immediately after it.

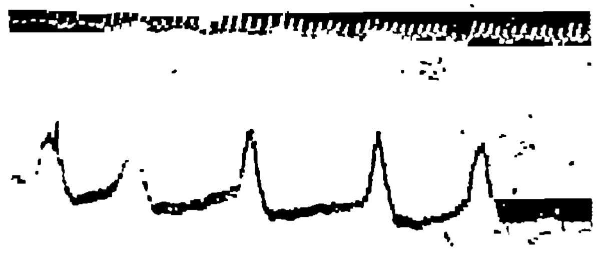

Fig. 6—Kymograph tracing showing changes in intragastric pressure in a man aged 51 with twenty years' history of duodenal ulcer. Lower tracing, before operation, shows (1) respiratory effect (frequent small wave at 20 per min.), (2) tonus waves (just discernible undulations at 3 per min., probably peristaltic), and (3) intermittent spasms of the whole stomach (tallest peaks—occurring at 1-2 min. intervals). Upper tracing was made after vagal resection and shows absence of gastric spasms. Record was continued for two hours. Before operation, gastric spasms were quiescent for periods of only a few minutes during the hour of observation.

INTERIM RESULTS

We have done 50 vagotomies or vagal resections in this series during the past two years without a death. The only serious postoperative complication was an empyema following a transthoracic resection. All the cases have been followed, and the results so far may be summarised as follows:

Incomplete Vagal Resections		*Complete Vagal Resections*	
Average follow-up period	1 yr. 7 mths.	Average follow-up period	6 mths.
Longest follow-up period	2 yr. 7 mths.	Longest follow-up period	1 yr. 4 mths.
Average titratable "free" HCl in whole of night secretion—		Average titratable "free" HCl in whole of night secretion—	
Before operation ..	50 c cm. of N/10 HCl%	Before operation ..	43 c.cm. of N/10 HCl%
After operation ..	31 c.cm. of N/10 HCl%	After operation ..	7 c.cm. of N/10 HCl%

	Cases		*Cases*
Bad	1	Bad, poor, or fair ..	0
Poor	3	Good	4
Fair	1	Excellent	30
Good	7		
Excellent	4		
Total ..	16	Total ..	34

Bad.—No patient has yet complained of worse symptoms after vagal resection; 1 patient died from a massive hæmorrhage three months after a partial operation.

Poor.—No relief, or moderate relief only.

Fair.—Definite reduction in frequency and severity of symptoms, but not symptom-free.

Good.—Ulcer pain absent since operation; on full work, but with varied and slight discomfort, such as "wind" or need to avoid certain foods.

Excellent.—Completely symptom-free since operation, on full work and full diet, and with definite improvement in mental outlook.

The operations on these 50 patients have been spread over the last $2^1/_2$ years. In no case is the report long enough after operation to justify a final evaluation of results.

Subdiaphragmatic Vagotomy.—In 15 patients the subdiaphragmatic route was used, and in these vagotomy was incomplete, as shown by the insulin test. One of the patients died three months after operation from a massive hæmorrhage from his ulcer; 3 continued to have symptoms; 5 have continued at full work enjoying good health for two years; and 3 subsequently developed stenosis requiring gastro-enterostomy but have remained well since that was performed. The remaining 3 have been followed for over two years and have continued at work, with occasional discomfort requiring restriction in diet or medication. In all this group, save the 3 who were not improved, the stomach lost its hypermotility and the ulcer appeared on subsequent radiography to have healed. In few cases, however, was there an appreciable fall in gastric acidity, and in no case was there a negative response to an insulin test-meal. One may infer that this procedure, while likely to benefit the less highly acid type of ulcer, is of little or no value in the treatment of the duodenal ulcer associated with excessive acid secretion.

Transthoracic Vagal Resection.—In 3 patients transthoracic resection was done. Two of these resections were for duodenal ulcer, and one for stomal ulcer following a previous gastro-enterostomy. In all 3 patients (the first now a year after operation) the acidity has fallen to, and remained at, a low level. All 3 patients are symptom-free, but 2 were incapacitated for several months following the operation by discomfort in the chest wall. This operation appears to have a place in cases of stomal ulcer or when adhesions, the result of previous intervention, render difficult an exposure of the hiatus from below.

Per-hiatal Vagal Resection from Below.—This operation, which we prefer, was performed on 32 patients, all tomy or œsophagectomy, without any specific side effects being observed. Animal experiments show that the secretion of the pancreas is slightly reduced by vagotomy, but not to an extent comparable with the gastric effect (Crider and Thomas 1944). The secretion of bile appears to be unaffected (Boyden and Van Buskirk 1943).

The chronic constipation common in patients with duodenal ulcer is cured by this operation. One daily motion seems to be usual after vagotomy, but 3 patients in the series here published had transient diarrhœa which lasted two weeks.

The delay in gastric emptying after vagotomy is sometimes considerable, but this seldom causes any symptoms. Tone gradually returns, though exceptional cases have been recorded in which full recovery has taken several months. Hypermotility and hypersecretion do not appear to return, and the pathway for neurogenic activity, both secretory and motor, remains permanently ablated.

In the presence of hypermotility early pyloric stenosis may escape recognition, since it may do no more than reduce a rapid emptying time to one within normal limits. Reduced gastric tone after vagotomy has occasionally caused such an unsuspected stenosis to come to light.

It has recently been reported by Machella et al. (1947) that normal gastric peristalsis can if necessary be restored by the administration of urethane of β-methyl choline, either by injection or by mouth.

INDICATIONS FOR VAGAL RESECTION

(1) *Duodenal Ulcer.*—The ideal subject is the young patient with a long history of relapses, a clear anxiety factor, not too much scarring or penetration, and no psychopathic factor in his symptoms. Vagal resection is likely to be recommended for the difficult case in which it is felt that medical measures are not maintaining a tolerable and reasonable level of usefulness and enjoyment of life but hesitation is felt in undertaking gastrectomy. Winkelstein and Berg (1938) have advocated the combination of gastrectomy with vagotomy, and perhaps, if this is done, a more conservative resection may achieve the desired achlorhydria.

Vagal resection alone, however, is safe, and there seems to be no justification for taking the risks of gastrectomy without first giving simple vagal section a trial. Gastrectomy is still in reserve if further treatment becomes necessary.

(2) *Gastric Ulcer.*—In our view gastrectomy should continue to be the operation of choice for gastric ulcer, but the addition of vagal resection may be considered where high acid secretion has been found.

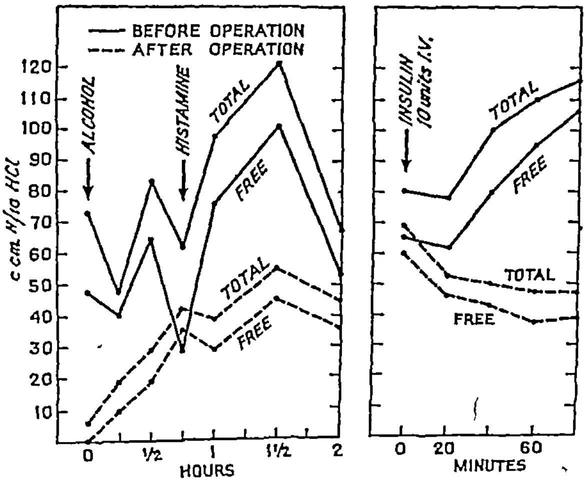

Fig. 4—Free HCl and total acid with alcohol, histamine, and insulin test-meals before and fourteen days after vagal resection combined with gastro-enterostomy, in same patient as in fig. 3.

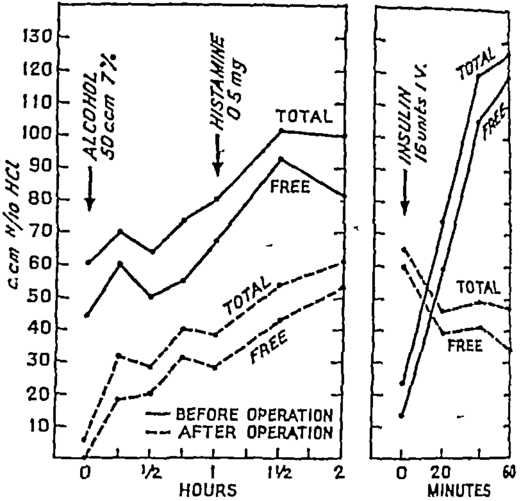

Fig. 5—Free HCl and total acid with alcohol, histamine, and insulin test-meals, before and four months after vagal resection, in a man aged 51 with twelve years' history of duodenal ulcer, showing a recovery of response to insulin.

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The nerve-supply to the stomach is well described by Mitchell (1938, 1940), whose observations go to show that the vagi descending on either side of the œsophagus divide below the roots of the lungs into 2–4 main trunks lying close to the lower œsophagus. Branches from the left vagus pass to the right and from the right vagus to the left, forming a bewildering plexus. Our observations at operation show that from their main trunks small filaments pass into the muscular wall of the œsophagus above the diaphragm and travel to the stomach, so that section of the vagi below the diaphragm can never lead to complete vagal denervation of the stomach.

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CLINICAL THERMOMETERS AS A OSSIBLE SOURCE OF CROSS-INFECTION IN HOSPITAL

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Most of us are familiar with the sight of a nurse ogressing slowly round the hospital ward carrying a ay on which is the customary equipment for taking the tients' temperatures. The purpose of this paper is demonstrate that she may be unwittingly introducing to their mouths a large dose of various pathogenic d non-pathogenic bacteria.

In her textbook of nursing, Pearce[1] describes the ethod of sterilising clinical thermometers as follows:

> "The articles required are: a clinical thermometer standing a jar with cotton-wool at the bottom in order to protect e end of the bulb, the jar being three parts filled with some sinfectant solution, such as 1/20 carbolic, 1/1000 perchloride mercury; a jar containing some either moist or dry wool abs with which to wipe the thermometer after use; a ceiver in which to place the used swabs. It has been found at wiping the thermometer with wool adequately cleanses because the surface is shiny and smooth so that germs do t readily adhere to it. *If there is a sink handy, the thermo*eter is held under running cold water for a few seconds after king it from the patient before wiping it."

She does not say how this procedure should be modified hen the temperatures of 20–30 patients in a general ard are taken. By questioning a number of nurses from arious hospitals, we find that the technique varies onsiderably in detail but conforms to a general pattern.

CURRENT PROCEDURE

A ward of 20–30 patients is supplied with a varying umber of thermometers—usually not more than 5 r 6. These are left standing upright in a small jar t the bottom of which is a small piece of cotton-wool. he jar is more or less full of a fluid which is usually ink and is credited with the property of sterilising the hermometers in a few seconds. When the temperatures *re to* be taken, the nurse places the jar containing the hermometers on a tray, with a small bowl containing otton-wool, and perhaps a bowl of water. The temperaures are taken in batches limited by the number of hermometers available. The thermometers are withrawn from the fluid one by one, dipped into the water, iped with cotton-wool, and placed in the patients' ouths. Probably four or five temperatures are taken t the same time. The thermometers are then removed rom the mouths, dipped in the bowl of water, and eplaced in the coloured fluid. The nurse then passes o the next batch of patients, and the process is repeated. his recurs all round the ward, the same tiny bowl of ater being used, and the thermometers left in the pink fluid for a matter of seconds only between patients. After the round of the ward has been completed, the thermometers are left in the jar until the temperatures are taken again, when the whole process is repeated.

The pink fluid in the bowl containing the thermometers is changed sometimes once in twenty-four hours, but *often* less frequently. The coloured fluid varies in composition; 1 in 20 carbolic acid seems to have been originally advocated, but is by no means always used, because it tends to remove the figures from the thermometers and the patients dislike its taste. Glycerinum thymol co. is commonly used by itself or sometimes mixed with equal parts of 1 in 20 carbolic acid. Some hospitals use a weak solution of 'Dettol' or other antiseptic.

The following tests will show that the procedures outlined above are not only unsound but may be dangerous.

INVESTIGATION OF FLUIDS USED FOR STERILISING THERMOMETERS

Fluid from the thermometer jars from all wards in the hospital was collected into sterile containers at random, without the ward having previous warning, and it was accepted only after one or more thermometer rounds had been undertaken. The results from ward to ward were not therefore strictly comparable. After collection, a loopful of the fluid was plated on 4% horse-blood-agar plates and incubated at 37°C for twenty-four hours. Various colonies were then picked off and the organisms investigated. At the same time as the plating several dilutions of the fluid were made. Plates were poured with these dilutions and with melted nutrient agar. These were incubated at 37°C for forty-eight hours, the colonies counted, and the number of viable organisms per c.cm. of the original fluid estimated. These methods are not very accurate, but some indication of the bacterial contamination is obtained. The results are given in table I.

TABLE I—ORGANISMS GROWN FROM FLUIDS USED FOR STERILISING THERMOMETERS

Ward	Thermometer fluid	Estimated no. of organisms per c.cm.	Organisms developing on blood-agar plate
A	Glyc. thymol co.	7,500,000	*Strep. viridans*, non-hæmolytic streptococcus, micrococcus, *Bact. coli anaerogenes*, Friedlander's bacillus, and a vibrio-like organism
B	Glyc. thymol co.	40,000,000	Micrococcus, *Bact. coli anaerogenes*, Friedlander's bacillus, and a vibrio-like organism
C	Equal parts of glyc. thymol co. and 1/20 phenol	45	*Staph. aureus pyogenes*, a capsulated coliform, *Bact. fæcalis alkaligenes*, and Friedlander's bacillus
D	Glyc. thymol co.	14,000,000	*Staph. albus*, non-hæmolytic streptococcus, *Bact. coli anaerogenes*, and two types of poorly growing gram-negative bacilli
E	Glyc. thymol co.	19,000,000	*Bact. coli anaerogenes*, a vibrio-like organism, and a poorly growing gram-negative bacillus
F	Glyc. thymol co.	900,000	*Staph. albus*, two types of micrococci, *Bact. coli anaerogenes*, Friedlander's bacillus, a vibrio-like organism, and a poorly growing gram-negative bacillus
G	*1/20 phenol*	*0*	None

Much difficulty was experienced in identifying many of the organisms, but they were defined as accurately as possible. It will be seen that the thermometer fluids were grossly contaminated with various pathogenic and non-pathogenic organisms. Since glycerinum thymol co.

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[1] Pearce, E. C. General Textbook of Nursing, London, 1937, p. 23.

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of whom have lost their duodenal pain. All, save the most recent, are at work, and all are pleased with the result of the operation. The full effect on the acid secretion is not seen till three months after the operation. All the patients have a well-marked reduction in gastric tonicity. Most show a six-hour residue of barium, and 2, with old periduodenitis and stenosis, have had gross delay in emptying but have nevertheless put on weight and been symptom-free. A gastro-enterostomy may be necessary, however, if the stomach does not regain sufficient tone to drive the meal through the narrowed pylorus, and 7 patients have been submitted to this additional procedure. Appetite has been poor immediately after operation but has returned to normal in a few months. Most patients have remarked on a freedom from their old-standing constipation; and 3 have complained of transient and spontaneously resolving diarrhœa after operation.

The effects of this operation on the titratable "free" acid in the spontaneous night secretion and after insulin and histamine injections are shown in figs. 1, 2, 3, and 4. In patients tested over a year after operation the fall in acidity was found to have become even more marked. Fig. 5 illustrates a result after four months and fig. 6 shows the effect on gastric motility. These curves are selected as representative and a more detailed report will be given elsewhere.

DISCUSSION

The end-results of medical therapy in duodenal ulcer have been reviewed, and it appears that 65% of patients have relapsed within two years, and many have developed acute complications. Though gastro-enterostomy continues to offer a satisfactory answer to the problem of stenosis, provided the gastric acidity is not excessive, even subtotal gastrectomy is not always a satisfactory choice for the highly acid type of ulcer. Apart from an appreciable mortality, there is a growing concern among those who see the late results of gastrectomy. The incidence of stomal ulcer in 2–9% of patients submitted to gastrectomy for duodenal ulcer is disquieting, and an appreciable number continue to have distressing symptoms though no stomal ulcer can be detected radiologically or have symptoms attributable to the gastrectomy itself. For these unfortunate people medical therapy avails little, further and more radical surgery is out of the question, and their last state may be worse than the first.

Per-hiatal vagal resection is advanced at this stage as a surgical measure in the management of duodenal ulcer *for information only, since without a long follow-up* no comparison can be made with the late results of subtotal gastrectomy. Nevertheless we have the authority of Dragstedt (1947) that a four-year follow-up of their vagal-resection patients shows freedom from recurrences. One thing, however, may be asserted with confidence—the fatality-rate of vagal resection will always be less than that of gastrectomy. The procedure, placing as it does little strain on the patient, may be confidently advocated by physicians at an earlier stage in the dyspeptic's life and not only as a last resort after months or years of invalidism and pain.

We do not yet know the long-term results of vagal resection, but it will not spoil the chances of a successful gastrectomy in any patients who may in the future relapse. In other words, vagal resection may be looked on as a reconnaissance in force in the war against duodenal ulcer. Little is lost if, on occasion, it fails, and we still have at our disposal the full-scale attack by gastrectomy with all the risks involved by such large-scale operations. A lasting success by vagal resection is a triumph of physiological strategy, and a failure spells disappointment but not disaster. A failure following gastrectomy, however, is an irretrievable reverse in which much has been sacrificed without hope of withdrawal.

SUMMARY

The incidence of duodenal ulcer is alarmingly high and fast increasing.

Though 80% of ulcers can be healed *medically*, 65% of patients have a recurrence within two years.

The risk of complications is considerable: 1 in 4 or 5 duodenal-ulcer patients bleed or perforate while still young.

Gastrojejunostomy is a failure as a routine procedure. It carries a mortality of about 2% and does not cure more than half the patients.

Gastrectomy is more successful if it is sufficiently radical, but it is also more dangerous. The operative mortality may be 5% in average hands, and the recurrent ulceration-rate 2–9%. A further percentage are not freed of symptoms, and new, symptoms may result from the *operation itself*.

It is claimed that vagal resection is a safe alternative giving promising results.

The rationale of vagal resection is considered.

The operation is described in outline and the advantages of a trans-hiatal section by way of an abdominal approach are presented.

Attention is drawn to the poor results which follow incomplete section, and to the importance of differentiating complete from partial vagotomies by the insulin test.

An interim report is presented on the progress of [illegible] patients submitted to vagotomy or vagal resection.

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Continued at foot of next page

ield was determined daily by test-feeds. The test-eeding began on the fifth day, or on the tenth day, and ontinued until the fourteenth day. The subsequent ourse of each lactation was followed up by assessing the aily milk yield from test-feeds done at the end of the ourth, sixth, and twelfth weeks and sixth month of actation.

Hormone preparations were given as follows:

(1) Injections of crude ox anterior-pituitary extract.

(2) Injections of crude ox anterior-pituitary extract plus estrogens by mouth.

(3) Injections of crude ox anterior-pituitary extract plus dried thyroid gland *B.P.* 1932 by mouth.

(4) Injections of crude ox anterior-pituitary extract plus estrogens and dried thyroid gland *B.P.* 1932 by mouth.

The control treatments were as follows:

(1) Breast massage as advocated by Randall (1945).

(2) Injections of physiological saline.

(3) Administration by mouth of a proprietary galactogogue.

Crude Ox Anterior-pituitary Extract.—This was a clear sterile extract prepared as described by Young (1938) and supplied by Glaxo Laboratories Ltd. Its concentration was such that 1 c.cm. contained the material extracted from 250 mg. of fresh ox anterior-pituitary tissue. Each c.cm. possessed prolactin activity (pigeon crop-gland assay) equivalent to about 20 I.U. Folley and Young (1940) showed that this extract was much more highly effective than prolactin in enhancing the milk yield of cows in declining lactation. Folley and Young (1941) suggested that trials of this material should be made in women with failing lactation. Once a day the extract was injected intramuscularly into alternate buttocks in diminishing amounts as follows: 5 c.cm., 5 c.cm., 2 c.cm., 2 c.cm., 1 c.cm. Reactions to the injections were few and were localised at the site of injection.

Œstrogens.—The synthetic material hexœstrol (Boots Ltd.) was used, 1 mg. tablets being given by mouth four times daily during the period of pituitary treatment in two of the groups of patients.

Dried Thyroid Gland.—Tablets gr. 1, made by the pharmacist at St. Thomas's Hospital from powdered thyroid gland *B.P.* 1932, were given by mouth four times daily during the period of pituitary treatment to two groups of patients.

RESULTS

The accompanying table shows the results obtained in the treated cases and in controls. The mean daily milk output before treatment was practically the same in the treated cases and the controls. The increase was also the same during treatment and continued to be the same up to the twenty-eighth day of lactation. Then in the controls the mean daily milk output began to fall, and by the sixth month of lactation it had fallen to 50% below the original level. In the treated cases the fall in the mean daily milk output was delayed until after the sixth week of lactation, and by the sixth month of lactation it was still slightly above the original level. The percentage of infants who were still being breast-fed at six months was almost twice as high among the treated cases as it was among the controls. The reason for this can be seen when the mean daily milk output for each group of cases is examined separately. The controls contain the group with the worst results, whereas the treated cases contain the group with the best results.

Where no treatment was given, the breast-milk had completely dried up in every patient by the third month. The 21 infants were entirely bottle-fed before they were three months old. These were the worst results. Where crude ox anterior-pituitary extract plus dried thyroid gland were given, 38% of the infants were still being breast-fed at six months. These were the best results. It is noteworthy that any form of treatment is better than no treatment at all.

The mean daily milk output was increased by over 100% in the 21 cases treated with crude ox anterior-pituitary extract plus dried thyroid gland. The rate of increase in daily output was no greater than it was among the controls and the other treated cases. The mean daily milk output continued to rise until after the third month of lactation, whereas among the controls and the other treated cases the increase in mean daily milk output ceased about the sixth week of lactation, and the total increase therefore never became as high as 100%. At the sixth month of lactation the cases treated with crude ox anterior-pituitary extract plus dried thyroid gland gave a mean daily milk output well above the mean daily yield before treatment. At the sixth month of lactation most of the controls and the other treated cases gave a mean daily yield of less than the mean daily yield before treatment.

In 7 of the 21 cases treated with crude ox anterior-pituitary extract plus dried thyroid gland, the dried thyroid gland alone was continued after discharge from hospital. Dried thyroid-gland tablets gr. 1 were given daily by mouth until lactation had failed, or until the *fifth month of lactation. The results were no better* than among the patients whose pills had been discontinued on discharge from hospital. In the group of patients given hexœstrol besides crude ox anterior-pituitary extract plus dried thyroid gland the results were no better than in the controls.

MILK YIELD OF WOMEN WITH FAILING LACTATION

Treatment	No. of cases	Mean daily output of milk (oz.) before, during, and after treatment						No. of infants breast-fed 6 months
		5th day	10th day	4th week	6th week	12th week	24th week	
Crude anterior-pituitary extract	16	6	8	8	6	6	5	3 (*18%*)
Crude anterior-pituitary extract plus hexœstrol	13	7	8	7	8	6	4	2 (*15%*)
Crude anterior-pituitary extract plus thyroid	21	6	9	12	13	13	11	8 (*38%*)
Crude anterior-pituitary extract plus hexœstrol plus thyroid	17	5	6	8	7	3	3	2 (*11%*)
Mean for 67 women ..	..	6	8	9	9	7	6	15 (*22%*)
Massage	11	7	9	11	12	9	8	3 (*27%*)
Proprietary galactogogue	15	7	8	9	9	8	2	2 (*13%*)
Saline injections ..	19	5	7	9	9	5	5	4 (*21%*)
No treatment	21	5	7	7	2	0	0	0
Mean for 66 controls ..	..	6	8	9	8	5	4	9 (*13%*)

Further investigations will need to be carried out with dried thyroid gland alone and in combination with hexœstrol, to find out whether the 100% increase in output was caused by the dried thyroid gland, and whether hexœstrol can counteract this effect. From the results shown in the table it seems unlikely that crude ox anterior-pituitary extract is of any value in stimulating deficient lactation in puerperal women.

SUMMARY

In puerperal women with deficient lactation daily injections of crude ox anterior-pituitary extract alone gave no better results than those obtained in controls.

When the crude ox anterior-pituitary extract was reinforced by dried thyroid gland gr. 4 daily by mouth, the increase in output was twice that obtained in the controls, and the increase continued longer.

When hexœstrol was given at the same time as the crude ox anterior-pituitary extract plus dried thyroid

was the usual fluid used, it was decided to test its bactericidal powers. This was done by adding *Staph. pyogenes* (Oxford H strain), *Strep. hæmolyticus* group A, and *Bact. coli* to separate 10 c.cm. amounts of 1 in 3 glycerinum thymol co. (this is the strength dispensed here, but varying dilution occurs on the wards). These were allowed to stand at room temperature and after 1/4, 1, 4, and 24 hours samples were taken and poured with nutrient agar (in the case of streptococci with sterile serum added at the time of the pouring). By this means the numbers of viable organisms were estimated (table II).

TABLE II—BACTERICIDAL POWERS OF GLYCERINUM THYMOL CO.

Organisms	Original no. per c.cm. of glyc. thymol co.	After			
		1/4 hr.	1 hr.	4 hr.	24 hr.
Staph. pyogenes ..	6000	6000	550	4	0
Strep. hæmolyticus	56,000	8000	30	0	0
Bact. coli	3500	3000	3000	2300	240

Phenol has long been known as a powerful antiseptic, and table I shows that diluted 1 in 20 it is much superior to glycerinum thymol co. as an antiseptic, though it may not be effective in the very short time in which thermometers remain in it during a round. Table II shows that glycerinum thymol co. is useless as a bactericidal agent for sterilising thermometers.

DISCUSSION

If the above-described method of taking temperatures is used, thermometers remain in the "sterilising" fluid only a few seconds between one patient and the next. The thermometers are returned repeatedly to this fluid and after each ward round remain there. Thus the fluid in the jars is frequently contaminated and diluted with saliva and the water on the thermometer tray. With an efficient antiseptic, such as 1/20 phenol, the fluid will probably be sterilised between the rounds, but with an inefficient antiseptic, such as glycerinum thymol co., there will be little or no sterilising of the fluid. The passage of bacteria from one patient to the next during a round must depend on the care, efficiency, and knowledge of the nurse and on the potency of the "sterilising" fluid.

Though some antiseptics are bactericidal in a few seconds, these would almost certainly be harmful to the mucosa of the mouth or noxious to the patient. For example, Gardner and Seddon[2] have shown that clean unwashed skin is virtually sterilised with 2% iodine in 70% alcohol in 15–20 sec., but such a solution could hardly be used to sterilise thermometers, because in spite of all possible care a patient would sooner or later have his temperature taken with the fluid still on the thermometer. The use of inefficient antiseptics such as glycerinum thymol co. gives a false feeling of security, and even efficient antiseptics would have their limitations under the present method of taking ward temperatures.

CONCLUSIONS

We suggest that, if ward temperatures are to be taken in the mouth, each patient must be supplied with a separate thermometer which he keeps to himself as long as he stays in hospital. This can be left by the patient's bed in a small jar containing an antiseptic solution. When he leaves hospital, his thermometer must be properly sterilised before being used again. This can be done by washing the thermometer in running cold water, drying it, and placing it in some effective antiseptic for a time long enough to allow the antiseptic to act.

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HORMONAL TREATMENT OF DEFICIENT LACTATION

RESULTS WITH CRUDE ANTERIOR-PITUITARY EXTRACT

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IN an extensive study of failing lactation in women (Robinson 1943) no obvious reason was found for the failure in at least 40% of the cases examined. It seemed that an endocrine dysfunction might be responsible, but no clinical signs of this were discovered. On the suggestion of Prof. F. G. Young and with the support of the Medical Research Council and the clinical advice of Mr. J. M. Wyatt, the influence of various hormone preparations on failing lactation was investigated. The present report deals with the results of treatment, during the puerperium, with crude anterior-pituitary extract, administered either alone or with other substances.

METHOD

Assessment of Milk Yield.—From the fifth to the thirteenth day of the puerperium the infants were test fed at every feed. The sum of all the test-feeds done in one day gave the total daily output of milk and was calculated for each day of the puerperium. After discharge from hospital the mothers reported for test-feeding when their infants were four weeks, six weeks, twelve weeks, and six months old. Two consecutive test-feeds were done on each of these days. The times of the feeds were either 10 A.M. and 2 P.M., or 12 NOON and 3 P.M. The average of these two test-feeds was multiplied by five or six, according to whether the infant was being fed four-hourly or three-hourly. This gave the total daily output of milk in the fourth, sixth, and twelfth weeks and sixth month of lactation.

Criteria of Failure to Establish Lactation in the Puerperium.—In 500 untreated lactations the infants were test-fed each day during the puerperium and were followed up during the next six months. Failure before the sixth month of lactation was rare where the milk output on the fifth day of the puerperium had been at least 10 oz., and on the tenth day at least 16 oz., whereas nearly all the failures occurring in the first three months of lactation had had a milk output of less than 10 oz. on the fifth day of the puerperium, or of less than 16 oz. on the tenth day. Therefore an output of at least 10 oz. on the fifth day of the puerperium and of 16 oz. on the tenth day was taken as the standard of establishment of lactation in the puerperium.

TREATMENT

Four different types of hormone treatment were used and three different types of non-hormonal treatment were used to provide controls. As a further control, an eighth group of patients was left untreated. In all, 126 patients were investigated, this number being randomly distributed among the eight groups indicated above. To avoid reactions to the protein in the crude ox anterior-pituitary extract, injections of this material were not given to patients with a family history of allergy.

All infants were test-fed on their fifth and tenth days. If, according to the criteria mentioned above, there was a failure to establish lactation on either of these days, experimental or control treatment was given daily until the thirteenth day, except in the case of injections, which were only given for five consecutive days. On the average, treatment began on the seventh day of the puerperium and ended on the thirteenth day. The milk he amounts thus gained are trivial, and the appeals ster the idea that streptomycin is a cure.

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* Working with a full-time grant from the Medical Research Council at St. Thomas's Hospital, London.

B.C.G. VACCINATION

Dr. Esmond Ray Long, Philadelphia, U.S.A., said hat both in Britain and the United States the attitude o B.C.G. has been cautious because of a correct insistence n statistical analysis, which in early trials was neglected, d also because good progress has been made with other methods. A controlled study initiated in the U.S.A. in 935 among 3000 young people, aged from 1 to 20 years, confirmed earlier estimates from other countries that the ubsequent risk of death from tuberculosis is six or seven mes less in the vaccinated than in the unvaccinated; nd figures for the attack-rates were even more impresve. Results after ten years were still better than after ix years. It would be illogical to attempt mass immuniation in the United States, for the national rate of uberculosis has recently been estimated as only 37·4 er 100,000; but selected groups should be vaccinated. n some countries, however, B.C.G. is an almost essential art of the anti-tuberculosis campaign.

Dr. K. N. Irvine advanced a plan for the B.C.G. accination of all negative tuberculin-reactors among ontacts. In countries where the populations are for the irst time being exposed to tuberculosis, a simplified cheme for mass vaccination should be adopted. The accine can at present be kept for only ten days; but Russian experiments in drying the vaccine are successul it will in future be preserved longer; and it will then e possible to test each batch before using it clinically.

THE VOLE BACILLUS

Dr. A. Q. Wells, in a paper read for him by Dr. J. H. Harley Williams, expressed his belief in the safety of accination with the vole bacillus. A single intradermal njection sometimes gives rise to a small ulcer, as with B.C.G., but this is comparatively innocuous. The interretation of results is difficult; but it is agreed that ensitivity to tuberculin after vaccination with the vole acillus is greater and occurs earlier than after B.C.G. The vole bacillus is a naturally occurring infecting gent in voles; and, unlike B.C.G., it can be maintained t a constant virulence by animal inoculation. A properly controlled study of the vole bacillus should be ndertaken, with regard to these essentials: (1) the ncidence of tuberculosis in the communities to be tudied should be high, and the communities should be elatively stable; (2) there must be strictly impartial division of the tuberculin-negative reactors into vaccinated and unvaccinated groups; (3) the vaccinated and unvaccinated groups must be as nearly as possible equal n number and in age, sex, race, risk of infection, and socio-economic status; (4) vaccinated and unvaccinated groups must be continuously supervised for at least five years; and (5) the numbers in each group must be large enough for statistical analysis.

STREPTOMYCIN

Dr. H. C. Hinshaw, vice-president of the National Tuberculosis Association, U.S.A., said that streptomycin modifies some forms of tuberculosis for a limited and possibly predictable time. Its limitations are imposed by the pathology of the disease and by the characteristics of the tubercle bacillus. The committee on therapy of the American Trudeau Society recently reported that streptomycin should be given in: (1) tuberculous meningitis, where the chance of complete clinical remission is big enough to justify its employment in all cases (a few, said Dr. Hinshaw, have recovered completely); (2) hæmatogenous miliary tuberculosis (for this is the only remedy, and there is reason for hoping that it may reduce the mortality from 100% to 50%); (3) tuberculous laryngitis; (4) progressive ulcerative lesions in the tracheobronchial tree; (5) extensive, progressive, pulmonary tuberculosis and tuberculous pneumonia, but not early fibroid or fibrocaseous pulmonary tuberculosis or chronic tuberculous empyema; (6) acute ulcerative tuberculous enteritis; and (7) sinuses from tuberculous lymphadenitis. Its effectiveness against other forms of tuberculosis, such as those affecting the genito-urinary tract, bones, joints, and skin, has yet to be assessed. The frequency and severity of vestibular disturbances following streptomycin have, said Dr. Hinshaw, been exaggerated; he knows of no case where any persistent disturbance is detectable except by fine tests: and with purer streptomycin the frequency of even this slight disturbance may decrease. In 1000 cases none with loss of hearing has been observed except among those who have had tuberculous meningitis. However, "streptomycin should be avoided where other treatments are available. I know of one case who two years ago at his own request was treated with streptomycin for minimal disease, and now has extensive progressive disease resistant to the drug." Cases for treatment must be wisely chosen; and the risk of exacerbation at the end of treatment must be acknowledged by keeping the patient at rest in bed. Streptomycin will possibly supplement, but will never supplant, other forms of treatment.

Dr. H. S. Willis, Northville, Michigan, said that in the United States a coördinated study has already been made of more than 1000 cases treated with streptomycin, while another 600 are now being studied; and probably 700 have been treated independently. Under the plan for a coördinated investigation individual workers are free to publish their results; but they are pledged to adhere to certain schedules. "Here is a drug which has made the grade in a few types of tuberculosis, where it now stands as a 'must'; but the large majority of cases are not susceptible to it."

Dr. S. A. Waksman, U.S.A., said that he and his colleagues originally investigated streptomycin for its power to combat the gram-negative organisms which are unaffected by penicillin. To their surprise laboratory tests suggested that it was effective against the tubercle bacillus; and this was confirmed by Dr. Hinshaw and his associates, to whom early samples were sent. "Streptomycin may not be the final answer—I hope it is not—but it has pointed the way to other agents."

Dr. P. M. D'Arcy Hart, winding up the discussion, said that at the end of 1946 the Medical Research Council received from the United States 50 kg. of streptomycin—enough for 200–250 cases. The council established two committees to investigate streptomycin—one in relation to tuberculosis, under the chairmanship of Dr. Geoffrey Marshall, and the other in relation to other conditions, under the chairmanship of Sir Alexander Fleming, F.R.S. There are now eight centres for the treatment of meningitis with streptomycin; and the results will be published as a piece of group-research. Some cases of miliary and of pulmonary tuberculosis are also being treated. The Ministry of Health, he said, is proceeding with the production of B.C.G. vaccine. The danger of using the vaccine is that it may lead to a slackening of other measures against tuberculosis.

Reviews of Books

Handbook of Correctional Psychology

Editors: Robert M. Lindner, Ph.D.; Robert V. Seliger, M.D. New York: Philosophical Library. 1947. Pp. 691. $10.

Correctional psychology is described in the editors' preface as "a branch of applied medical art and science which properly restricts itself to the understanding and treatment of individuals under conditions of detention." Their book "includes only material which will be practical, applicable, and of immediate value" and is presented as a "source book to which the institutional psychiatrist, psychologist, physician, caseworker and administrator can turn for guidance in the performance of his functions." If the reader accepts this definition he cannot reasonably complain that there is relatively little psychology in this collection of articles; but he may wonder whether it is possible to compile a "source book" which contains only practical material.

The 46 contributors vary widely in their approach; there is no index; and the arrangement does not indicate which chapters are meant for which of the five different classes of reader. Also the balance of contributions is open to criticism.

Chapters are devoted to E.N.T., dental, acute medical, and venereal practice, and to gastric neuroses, sedation, electric gland, the results were no better than those shown by the controls.

It is therefore possible that dried thyroid gland may stimulate lactation in the puerperium, and that hexœstrol may counteract its action.

In the cases treated with crude ox anterior-pituitary extract plus dried thyroid gland the full effect of the stimulation of lactation seemed to be obtained by treatment in the puerperium only.

The continuation of the dried thyroid gland alone, after discharge from hospital, seems to be unnecessary.

I wish to thank Mr. J. M. Wyatt, F.R.C.S., F.R.C.O.G., Mr. A. J. Wrigley, F.R.C.S., and Prof. F. G. Young, D.SC., for their help and criticism; and the nursing staff of St. Thomas's Hospital for their coöperation. I am indebted to the Medical Research Council for their support and to Glaxo Laboratories Ltd. for the materials used in some of the experiments.

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A SWALLOWED PIN RETAINED IN THE APPENDIX

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A COMMON history at any large hospital is that the patient has swallowed a foreign body. If this reaches the stomach it is usually passed spontaneously without need of operation. The pylorus, the "hairpin" bends of the duodenum, and the ileocæcal region are the most commonly reported points of impaction.

Many different objects small enough to enter from the cæcum have been retained in the appendix; but most of the published reports are concerned with those responsible for acute symptoms, and I can find few instances where operation was necessary for removal of a retained foreign body which did not cause any complications.

At one time foreign bodies were thought to be a common cause of acute appendicitis, but nowadays such a cause is considered rare. They still sometimes cause acute appendicitis from erosion of the mucosa, with entrance of organisms into the appendix wall, or they may act as a nucleus for a fæcolith, with the eventual onset of classical obstructive appendicitis. Sharp-pointed foreign bodies may perforate the wall and cause peritonitis, or a more gradual penetration may lead to a local abscess. They may lie dormant for years, but always remain a potential menace to the host.

CASE-RECORD

A boy, aged 13 years, was seen at the West Middlesex County Hospital on Oct. 11, 1942, with a history of having accidentally swallowed a pin at 3.15 that afternoon.

Radiography revealed a large pin in the central abdomen, and the patient was admitted to hospital. Next day radiography showed the pin to be in the right iliac fossa, and repeated radiography in the next six weeks indicated no real progress of the pin, though there were slight variations in its position. The patient during this period had no symptoms, and physical signs were completely lacking.

Retention of the pin at the ileocæcal valve was diagnosed; and, in view of the lack of progress and the danger of slow perforation, I decided to operate.

On Nov. 23 a small right paramedian incision was made, and the first structure to present in the peritoneal cavity was the appendix containing the pin, whose glass head was resting at the tip of the appendix.

A simple appendicectomy completed the operation. When the appendix was opened the pin was found to be 2½ in. long, with a glass head the size of a small pea. The mucosa appeared normal.

On reviewing the case after operation, I felt that retention in the appendix should have been surmised. Earlier intervention might also have been considered, but a waiting policy in these cases had, in my previous experience, been invariably successful.

Medical Societies

COMMONWEALTH TUBERCULOSIS CONFERENCE

DELEGATES to the Commonwealth and Empire Health and Tuberculosis Conference, convened by the National Association for the Prevention of Tuberculosis in the Central Hall, Westminster, on July 8, 9, and 10, were addressed by Mr. ANEURIN BEVAN, the Minister of Health. Speaking of the National Health Service Act and its effect on tuberculosis work, Mr. Bevan pointed out that the increase in tuberculosis notifications is merely a reflexion of more accurate diagnosis and earlier recognition. The resulting earlier treatment is responsible for the decline in mortality. We could do much more for the early cases but for the many sanatorium beds standing idle because of lack of nurses and domestic staff. We have more nurses than ever before, but a larger number of people are going to hospitals and sanatoria for help; hence the need for still more nurses. In the National Health Service the sanatoria will retain their identities, because there is a great moral reserve in tradition. There will be an integration on the institutional side of all the tuberculosis institutions and the regional boards, but on the personal side responsibility will rest with the local health authority. Some will object to what they will call a dichotomy in the service, but the Ministry hope that the tuberculosis officers will be joint appointments with the local health authority, so there will be a link at the executive point, where the actual work is being done. The winding-up of the poor-law system will have an important bearing on tuberculosis treatment. The benefit paid under National Health Insurance was too low to encourage tuberculous people to undergo treatment in time, and the special allowances introduced during the war had the grave and cruel disadvantage that they were withdrawn if the patient was incurable. Under the new scheme this disability will be removed because the benefits paid will be much higher. The Assistance Board will also give additional help, with special provisions, to tuberculous patients. Patients will then receive help without any stigma attaching to it. *We are hoping, by the provision* of spacious well-lit homes, by supplying extra nourishment for children, by looking after mothers and babies, by developing social services generally, and by facilitating earlier diagnosis and earlier treatment, to ensure a continued fall in tuberculosis mortality.

On July 9, the second day of the conference, a discussion was held, under the chairmanship of Prof. S. LYLE CUMMINS, on

Specific Measures in the Prevention and Treatment of Tuberculosis

In an introductory speech Prof. W. H. TYTLER referred to the proved safety of B.C.G. vaccine; but its efficiency is, he said, less easily ascertained. Vaccination is less effective among populations with a low than in those with a high primitive mortality from tuberculosis; perhaps this is because in low-mortality populations those who, despite vaccination, have persistently poor resistance represent the residue of family stocks with poor natural immunity. The attitude to B.C.G. has been one of apathy, possibly because people have been unconvinced of its real advantage. There is, however, growing enthusiasm for its use among uninfected and exposed young adults. Vaccination with the vole bacillus may offer the advantage of continuing immunity; but B.C.G. has been well tried and should not be discarded until the superiority of the vole-bacillus vaccine has been proved with certainty. It is doubtful if streptomycin will cure advanced tuberculosis; and "I should like to protest against broadcast appeals for streptomycin."

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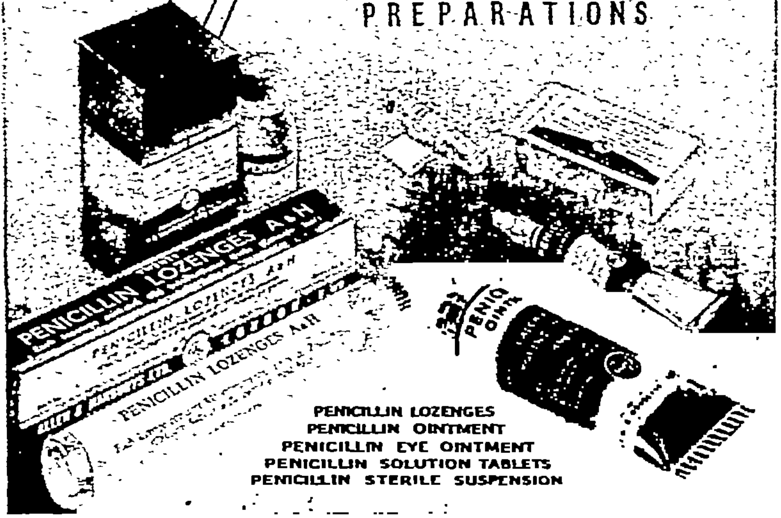

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shock, psychotherapy, and puberty, though these matters are common to medical practice in all organised communities. In those describing the technique of electro-encephalography, hypno-analysis, psychometric procedure, diagnosis and training of mental defectives the detail is too great for the casual reader but insufficient for a practitioner. On the other hand, practical mental hygiene and specific methods of preventing maladjustments are disposed of in two pages.

Articles on the treatment of juvenile delinquency, on municipal courts, and on the classification clinic in a big penal institution show the English reader how much can be achieved by the intelligent application of psychiatric principles to the handling of crime. Other chapters indicate varying stages of progress in the United States, as shown in a bitter attack on the legal attitude to sex offenders, and a plea for "some form of training for personnel (staff) in juvenile delinquency institutions." That this variation extends to medical men is suggested by a warning to young doctors entering the prison service against accepting bribes from inmates!

Certain attitudes of contributors are surprising: delinquency is said to arise out of divergent viewpoints in society; ruthlessness is the automatic sequel of lack of love in the home. Consistently enough, the same writer wants preventive schools to supervise the delinquent child's "every moment," and advocates compulsory work, as "the only way to cure juvenile vagrancy." A delinquent needs teaching "how to withstand the environment to which he will return"; and another contributor advocates (admittedly with diffidence) the use of "specially trained prostitutes" in the treatment of exhibitionists, though his own description of the character of prostitutes suggests that they might not prove easy to train.

Chapters devoted to psychopathic personality are frankly disappointing; because of insufficient coördination they do little to clear up the confusion reigning in that field. The psycho-analytical contributions, of which there are several, are more impressive because they show evidence of original thought and are noticeably modest and reasonable in their assertions. A plea for the public financing of the planned investigation of 500 criminals by 50 trained psycho-analysts is both timely and reasonable.

Much time and care has obviously gone into the preparation of this volume, and our criticisms arise from its attempt to achieve an unattainable and perhaps unworthy object—to be a figurative departmental store in which serious workers may obtain their professional tools. It does, however, show how much needs to be done if Britain is not to be left far behind the United States in dealing with antisocial behaviour.

Sick Children: Diagnosis and Treatment

(6th ed.) DONALD PATERSON, B.A. Manitoba, M.D. Edin., F.R.C.P., physician to the Hospital for Sick Children, Great Ormond Street. London: Cassell. 1947. Pp. 455. 16*s*.

THIS well-known book is comprehensive and detailed, but still of convenient size. This edition looks like the mixture as before, but many portions have been revised and several have been rewritten. Most pædiatricians use larger doses of the sulphonamides than those recommended by Dr. Paterson for young infants. In general however the book is up to date and reliable. It is not very easy to read consecutively, but is a good compact reference book. The index is well made. Hæmorrhagic disease of the newborn has to be sought as "hypoprothrombinæmia" or by way of "vitamin K," but such defects are uncommon.

Treatment of Bronchial Asthma

VINCENT J. DERBES, M.D., instructor in medicine and in preventive medicine, Tulane University of Louisiana; HUGO TRISTRAM ENGELHARDT, M.D., F.A.C.P., instructor in clinical medicine, Baylor University College of Medicine, Houston, Texas. London: J. B. Lippincott. 1946. Pp. 466. 48*s*.

THIS book by the authors and nineteen other contributors gives a clear account of the basic factors in the production of asthma, and then discusses the clinical treatment from these fundamentals. The important facts of anatomy and physiology are given concisely, and the chapter on the experimental and theoretical siderations of immunology is well illustrated and this difficult subject fairly intelligible. Various of modern treatment are considered under [illegible] headings. The "desensitisation" type of [illegible] is perhaps emphasised too much at the expense physical treatment—athletic training, games, and tory exercises—which some believe to be more [illegible] especially for young asthmatics. The chapter on [illegible] treatment carries some good anatomical illustrations with details of operative technique; but more facts be welcome about the clinical results after five [illegible] We really need to know the ultimate fate of a big group of asthmatics treated by specific means, as compared with a control group treated palliatively.

Notes on Essential Factory First Aid (Croydon Couldrey & Co. 1946. Pp. 16. 1*s*.).—Sir Ernest Cowell has produced a series of short lecture notes on first-aid, designed to be read in conjunction with the standard first-aid books and containing some points which have not reached them. As "bread and butter" first-aid, the notes are brief, clear, and full of common sense, but they hardly justify the title of "factory first-aid." No mention is made of the many conditions peculiar to factories for which first-aid treatment is necessary. For instance, a factory first-aid worker should be told how to deal with a scalping accident, how to get an electrocuted worker off a crane-track or a gassed one from a soaking pit; what to do, if anything, for a cyanosed chemical worker, and what is the first-aid treatment of cyanide poisoning. He will want to know what to do when acids, alkalis or other chemicals splash into eyes, and whether there is anything to be done for a welder who gets "eye flash." Again, what should be the first-aid treatment for a burn by boiling pitch which sticks to the skin? Each industry has its special health risks and types of accidents, and no book dealing with factory first-aid should omit to mention them.

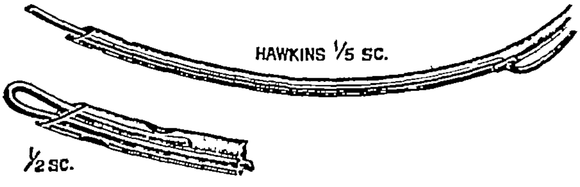
New Inventions

FLUSHING CATHETER FOR USE AFTER RETRO-PUBIC PROSTATECTOMY

THE instrument illustrated here is made of plastic and consists of a size 26 whistle-tipped catheter with a narrow tube let into the side and lying free in the lumen to project beyond the terminal opening.

It is sterilised by boiling and passed with the projecting tube turned back (see inset diagram) through the urethra into the prostatic bed; the end is then pulled out and the catheter guided into the bladder neck.

After suture of the prostatic capsule 4 ounces of citrate solution is instilled into the bladder and both tubes of the catheter spigoted. On the patient's return to the ward the narrow tube is connected through a drip interrupter to a reservoir and the large end to a bottle under the bed. Citrate solution (2 pints), followed by normal saline or saline and sulphanilamide solution, is dripped through continuously for the next 48 hours. This continuous irrigation prevents clots accumulating in the bladder, and the urine rapidly becomes clear.



The object of the small tube lying free in the catheter is to facilitate cleaning; it could also be withdrawn an emergency. The projection of the small tube b[illegible] the catheter end ensures irrigation of the bladder and [illegible] of the catheter only.

I have used this instrument and its rubber prototype with complete satisfaction on many occasions.

The catheter is made by Messrs. A. L. Hawkins & Co. Ltd. of London.

E. G. TUCKWELL, F.R.C.S.

THE LANCET

LONDON: SATURDAY, JULY 19, 1947

Vagal Resection for Peptic Ulcer

It is natural for a sick man to shrink from a surgical eration if medicine can cure him, and the sufferer om peptic ulceration is usually wise to explore the ysician's resources before undergoing an operation. ut where medical treatment has failed surgery will ten restore the patient to health. The results of eration nevertheless fall considerably short of erfection, partly because surgery carries an apprecible mortality, and partly because though it will cure n ulcer it may fail to prevent a recurrence. Many ifferent operative techniques have been tried in ttempts to remedy these defects—to combine safety ith maximum reduction of the abnormal acidity and uantity of the gastric juice, which are associated with eptic ulcer. The latest of these techniques is resection the vagus nerves, and first-reports suggest that this ay be a major advance.

The conception of vagal resection as a treatment for ptic ulcer must be nearly as old as the knowledge the vagi are responsible for the psychic flow of astric juice, but it was not until the work and writings f L. R. Dragstedt and his colleagues drew attention it that the idea caught on. Dragstedt and Owens[1] howed that, whereas the normal man ceases to secrete ic juice when he is asleep, the ulcer patient coninues to do so throughout the night. This juice, nprovoked by food, must be a psychic flow, mediated hrough the vagi; and, undiluted by food, it is the rime factor in causing ulceration, particularly when t is hurried into the duodenum by a hypermotile tomach. Dragstedt hoped in particular to decrease he night flow by vagal denervation of the stomach, nd the excellent results of his procedure have been ttested by many workers. The immediate effects of ection of the vagi are to reduce the quantity and cidity of the gastric juice and the motility of the tomach, and, though all three return with the passage f time to nearly normal, night secretion and hypermotility are permanently abolished so far as can be udged in the limited time so far available for follow-up f the patients. Section of the vagus probably does more than this. There is evidence (some of it contraictory) that it cuts the afferent pathway for stomach nd duodenal pain, that it abolishes the spasm of the uodenum which many think is the origin of ulcer ain, and that it severs the nervous connexion between he stomach and the cerebrum. This last may be the ey to the success of vagal resection. The evidence or it is the finding by Dragstedt[2] that in man nger or nervous tension immediately and greatly ncreases the amount of gastric juice which can be ecovered from an indwelling Ryle's tube, an effect hich is abolished by section of the vagi. Wolf[3] as amplified these observations by showing that vagal resection in man abolishes those vascular responses of the stomach to emotion which he and Wolff[4] described in their classical monograph.

The indication for vagal resection is long-standing peptic ulceration which has resisted medical treatment. Duodenal ulcers constitute the majority of cases hitherto reported, and typical ulcer patients, who can relate recrudescence of their symptoms to anxiety or stress, are said to do very well. If pyloric stenosis is present, a gastro-enterostomy or pyloroplasty is an essential addition to the operation; one could hardly expect a physiological operation on the vagi to correct anatomical obstruction by old fibrosis. In cases of gastric ulcer vagal resection leads to healing, though some surgeons believe that it should be combined with partial gastrectomy. Gastrojejunal ulceration after gastro-enterostomy or gastrectomy responds well to vagal resection, according to reports, and those who have had to make a second attack on a stomal ulcer by orthodox techniques will welcome a method of side-stepping its difficulties and perils. Patients who do not do well are those with a bad emotional history, in whom dyspeptic pain is one of many symptoms. One need scarcely add that patients in the throes of an acute gastroduodenal hæmorrhage are not suited to vagal resection; but a history of hæmatemesis or melæna is no bar.

The technique of vagal resection is not unduly difficult. The nerves are attacked in the region of the diaphragm. Unfortunately their anatomy is variable at this point. They may appear as two stout nerves, one anterior and one posterior to the œsophagus, or they may be plexiform. Twigs moreover may leave the vagi well above the diaphragm to enter the œsophageal musculature and run therein to the stomach. These anatomical peculiarities have been described by Mitchell[5] and with special reference to vagus resection by Bradley and colleagues[6] and by Miller and Davis[7] To secure complete vagal denervation of the stomach not less than an inch of the nerves or the plexus should be removed. The approach to this task may be either through the chest or through the abdomen. The thoracic approach has the great advantage that in the absence of pleural adhesions it is easy and total vagal interruption is fairly certain. The greater part of the eighth rib on one or other side is resected, the pleura opened, the pulmonary ligament divided, and the lower inch of the œsophagus mobilised and rotated on a tape as far as is necessary for the identification and resection of the vagal apparatus. This chest approach however suffers from the disadvantages that a thoracotomy is more perilous than a laparotomy, that pleural effusion and pain in the chest scar often occur, and that the stomach and duodenum are not open to direct inspection. The abdominal approach is technically more difficult, because the surgeon has to work under the high concavity of the diaphragm. The vagi can be sectioned but the cardinal difficulty is to remove a length of all the vagal fibres traversing the œsophageal hiatus. This difficulty can be overcome by the method described by Crile,[8] and in this issue Orr and

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Dragstedt, L. R., Owens, F. M. *Proc. Soc. exp. Biol., N.Y.* 1943, 53, 152.

Dragstedt, L. R *Canad. med. Ass. J.* 1947, 56, 133.

Wolf, S., quoted by Andrus, W. D. *J. Amer. med. Ass.* 1947, 133, 748.

[4] Wolf, S., Wolff, H. G. Human Gastric Function, London, 1944.

[5] Mitchell, G. A. G. *Brit. J. Surg.* 1938, 26, 333.

[6] Bradley, W. F., Small, J. T., Wilson, J. W., Walters, W. *J. Amer. med. Ass.* 1947, 133, 459.

[7] Miller, E. M., Davis, C. B. *Ibid*, p 461.

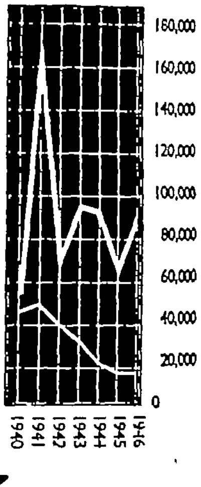
[8] Crile, G. jun. *Cleveland clin. Quart.* 1947, 14, 65.

ONE immunological course

WHOOPING COUGH

DIPHTHERIA

● The success of the campaign for diphtheria immunisation focuses attention upon the gravity of the figures relating to whooping cough. For this reason and for the convenience of *simultaneous* prophylaxis against both diseases, Glaxo Laboratories present the new preparation of *combined* antigens—Diphtheria Prophylactic A.P.T. plus Pertussis Vaccine (Alum-Precipitated). This condenses prophylaxis into one course of three injections (0.5 cc., 0.5 cc., and 1.0 cc.) at monthly intervals. Each cc. contains, in equal proportions, the customary Diphtheria A.P.T. (at least Lf 25) and 20,000 million H. pertussis alum-precipitated.



Vital statistics
for England and Wales
(Hansard, 1946, 197, 427, 227).

Thick lines.
Whooping Cough cases notified

Thin lines.
Diphtheria cases notified

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In bottles, 5 cc. 10/9 and 10 cc. 15/6. Less usual professional discount.

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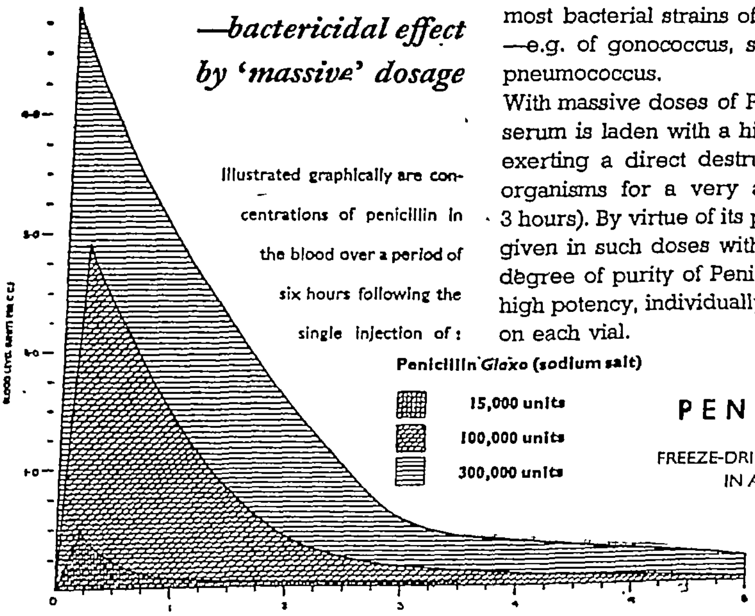
PENICILLIN *Glaxo*

—bactericidal effect by 'massive' dosage

Illustrated graphically are concentrations of penicillin in the blood over a period of six hours following the single injection of:



At low serum levels penicillin exerts a bacteriostatic effect. At higher levels a direct bactericidal effect is achieved, beginning at perhaps 0.5 to 1 unit per cc. for most bacterial strains of ordinary penicillin-sensitivity—e.g. of gonococcus, staphylococcus, streptococcus, pneumococcus.

With massive doses of Penicillin *Glaxo*, therefore, the serum is laden with a high concentration of penicillin exerting a direct destructive effect on the invading organisms for a very appreciable time (from 1 to 3 hours). By virtue of its purity, Penicillin *Glaxo* can be given in such doses without pain or side effects. The degree of purity of Penicillin *Glaxo* is reflected in its high potency, individually stated in units per milligram on each vial.

PENICILLIN Glaxo

FREEZE-DRIED SODIUM SALT FOR INJECTION
IN AQUEOUS SOLUTION

In vials containing 100,000 units, 200,000 units; 500,000 units and 1,000,000 (1 mega) units per vial.

GLAXO LABORATORIES, LTD., GREENFORD, MIDDLESEX BYRon 3434 ings from all this: wherever they are placed—ne, infirmary, cottage, institution, or hospital rd—and whatever their disabilities—crippling umatism, incontinence, chronic bronchitis, even cer—old people can be content and cheerful if y are given the chance; and whether or not they the chance depends on the character, insight, and ermination of those in charge of them. These are ple of many sorts: medical officers of health, blic-assistance officers, housing managers, visiting eral practitioners, wardens, masters, matrons, rses, assistant nurses, orderlies, even ward-maids—y one of whom may be an arbiter of destiny for old and helpless. Individual kindness from any mber of the hierarchy counts for much: a friendly rd-maid can partly compensate for an unimaginative ster. But a uniformly happy atmosphere in wards, stitutions, and homes is achieved only when the ople at the top are keen and interested and inspire like enthusiasm in the rest of the staff. Nurses e conditioned by their training to follow the lead doctors: and a bored and apathetic doctor who inks the old and infirm not worth treating usually akes his nurses bored and casual too. This is the ore likely to happen where nurses are scarce and handful of girls and women have the heavy task of ring for more old people than they can possibly anage. The nursing of the old is skilled, exacting, d absorbing work, as nurses at the West Middlesex ospital have shown; but it can only be done operly where there are enough people to do it. several of the hospitals visited, shortage of nurses as making skilled work difficult. A striking contrast as seen in the infirmaries of Gloucestershire, where e part-time nursing scheme has been an unqualified ccess. Many other local authorities, encouraged y the Ministry of Health, have launched part-time hemes; and though some of these have been based ccessfully on Gloucestershire experience, others re not achieving the same brilliant result. At is critical moment failure cannot be condoned. nless enough good nurses can be won to the care f the chronic sick the able plan proposed by the ritish Medical Association committee[2] will fall to the round. This problem stands apart from the nursing isis as a whole, for we have been shown that it can e handled separately and with outstanding success. here there are special local difficulties our national putation for finding a way round must justify itself. he only difficulties likely to prove insuperable are ck of will and ability in those entrusted with running e schemes; such people should be superseded.

Dr. MARJORY WARREN, Dr. L. Z. COSIN, and Dr. REVOR H. HOWELL, working in three different stitutions, have shown the revolution in atmosphere nd tempo which active medical and surgical treatment bring to infirmary wards. Patients no longer ake to sluggish days, when meal-times make the nly breaks and their own boredom and ill-humour nfect the hard-pressed nursing staff. They are eager, xpectant, keen to get on; or, if treatment can do o more for them, they are occupied, gossiping, and lert. The same change in spirit is found in the loucestershire infirmaries where the relays of nurses, fresh from their own family interests, unfatigued, and pleased with their opportunity for service, bring the old people news from the outside world. Incontinence, that outstanding cause of mental and physical misery for the old and infirm, responds to training far more often than is usually supposed, as nurses at the West Middlesex Hospital and St. Helier, Carshalton, have fully demonstrated; while a new method of medical treatment devised by Dr. THOMAS WILSON is proving its value at St. John's, Battersea. Physiotherapy and occupational therapy can easily be extended to old people living at home, as St. Helier has shown: three groups of old people daily are brought to the hospital in a Ford brake and taken home again after treatment. Birmingham has made it clear that the large institution need not carry on the gloomy traditions of its type, and that even ancient, bleak, and unsuitable buildings can be a centre of pleasant community life if managed with imagination.

Homes for small groups are seen at their best in the Hill Homes, Highgate, the homes of the Worthing Council of Social Service, and the hostel at Aberdeen. Old people like the intimate atmosphere, the smaller rooms, and the friendliness of such homes, and the Ministry of Health[3] is encouraging local authorities to acquire houses suitable for conversion into homes for 25–35 residents, and to run them on the liberal lines which the voluntary societies have developed. Thanks to representations to the Assistance Board by the National Old People's Welfare Committee, a supplementary pensioner now receives 37*s.* weekly, which means that, once established, such small homes can be self-supporting: the old people can pay for their maintenance and still have something over for pocket-money. It is a great misfortune that those admitted to public-assistance institutions are not allowed to retain their pensions and to pay for themselves in the same way. A "charity institution" is still, for them, a symbol of degradation; to pay their way would mean a return of self-respect. It is believed that the Government, which has shown itself sympathetic with this view, may introduce more enlightened practice either by regulation under the National Insurance Act or by fresh legislation in the forthcoming National Assistance Bill. For healthy independent old people, bungalows and almshouses, such as those at Trowbridge and Devizes, are specially suitable. Estates containing houses or flats for the elderly would gain greatly if they also carried a nursing and home-help service, for, as Lord AMULREE has repeatedly pointed out, the line between health and sickness in old age is exceedingly fine. The Linen and Woollen Drapers' Institution, with its properly staffed nursing-home set among the cottages of the estate, has shown what can be done.

Since our articles are by no means comprehensive, it seems proper to refer here to the work of the National Old People's Welfare Committee, which brings together the national organisations and pools their experience on the needs of old people and on measures designed for their well-being. Some 158 local committees are now active, and have already established homes for about 1000 old people, besides encouraging the work of other voluntary bodies in this field. They

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Report (1947) of the Committee on the Care and Treatment of the Elderly and Infirm. *Brit. med. J.* June 21, supplement; and see *Lancet*, June 21, p. 874.

[3] Circular no. 49/47.

JOHNSON have briefly indicated their method of enlarging the œsophageal hiatus to reach the posterior mediastinum. Once a satisfactory vagal resection has been accomplished all the advantages are with the abdominal approach. Mechanical defects such as pyloric stenosis can be remedied and gastric carcinomata or gall-bladder disease will not be overlooked. It seems likely that the thoracic approach will remain useful for patients who have already undergone radical surgery of a more usual kind for their peptic ulcer and have developed gastrojejunal ulceration. Here the pathology has already been verified, and exposure from below, difficult enough in the normal abdomen, may be impossible when the anatomy is distorted and obscured by adhesions.

There is general agreement that most patients lose their symptoms and most ulcers heal after vagal resection. THOMPSON and JAMES, who reported 4 cases in these columns last week (p. 44), found that all the patients were symptomatically relieved and their gastric acidity showed a substantial fall. In this issue ORR and JOHNSON report 50 cases. The first 15, in which a subdiaphragmatic vagotomy was done, showed the highest proportion of failures, but the later cases, though not reported in detail, were exceedingly successful. They believe that the early failures were due to incomplete vagal interruption, as judged by the results of the insulin test-meal which is believed to be a specific test for vagal denervation of the stomach. Other large series have come from America. CRILE [8] has done 77 cases, often with additional gastroenterostomy or other mechanical rectification, and describes his results as excellent. MOORE and colleagues [9] have had 1 failure and 3 unsatisfactory results in 33 cases. DRAGSTEDT,[2] who speaks from the largest experience of anyone, has done 140 cases, the first over four years ago, and he says that vagal resection has replaced all other methods of treating peptic ulcers in his clinic.

There are some side effects and dangers associated with vagal resection. Transient anorexia and gastric atony follow the operation, but continuous suction for three or four days will tide the patient over the danger of acute dilatation of the stomach. Gastric atony may be a more serious matter if it brings to light a mild pyloric stenosis for which no short-circuiting operation has been done after the vagal resection. A stomach which could cope with some narrowing of its exit before vagal denervation may afterwards be unable to empty itself. No constant or serious effect on any of the organs distal to the stomach has been found;
sometimes follows the operation but ceases
y. In some circumstances the balance
ominal sympathetic and parasym-
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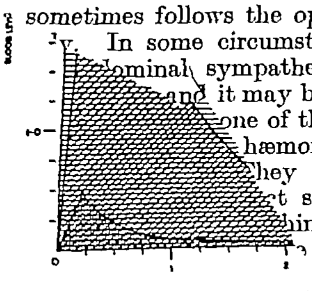

GLAXO LABORATORIES
14

a man suffering from hypertension and peptic who had his vagi and his thoracolumbar resected; he died of a symptomless perforation duodenal ulcer fifteen days after the second op. *No other case of perforation after vagal* seems to have occurred, but it may be unwis treat the peptic ulcer of a hypertensive by resection or the hypertension of a dyspeptic by lumbar sympathectomy. WEEKS et al. also another fatality after vagal resection which is esting. The patient died on the table from arrest, symptoms of which appeared while the were being manipulated. The question arises handling of the vagi has repercussions on the and it would be interesting to know whether graphic studies of the heart during dissection of vagi have been done.

Any new technique, especially if founded elegant theoretical considerations, will evoke rary enthusiasm. But though it is too early to pass judgment, it seems that vagal resection will more than a passing fashion. If the claims made for it are substantiated it will have a perm place in the treatment of peptic ulcer. Appa vagus does not regenerate after it has been cut, and the passage of time shows the effects of resection to permanent the operation will become the answer to the majority of peptic ulcers.

Life for the Long Lived

"AFTER reading many books on old age, I Cicero the most irritating," complains Dr. R. BENNETT in a lively scholarly treatise [1] written from the vantage-point of the eighth decade of life objects specifically to the insincerity and lack of humour manifest throughout the *De Senectu*— "this tiresome work." According to Cicero, Cato gave four reasons for a miserable old age: having nothing to do; enfeeblement of body; depriv of pleasure; and the approach of death. actually, of these four reasons, only the last an inevitable result of life, whether long or short. is now well established that old people like to occupied, that many of their ills yield to treatment, that they take pleasure in simple things, and that so long as they get these things and can live under conditions of reasonable comfort they pay more attention to the thought of death than the rest of us.

With the account of the measures adopted Aberdeen for lightening the burden of age (p 106), our series of articles on the modern care of old pe comes to an end. They show what is being done, and down the country, to get rid of shoddy standards of treatment, to replace carelessness by attention to the welfare of old people, and to restore bodily function and zest for living in those who must depend to a greater or less degree, on strangers for care their later years. Our study has ranged from t receiving active treatment in hospital to those in institutions, residential homes, almshouses, corporation bungalows; and we have shown how cities—Glasgow and Aberdeen—are tackling the of the old from many directions. One vivid lesso

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., Jones, O. M.
946, 132, 988.

[1] Old Age and How to Make the Best of It. Bristol: John W 1947. Pp. 23. 2*s*. 6*d*.

Annotations

NURSING STANDARDS

THE General Nursing Council have been strongly riticised in these columns and elsewhere for setting tandards which exclude many suitable girls from the rofession of nursing. At a time when the hospital ervices can be saved *only by a large influx of new nurses* hey would deny the title of nurse to anyone who does not follow a syllabus which they are making more and more academic. In justification of this policy they send us this week through their registrar a letter announcing hat British Columbia no longer feels able to recognise our training schools—on the ground that the educational qualifications for entry are too low and the standards of training unequal. This shows, says the registrar, the necessity to raise rather than lower the standards of nursing education in this country; and we quite agree. What we have proposed, and still propose, is that every nursing candidate should qualify first in bedside nursing of a higher standard than is required today: this bedside course, we have suggested, might last two years. Those with the right abilities and educational background should then take a much more exacting and scientific course for State registration than has so far been offered. Qualification in bedside nursing would give a woman the title of nurse, and State registration would give her the rank of sister.

Thus the *Nursing Times* is only partially correct in saying last week that we advocate "a shortening and simplification of the training, to open the profession to larger numbers of potential nurses." Unlike the General Nursing Council, we think the profession should find room both for the woman with intellectual ability and for the woman with practical capacity. Both are urgently needed within its ranks.

PROBLEM GIRLS

THOUGH delinquent adolescent girls present more intricate problems than delinquent boys of the same age, we have more and better institutions, with more trained intelligent staff, for the care of boys than of girls. A joint committee of the British Medical Association and the Magistrates Association, who have just reported[1] on the problem of unstable adolescent girls between the ages of 13 and 17, suggest that the causes and nature of the problem are not always clearly appreciated by those dealing with such girls, and that the general attitude towards them is often mistaken, the decision of the court or other authority serving only to increase their difficulty. When a girl appears in court it is seldom as a result of her first misdemeanour; if charged with theft she has generally stolen before, if with a civil offence she usually has a history of sexual deviation and defiance of parental control. Her standards of conduct, or misconduct, are thus well established. The probation officer often finds that her environment has been poor; her home life has been broken by the death or absence of one or both parents, there has been gross overcrowding or great disharmony. Lacking love, stability, or security in the home she tries to find compensations outside. Moreover some girls are unhappy in their jobs: while others, having been brought up in an institution, are self-centred with little sense of responsibility towards others, and with no clear idea of the value of money. Yet, as the report notes, many girls in equally unpromising circumstances overcome them and do well. "The fundamental cause of the delinquency is usually found by the psychiatrist to be some defect of character structure, not always amounting to a mental defect." Some, indeed, are dull and backward, even to the point of feeble-mindedness; but moral or social deficiency is not necessarily associated with a low intelligence quotient.

The girl with an I.Q. below 60 usually has a childish appearance and manner, and is facile and friendly but incapable of loving adequately either her parents or anybody else; lazy and lacking in initiative, she is impatient of control and sexually undiscriminating. Most of the unstable girls who come before the courts, however, are brighter than this, with an I.Q. between 70 and 90; well developed physically, they resemble in their emotions the lower-grade girls just described, though they are more discriminating in the type of man they go about with and are more skilful in telling lies to cover up their misdemeanours. Though docile when under authority, they are usually only waiting to get free to return to their former style of life. A special type of girl is over-credulous and romantic, easily believing herself in love though actually incapable of deep affection, and over-sexual in her behaviour. Such girls may contract venereal disease, give birth to illegitimate children, or become true nymphomaniacs; but they are capable of responding to psychotherapy, and should be encouraged, the report suggests, to undergo voluntary residential treatment.

The girl brought into court suffers a good deal of mismanagement. She may first be put under the probation officer, and though she may intend to settle down at home, she has no sense of "obligations" as a corollary to "rights," and will very likely disappear again after the first row at home. By the time she is found she has usually had sexual relations with one man or several. This results in a stay in a remand home, where she hears the boasts of her companions and boasts in return. After a brief interview with a psychiatrist, and a medical examination, she reappears in court, and is perhaps sent for a period to a hostel. Hostels are scarce, and the one chosen is not necessarily the most suitable, but the one which has a vacancy. If this fails, and she transgresses again, the approved school remains. This is sometimes reached only after 4 or 5 months in a remand home, and a further 10–12 weeks in a classifying centre—both upsetting experiences. When the time of detention is over the girl goes back to the home in which she first broke down as a citizen.

The report points out that arrangements for dealing with these girls are not only inadequate—they are often of the wrong kind. "It is wrong to treat as guilty of an offence a girl who needs and cannot find care and protection. An emotionally unstable girl needs a special type of remand home." If we are to deal effectively with such girls, the report suggests, the nature and causes of their misbehaviour must be more fully recognised, and more skilled staff and more clinics and institutions must be provided for their investigation and treatment. A better home environment means a better chance; good housing and freedom from overcrowding, as well as better nutrition, are important for normal growth. The Ministry of Labour's schemes for vocational guidance should also help; for many girls, rebelling against drab employment, are merely seeking some interest which will bring colour into their lives. Clubs and youth organisations encourage development of the sexual instinct along accepted lines. For those who need psychiatric investigation selected approved schools should be set aside and visited regularly by psychiatrists. In hostels, approved schools, or colonies for such girls the staff should be carefully chosen and trained; needless to say, many more such institutions are needed.

Emotionally unstable girls do badly in remand homes, and should be received, for preliminary investigation, in special observation centres. Afterwards they need 2 or 3 years in a suitable school, hostel, or institution, are also promoting old people's clubs, which benefit many, giving them company and occupation, and somewhere to turn when they need advice and help; in some places a lunch club, often combined with a social club, has proved successful. Visits are paid to lonely old people in their own homes or institutions. In many areas mobile canteens are being started with the help of the British Red Cross and the Women's Voluntary Service: these take cooked meals to old people in their own homes once or twice a week. The committee's experience confirms our belief, based on the current study, that where good work is being done for the old no special conditions favouring success were present at the outset. In every case a single person or a small group of people set out to see what could be done; and in the face of frustration, opposition, and every sort of structural drawback they have achieved remarkable things. But these are the exceptions.

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[1] The Problem Girl. Obtainable from the British Medical Association, Tavistock Square, London, W.C.1. Pp. 15. 3*d*.

Obstructing a Coroner

THE inquest proceedings in the Clements case, which attracted popular attention last month, raised one point of great professional interest. The coroner referred to the post-mortem examination "performed privately by Dr. Houston as arranged by Dr. Holmes." He found it "very disturbing" that this should have occurred without his authority. Dr. Holmes, said the coroner, admitted his own uncertainty as to the cause of death. He therefore had a duty, as the medical attendant of the deceased Mrs. Clements, to report the matter forthwith to the coroner or his officers so that the machinery of the inquest could be set in motion; from that time onwards it was the coroner's responsibility. "If this case had been reported to the coroner as it might have been and ought to have been, the interests of justice would have been better served." A somewhat similar view was expressed at Wrexham lately by the East Denbighshire coroner, where there was evidence that the house-physician at a local hospital had been unable to diagnose the cause of death. "In a case where the cause of death is unknown," said the coroner, "you should, out of courtesy and before any post-mortem is performed, consult the coroner to ascertain whether he agrees." Such observations may create some doubt in hospital practice. At every hospital autopsies are performed where patients have died of natural but not definitely ascertained causes; in these cases, where there is no reason to suspect foul play, the coroner is not informed.

The coroner has, of course, a statutory duty to hold an inquest where death is due to a non-natural cause. It is for him to decide whether the case is one in which he will hold an inquest, and, although Lord Ellenborough made some vigorous remarks in R. *v.* Kent Justices (in 1809) upon the practice of holding unnecessary inquests, the coroner is justified even if the information whereon he acted proves to be untrue, provided that he honestly believed that death might be due to some non-natural cause (R. *v.* Stephenson: 1884). Needless to say, he must not be thwarted in the exercise of his jurisdiction. In R. *v.* Clerk (1702), where a body had lain buried for seven months, Chief Justice Holt remarked "the coroner is not obliged to go ex officio to take the inquest but ought to be sent for, and that while the body is fresh, and it is a misdemeanour to bury the body before, or without sending for the coroner... it is a matter indictable to bury a man that dies of a violent death, before the coroner's inquest have sat upon him." Just as it is an offence to prevent an inquest by burial, so it is an offence to dispose of a body by cremation in such manner as to prevent the coroner from holding his inquest. This was the decision of Mr. Justice Stephen in R. *v.* Price 1884) where Dr. Price, "the last of the Druids" had attempted to cremate his child on a Welsh mountain-top. Cremation, said the judge, was legal if not done in such a way as to be either a nuisance or an obstruction to the course of justice. Another case of unusual disposal of a body was the subject of a prosecution in R. *v.* Purcy in 1933.

A man and his wife and daughter, were convicted at Northampton quarter sessions of having obstructed a coroner in the execution of his duty by disposing of the daughter's infant child in such manner as to prevent an inquest being held on it. The body was found under a hedge and the death had not been registered. Post-mortem examination showed death to be due to broncho-pneumonia *accelerated by neglect*, but death was ascribed to natural causes. On appeal, the Lord Chief Justice held that *the foundation of the charge must be* that the case was one where a coroner had a duty to hold an inquest. This fact had by no means been established. Even if the fact had been proved, the court could see no evidence that the accused intended to obstruct the coroner.

To obstruct a coroner by removing organs or otherwise tampering with a body must be just as much an offence as obstruction by disposing of the body. The decision of the Court of Criminal Appeal in R. *v.* Purcy, however, suggests that a medical practitioner who conducts an autopsy in a hospital in a case where death, though not definitely explained, has been due to natural causes commits no offence. The burden would lie upon the prosecution to prove that his action was done with intent to obstruct the coroner.

It is natural and indeed proper that coroners should jealously uphold their jurisdiction. At the inquest on the Leigh Pit explosion victims in May, 1934, the coroner announced that some bodies had been interfered with and a portion of one body had been removed. It appeared that samples of blood had been taken in an examination for carbon monoxide. Addressing a witness, the coroner stated for the information of the witness and others for the future that "no body must be tampered with after death without the permission of the coroner." He gave the witness an opportunity to apologise for what had been done—"you may be doing several *things that should not be done, and one is contempt* of court." This threat was perhaps an excess of authority. As the judge of a "court of record" the coroner can commit persons for contempt of court. Since, however, his court is presumably graded (with the county courts) as an "inferior court of record," it seems that he has no power to punish for contempts not committed in the face of the court. If so, anything *done outside the court is no contempt.*

The recent inquest on Mrs. Clements disclosed that suspicions were not unfounded. In these circumstances the coroner's warning *needs no emphasis.* Be that as it may, it would be useful if some official ruling could clarify the limits within which hospital autopsies may properly take place.

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From the laboratory comes news[3] of a further attack n the pathogenesis of the demyelinating diseases in rms of immunity reactions. For many years attempts ave been made to produce these lesions by the injection heterologous brain-tissue, and, though the results have ometimes been equivocal, the experiments of Ferraro nd Jervis[4] left little room to doubt the validity of the ethod. But positive results entailed many months f waiting before symptoms appeared. The advance egistered in this latest work lies in the success obtained ith homologous brain-tissue, and in the speeding p of the reaction by the addition of "adjuvants" o the inoculum. These adjuvants, used by bacteriologists for the enhancement of immune reactions, include uch substances as killed tubercle bacilli, liquid araffin, and the ointment base, 'Aquaphor.' When hese were added by Kabat and his co-workers[3] to mulsions of brain-tissue the time elapsing before ymptoms developed was usually 3–5 weeks from the rst injection, and a large proportion of the monkeys eceiving inoculations of adult brain-tissue, whether omologous or heterologous (rabbit), developed cerebral esions. These predominated in the central or subortical white matter of the cerebrum, pons, optic nerve, nd central white matter of the cerebellum; the spinal ord was little affected. The lesions were related to lood-vessels and consisted, in the early stages, of periascular polymorphonuclear infiltration associated with edema, degeneration of myelin, and occasionally fresh æmorrhages. The axis-cylinders were relatively preerved. In monkeys that survived beyond the third r fourth day after the onset of symptoms there was vidence of the progressive subsidence of the inflammatory henomena, with replacement of the leucocytes by microglia. In the severity of the reaction described nd illustrated these experimental results perhaps bear closer resemblance to acute hæmorrhagic leuconcephalitis than to disseminated sclerosis as we usually now it. The illness produced in the monkeys was owever of considerable severity, and death mostly ook place within a few days of the onset. The relationhip between these forms of disease is still undetermined.

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THE view is gaining ground that midwifery, in so far as it is undertaken by doctors, should be concentrated in the hands of doctors with a special interest in this work, and should no longer be undertaken by all general practitioners, regardless of whether they have acquired special skill in its practice, or are continuing to do enough midwifery to keep up their skill. The arrangements proposed by the Ministry of Health for the provision of maternity services (summarised on p. 105) will not therefore surprise anyone who has observed the recent trend of informed opinion.

Under the Act, the Minister was enabled to lay down the qualifications of doctors to be eligible for this work. The suggestion of such a limitation on the right of a qualified man to undertake all types of practice was repugnant to many doctors. Others, though recognising the need to ensure a high standard of midwifery, were reluctant to agree to a clause that might make a medical (or even a lay) officer of a health authority the Minister's agent as arbiter of the fitness of a practitioner to practise midwifery. The proposals contained in the present circular will do much to allay these fears. The screening committee, consisting of local general practitioners, a consulting obstetrician, and the local health authority's medical officer of health, should be a sufficiently liberal and informed body to compile without bias a satisfactory list of approved practitioners. It is good to see that no diploma will be needed, and it is to be hoped that the list will include the largest possible number of competent general practitioners, consistent with their being able to do enough midwifery to remain competent. It is also proper that doctors whose names are not immediately acceptable should be told why, and should be given the chance of being included later after further postgraduate training and experience. Given the safeguards that the committee is local, not central, is wholly professional, and is drawn from no single professional group, and that the approved lists will remain under continuous review, it seems unlikely that the new proposals will cause serious hardship, or any unjustifiable restriction of professional freedom.

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AN appeal for £400,000 is being made by the Queen's Institute of District Nursing to supplement their long-service fund, which provides annuities of £40 a year on retirement for Queen's nurses who are too old to come into the nurses' superannuation scheme. These nurses worked in the days when conditions in the homes they visited were far worse than they are today, and the nurse's pay was not such as to encourage saving for old age. By their example and unobtrusive teaching in hygiene they truly earned Florence Nightingale's description, "the civilisers of the poor." Today more than half of the 8000-odd district nurses in the country wear the blue uniform and badge of the Queen's Roll. About 1000 Queen's nurses who have retired or will soon do so must rely in their retirement on the institute's annuity and the old-age pension. Under the National Health Service Acts district nursing will become the responsibility of local authorities, and it will be for them to decide how far to make use of existing voluntary bodies; but their decision will not affect the position of these nurses.

SIR ALFRED WEBB-JOHNSON has been re-elected president of the Royal College of Surgeons of England for a preferably run on colony lines. Many would benefit by a short transition period in a hostel after leaving an approved school and before returning to their own homes. The joint committee end by affirming their belief that the psychiatric approach is the right one, and will succeed in most cases.

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[2] Margulis, M. S., Soloviev, V. D., Shubladze, A. K. *J. Neurol. Neurosurg. Psychiat.* 1946, 9, 63.

[3] Kabat, E. A., Wolf, A., Bezer, A. E. *J. exp. Med.* 1947, 85, 117.

[4] Ferraro, A., Jervis, G. A. *Arch. Neurol*

REACTION TO NERVE INJURY

WE have still much to learn about the response of the organism as a whole to wounding. Dr. W. K. Livingston, professor of surgery in the University of Oregon, investigated this problem during the late war, partly by the detailed questioning of wounded men as to their subjective experiences during that period before arrival in hospital concerning which clinical data are so scarce. In a Moynihan lecture at the Royal College of Surgeons on July 8 he discussed his findings in 1278 cases of peripheral nerve injury treated in the U.S. Navy Medical Service.

In the first place, 70% of these patients felt no pain at the time of wounding; during convalescence only 15% suffered severely, and only a third felt any pain. The appreciation of wounding was rarely dramatic; one in four had no sense of impact at all, and accurate discrimination as to the size of the fragment and its degree of penetration was extremely rare. Careful questioning revealed that the immediate sensory and motor disturbance was nearly always much more extensive than appeared at the first examination in hospital. The initial result was a flaccid paralysis of the limb, with involuntary movements, combined with a state of mental dissociation from the part, which might fix in a vice-like grip or wriggle and twitch as if of its own volition. There was often an overpowering conviction that the limb had been completely shot away at the hip or shoulder, even though it was obvious that this was not so. About a third of these cases of peripheral nerve injury experienced sustained tonic or clonic involuntary movements. A small group of patients were subject to hallucinations of posture during the paralytic phase—vivid and convincing impressions, sometimes recurring for several days, that the affected limb was in a certain position other than its visibly true one.

The paralytic phenomena were particularly interesting. There were a few cases of transient remote reflex paralysis, involving a site proximal to the actual injury or in the opposite limb, and without organic local damage; these somewhat resembled cases reported by Weir Mitchell in the American Civil War, though in those the paralysis lasted longer. In Professor Livingston's series, 4% of the whole group experienced a total quadriplegia lasting a few seconds or minutes, and this was particularly frequent in brachial-plexus injuries where every seventh man was so affected. The victims were conscious and some could speak, but they felt as if they possessed only a head with no body below it. This feeling then passed off, leaving the residual definitive picture of the actual nerve lesion, but it was sometimes followed by postural hallucinations in which the body might be felt to take up an acutely flexed position, with legs drawn up. Characteristic features were the sudden, immediate, and complete quadriplegia, the retention of consciousness and orientation, and the rapid total recovery of function. Stimuli affecting the head were felt normally, or hyperacutely, and there was often some appreciation of the real state of the body in that the damage to the wounded limb was felt to be more "genuine" than the widespread paralysis. Motor function in the head was normal, and the intact state of the anterior horn cells was evidenced by violent flexor spasms in some patients.

The explanation of these phenomena is not clear, though Professor Livingston was convinced that it must be sought in physical and not psychological mechanisms. These transient reactions to injury may jeopardise on the battlefield, and are more likely to be the of physiological changes than of subconscious moti Paralysis is probably the result of an overpowering lation of nerve-fibres produced by the large amount energy which is liberated by a missile within the space of the limb, disrupting fascia and stretching and nerves. It may act by overstimulation and of motor fibres, or by massive and sustained sensory stimulation. The quadriplegia is rather niscent of spinal shock and cerebral concussion. barrier seems to intervene between the cerebral and the periphery, and the rapid complete recovery communication resembles the re-establishment of wireless circuit after interruption. The older of molecular disorganisation or synapse damage concussion do not seem to apply here. Rather appears to be an initial massive excitation of neur within the central nervous system, with after-discharge and subsequent decrease of excitability. Some sort of cerebral dysrhythmia and desynchronisation must occur and it is important also not to overlook the gross physical jolt to the brain and cord which must be transmitted along main nerves by such an injury as a high-vel penetrating wound of a limb plexus.

ÆTIOLOGY OF DISSEMINATED SCLEROSIS

RECENT contributions to the problem of disseminated sclerosis have been surprisingly diverse both in their approach and superficially in their implications. First may be mentioned a study "in the field" by the workers from the department of neurology in Oxford, together with J. R. M. Innes, well known for his work on sway-back in lambs. This disease, it will be recalled, is a demyelinating form of encephalopathy bearing some resemblance to Schilder's encephalitis in man. It occurs not only in this country but also in Australia, New Zealand, South Africa, parts of South America, and possibly in Sweden. Our knowledge of its ætiology is incomplete, but in spite of repeated attempts at transmission no evidence exists to show that it is infective. Its incidence seems to be closely linked with the availability of copper to the developing animal at the time when myelination is in active progress. This being established and generally accepted, it is startling to learn[1] that four of the seven principal members of the Cambridge team who worked on swayback have now developed a neurological disease which "would confidently diagnosed as disseminated sclerosis by any neurologist."

Though disseminated sclerosis is a fairly common condition, it would be strange if this odd juxtaposition of two demyelinating diseases were a pure coincidence. But interest in the matter must be tempered with more than customary caution. Disseminated sclerosis has not been proved in any of these four cases; no more definite diagnosis than "neurological disease" has been made. As to the victims, we read that the sister of one died of disseminated sclerosis, and this man had no contact with the disease in the field but was concerned with laboratory analysis of blood, tissues, soils, and pastu Another was an agricultural advisory officer concerned with field inquiries "who may have handled a moder number of living cases, but had no contact with autops work." Yet two of the three still unaffected workers were extensively engaged with the pathological side of the work and must therefore have been heavily exposed to any potential virus. If contact with living affec lambs is a means of acquiring the disease it is rema able that we have as yet learnt of no such disease amo those tending affected herds. Again, species-specific

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1. Campbell, A. M. G., Daniel, P., Porter, R. J., Russell, W. R., Smith, H. V., Innes, J. R. M. *Brain*, 1947, 70, 50.

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[3] Ferraro, A., Jervis, G. A. Arch. Neurol. Psychiat. 1940, 43, 195.

Special Articles

ROTUNDA BICENTENARY

THE INTERNATIONAL CONGRESS

LAST week the foundation in 1745 of the Rotunda Lying-in Hospital, Dublin, was celebrated by an international congress, opened by the PRESIDENT of IRELAND and attended by nearly 600 doctors. At the first session, on the History of Midwifery, Sir EARDLEY HOLLAND presided. At subsequent sessions five main topics were discussed under the chairmanship of Prof. JAMES YOUNG, Dr. GIBBON FITZGIBBON, Dr. J. F. CUNNINGHAM, Dr. BETHEL SOLOMONS, F.R.C.P.I., and Prof. A. H. DAVIDSON.

Puerperal Sepsis

Prof. J. W. BIGGER said that when the Rotunda was founded childbirth fever was not very prevalent, because each midwife had a limited clientele. To bring the patients to hospital under the care of professional midwives and man-midwives exposed them to greater risks of infection, and it was surprising that the institution did not acquire a worse reputation than it did. Today infection came not from the doctor's hands but more often from some breach in the barrier between patient and patient. The organism chiefly responsible was the group A hæmolytic streptococcus; its main reservoir was the throat, and it was spread chiefly by droplets and dust. Ideally each woman should have a separate cubicle or room; for a woman at childbirth with this organism in her throat was a danger to herself and other mothers. To those who were still carriers at parturition, penicillin should be given systemically; and it should also be given to all women entering an institution where puerperal sepsis had occurred. Further, the throat of everybody working regularly in a maternity ward should be swabbed weekly, and if *Strep. pyogenes* was found the person should be put off duty till the group was determined. In the presence of group A this exclusion should be maintained until three consecutive swabs were negative. Puerperal sepsis was likely to become rarer, but if precautions were relaxed there would always be danger so long as *Strep. pyogenes* inhabited throats.

Dr. C. J. MCSWEENEY pointed out that infection of the genital tract from the throat does not explain everything: why did so many mishandled patients escape sepsis? The resistance of the patient determined the development and degree of sepsis, and though the genital tract was the likeliest site of entry its importance had been exaggerated. In 151 of a series of 247 cases labour had been normal, and in this series trauma and manual removal of placenta were less important than conditions such as prematurity and stillbirth. He was convinced that the attendants were often unjustly blamed for sepsis. At general hospitals cases must be treated by special units housed in separate wards; but in large towns the most economical arrangement was to put the sepsis units in a fever hospital. The medical and laboratory staff of a fever hospital were trained to cope with such conditions, and (unlike obstetricians) ran no risk of carrying infection to clean cases.

Mr. WILLIAM GILLIATT, F.R.C.O.G., said that even before the introduction of sulphonamides and penicillin the virulence of hæmolytic streptococci was decreasing (compare scarlet fever), and it might increase again. *Sulphonamides were of most use if given at the first rise of temperature.*

Prof. NAGUIB MAHFOUZ Pasha (Cairo) recommended routine use of penicillin or sulphadiazine when instrumental delivery is undertaken in patients admitted after rupture of membranes, or when there is respiratory infection or skin sepsis. Perineal tears should be repaired immediately after delivery—an hour's delay may lead to infection. Remnants of placenta could nowadays be removed, if troublesome, under cover of penicillin.

Prof. W. C. W. NIXON advocated regular bacteriological "snooping" to kee [illegible] clinique up to standard. In cases of prolo [illegible] believed that a clean surgical cut—cæs [illegible] less harm than mutilating tra [illegible] aking routine swabs from bet [illegible] rean section he had seldom found any organisms, even several days after the membranes had ruptured. When surgery was indicated for puerperal sepsis he preferred extraperitoneal suprapubic lower-segment cæsarean section, which Waters had performed in 250 cases with a mortality of 0·8%. The striking absence of puerperal sepsis in China and Turkey made Professor Nixon wonder whether we were losing our immunity.

Eclampsia

Dr. NINIAN FALKINER (master of the Rotunda) said that whereas mortality from sepsis is declining, mortality from eclampsia, pre-eclampsia, and toxic albuminuria was virtually unchanged. These three conditions were manifestations of a single disease—peculiar to pregnant women—which might end in spontaneous delivery without harm or might progress to convulsions. The disease sometimes developed very rapidly and sometimes very slowly. Present treatment of eclampsia was based on the belief that labour accentuates it; that control of convulsions is beneficial, that shock is particularly dangerous, and that delivery without shock will lead to recovery unless irreversible changes have taken place in brain, liver, or kidneys. The Rotunda routine today involved the use of morphine, magnesium sulphate (up to 8 grammes in twelve hours), and intravenous glucose. If the patient was not in labour, and response was satisfactory, no obstetric interference was undertaken; but if fits were uncontrolled, or coma was extreme, cæsarean section under gas and oxygen was indicated. With a patient in labour making normal progress, normal delivery in the second stage was performed, with the utmost care. Where labour was complicated by inertia and the condition was deteriorating cæsarean section was considered; and in all cases with dystocia associated with delay and probable difficulty at delivery it was demanded. Pre-eclampsia might be an urgent indication for section. In 1941–47 93 cases had been treated with a loss of 8 mothers and 16 infants. Of the 10 women having cæsarean section 2 had died (1 moribund on admission, 1 cerebral hæmorrhage), with 1 fœtal death.

Prof. H. J. STANDER (New York) summarised suggested causes of eclampsia as follows:

A. *Causes Outside Maternal Organism*
   1. Dietary deficiency: (*a*) general, (*b*) protein, (*c*) calcium, (*d*) vitamin.
   2. Infection: (*a*) pyelitis, (*b*) septic foci to infect placenta.
   3. Meteorological influences.

B. *Causes Within Maternal Organism*
   1. Constitutional predisposition.
   2. Pressure.
   3. Endocrine imbalance: (*a*) pituitary, (*b*) adrenal cortex, (*c*) others.
   4. Chemical poisons: (*a*) guanidine, (*b*) histamine, (*c*) tyramine.

C. *Causes Within Products of Conception*
   1. Placenta: (*a*) infarct, (*b*) ischæmia, (*c*) crush syndrome, (*d*) allergy, (*e*) elements.
   2. Fœtus: (*a*) endocrine imbalance, adrenal cortex, (*b*) iso-immunisation (i) Rh factor, (ii) other factors.

In groups A and B he thought further attention should be given to dietary deficiencies, endocrine imbalance, and chemical poisons. He referred to the Smiths' discovery of a toxic euglobulin in menstrual discharge and in the blood-stream of menstruating and toxæmic women. Toxæmia late in pregnancy might prove to be due to *withdrawal of endocrine support*, owing to interference with the blood-supply of the placenta. Many theories came to involve the placenta (group C.1) and usually something outside the placenta was supposed to cause the placental changes: but it was not clear at what stage of events the placenta was implicated. Iso-immunisation could probably be ruled out. What was needed now was not more theories but more data, and he described his own observations, particularly on uric acid.

Dr. J. D. HOFBAUER (Cincinnati) emphasised the rôle of the placenta, which initiates and sustains hyperplasia of pituitary, thyroid, and adrenal cortex. He regarded eclampsia as a response by sensitised vessels to pressor substances present in normal blood. Painful stimuli of splanchnic areas led to increased output of these substances, and termination of labour could be considered a physiological lumbar sympathectomy.—Prof. M. A. VAN BASTIAANSE (Amsterdam) attached much importance to interference with placental function by compression of the intervillous spaces—e.g., in hydramnios or multiple pregnancy.

Prof. SUBODH MITRA (Calcutta), impressed by the geographical differences in eclampsia, had correlated the monthly incidence in Calcutta with heat and humidity, but the results differed somewhat from those recorded in Bombay and Madras.—Prof. E. C. CRICHTON (Cape Town) had found that in South Africa eclampsia was common in areas where the soil is poor in calcium.

Mr. G. W. THEOBALD said that the mortality from eclampsia in England and Scotland remained much the same from 1911 to 1940, despite the growth of antenatal care. From 1940 onwards, however, there had been a steep decline, which must surely be connected with changes in diet. If placental changes were responsible for pregnancy toxæmia why should it be so common in Ceylon and so rare in Siam? Did placentas differ in the two countries? Food deficiencies provided the real answer, as he had long maintained.[1] Eclampsia might be followed by recovery with birth of a living child some weeks later, or might appear some days after delivery. It was a self-limiting disease, and if the woman could be kept alive for 48 hours without serious damage she would live.

Prof. JEAN SNOECK (Brussels) recalled the decline of eclampsia in Germany and Austria in the 1914–18 war. At the Brussels Hospital women's clinic the incidence of pre-eclamptic toxæmia, which was 2·09% in 1938–40, fell to 0·70% in 1941–42, rose to 0·87% in 1943–44 when more food was obtainable on the black market, and went up to 4·01% in 1945–46 after the liberation.—Dr. B. S. TEN BERGE (Rotterdam), comparing two series of roughly 20,000 deliveries, had found a fall in the incidence of eclampsia from 1·1 per 1000 in 1929–37 to 0·7 in 1940–45. The exact relation to food, however, was not clear.—Prof. A. J. M. HOLMER (Leiden) had observed a slight decrease in the blood-pressure of pregnant women during the war, when the only cases of toxæmia he had seen were in the relatives of black-market merchants. The increase after liberation he attributed to inability to cope with unaccustomed fat and protein.

Dr. T. DIXON HUGHES (Sydney) remarked that in Australia the incidence of eclampsia in sheep rises when they get a rich diet after a drought period. He believed that antenatal care is capable of reducing the incidence of toxæmia and almost abolishing its mortality. The term "fulminating toxæmia" should be discontinued because it shelters inefficient antenatal care, and toxæmia should be made notifiable.

Dr. J. S GREEN (Melbourne) also held that antenatal care and timely admission to hospital can lower mortality: in 164 cases whose first fit was after admission the mortality was 5·5%, compared with 20% in 233 cases not admitted until they had had a fit. It was important not to do too much to the eclamptic and to nurse her skilfully.—Dr. BETHEL SOLOMONS likewise urged the necessity for good nursing care, with attention to detail.

Prof. F. C. IRVING (Harvard) said that active interference with the antepartum eclamptic during fits was likely to be disastrous. At the Boston Lying-in Hospital patients were given morphine, magnesium sulphate, and 'Veratrone.' The anticonvulsive effect of veratrone was probably due to vasodilatation and relief of cerebral œdema, and it was given at 20-minute intervals to keep the blood-pressure below 150. Some 24–72 hours after convulsions ceased, labour was induced by rupture of membranes or by a dilating bag, and was allowed to continue naturally. Cæsarean section was reserved for cases with other indications such as disproportion.—Mr. D. M. STERN had used veratrone in 46 cases (some severe) with no maternal deaths; but over a third of the babies died. Accidental administration of ten times the normal dose had not been fatal.—Mr. OSWALD LLOYD had used curare with 'Pentothal' and oxygen. All cases thus treated had recovered—both of them.—Mr. R. DE SOLDENHOFF thought well of immediate rectal instillation of bromethol in any woman showing signs of eclampsia.

Prof. DUGALD BAIRD was not much impressed by veratrone: a good obstetrician could get good results in various ways. It would be very wrong to suggest that antenatal care would not prevent deaths from eclampsia. Stillbirths had behaved like eclampsia during the war years, and a statistical attack was needed.

Dr. EVA F. DODGE (Arkansas) said that in the Deep South, where diet is defective especially in protein, there was much pregnancy toxæmia. In the six years since the introduction of egg and milk supplements antenatally at her hospital there had been no eclampsia among about 600 deliveries annually. A well-balanced diet would not hurt any pregnant woman.

Prof. GORDON KING (Hong-Kong) pointed out that war diets may mean wholemeal bread and vegetables, with more vitamins than previously. In Hong-Kong the incidence of pregnancy toxæmias rose with the incidence of beriberi, and both fell after the surrender.

Shock in Obstetrics

Prof. H. L. SHEEHAN said that shock is associated with slackening of blood-flow not only through the skin but also through the kidneys, liver, and probably the abdominal viscera. The blood returned slowly to the right heart and the ventricular output was small. A rise of diastolic pressure, with a fall in pulse pressure, might be the first indication of shock, preceding the fall in both systolic and diastolic pressures. In all cases dying after more than 3–4 hours of shock he had found subendothelial hæmorrhages corresponding in distribution to the left branch of the atrioventricular bundle: these were very rare in other conditions except eclampsia and cerebral lesions. Great distension was often seen in the stomach and proximal part of the colon, corresponding to sympathetic nervous distribution, and it was tempting to speculate on a common cause for this distension and the subendocardial hæmorrhages associated with cerebral irritation. The suprarenal cortex had nothing to do with shock, and the necrosis seen in the anterior pituitary might be an effect rather than a cause. After severe hæmorrhage there was a sharp decrease in blood volume, and vasoconstriction except in the brain. The same vasoconstriction was seen in shock, where it appeared to be a harmful response interfering with visceral and cardiac blood-flow. Was it a result of sympathetic overactivity or an attempt to restore blood volume? Observations on shock at the Glasgow Royal Maternity Hospital suggested that blood-transfusion was effective where collapse was wholly or partly due to hæmorrhage but valueless where there was none. These observations, said Professor Sheehan, "completely shake my faith in the view that uncomplicated shock is due to reduction in blood volume."

Dr. A. W. SPAIN approved the title of the discussion: so-called obstetric shock was nearly always a case of shockin' obstetrics. Its origin was seldom uncertain, and what mattered most was prophylaxis by good conscientious obstetrics. In this country obstetrics was usually conscientious; but was it good? Too many undertakings in which two lives were at stake were considered suitable for domiciliary attention. The student must above all be taught (*a*) avoidance of traumatic midwifery and (*b*) effective action against postpartum hæmorrhage—in which resuscitation should be secondary to "*turning off the tap.*" In treating shock the first step was to remove the inflicting agent. Cardiac stimulants were useless; morphine was always good in a conscious patient; and excessive heat was dangerous.

Prof. W. A. SCOTT (Toronto) felt that, excluding collapse caused by drugs, the great majority of cases of obstetric shock could be evaluated in terms of hæmorrhage.

Prof. HENRI BEDRINE and Prof. M. M. PAUCOT (Lille) outlined their management of shock, which included injection of pituitary extract through the abdominal wall into the uterine muscle when needed to promote contraction.

Mr. J. V. O'SULLIVAN said that shock, arising from many diverse causes, affects the systems of the body one after another until it is universal and eventually irreversible. He pleaded for more careful antenatal care. With impending shock the fœtal heart-rate showed disturbance before the mother's, and it should be counted as a routine. In inducing labour undue purgation should be avoided. The patient's own blood was more useful to her than anyone else's; but transfusion when necessary should be prompt, using fresh blood if possible. Could we not have fresh plasma, too, when appropriate?

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[1] *Lancet*, 1930, i, 1115.

Sir EARDLEY HOLLAND stated that in England shock and hæmorrhage account for almost half the maternal deaths. He regarded pituitary extract as the last drug to give to women in shock, and he thought many lost their lives through zealous efforts to overcome retention of the placenta. With postpartum shock the uterus might go into spasm, but if it was left alone for a couple of hours the placenta would usually be found in the vagina.

Prof. J. P. GREENHILL (Chicago) hoped that Credé expression of the placenta would be given up entirely [applause]. Similarly, the uterus should very rarely be packed. He rather favoured injection of pituitary into the uterine muscle.

Mr. K. V. BAILEY held that "rubbing up a contraction," and the Credé manœuvre as usually practised, constitute mismanagement of the third stage. But they seemed difficult to get rid of—like Queen Victoria's statue in the Dail. Those who did these things should realise that actually they were conducting an operation (though without an incision) on important abdominal organs. He described a method, employing only the flat of the hand, which avoided squeezing of uterus and ovaries and consequent sympathetic irritation.—What was usually done, said Prof. HARVEY MATTHEWS (New York), was more of a push than a Credé. He also condemned the Trendelenburg position, as interfering with respiration, and the use of heart stimulants. The body should be kept at body temperature, and oxygen should be used early.

Mr. A. W. PURDIE asked how many obstetric units provide a service to go out and deal with postpartum hæmorrhage in the home. And whom did they send? This was not a task for the junior.

Mr. F. R. STANSFIELD reported that in women apparently dead from hæmorrhagic shock he had had some success from running plasma into two or three veins simultaneously under pressure, combined with "heparinisation."

Dr. F. PRESCOTT gave the cardiovascular criteria of shock as a pulse pressure less than 10 mm. Hg or a systolic below 80. By overheating, nurses sometimes produced a fall of 30 mm. or more. A few blankets were all that was needed to preserve blood-heat: slight chill was better than excessive warmth. 'Methedrine' was helpful unless the blood volume was lowered.

Dr. J. TUMA (Prague) had found the placenta a useful source of blood for storage. At least 100 litres could be collected from 2000 confinements.

Dame LOUISE MCILROY, summing-up, spoke of the emotional factor. In the last week a hot bath every night, with chloral gr. 10–15, helped to soften the cervix: and antenatal work should be done by senior people who could impart more confidence.

Sterility

Dr. ISIDORE C. RUBIN (New York) spoke of the hazards of hysterosalpingography. The fallopian tubes, he said, cannot always rid themselves of iodised oil, and a foreign-body granuloma might form where the lumen is constricted, substituting permanent occlusion for a permeable stricture. Even the crystalloid iodide media with which he had experimented caused pelvic pain requiring analgesics. On the other hand the only pain (at the shoulder) caused by carbon-dioxide insufflation was relieved by the supine posture, and with proper care this method need cause no accidents whatever. Of 2261 supposedly sterile women whom he had treated by insufflation 590 (26·1%) voluntarily reported pregnancy. The conditions found were:

Condition	No. of cases	No. reporting pregnancy	Pregnancy (%)
Normal patency ..	1210	316	26·1
Adherent tubes ..	538	135	25·1
Strictured tubes ..	379	[illegible]	31·1
Spasm with normal patency	[illegible]	[illegible]	13·4

Dr. M. E. DOUAY and Dr. RAOUL PALMER (Paris) reported on 121 cases of complete tubal closure treated by various operations. The results (18 uterine pregnancies with 14 living children, and 3 tubal pregnancies) made them hesitate to encourage a woman to undergo operation unless either salpingolysis or salpingostomy is likely to be feasible.

Mr. ALBERT SHARMAN in 190 consecutive cases had seen no pregnancy within six months of passing a sound. Tubal block should not be diagnosed without two negative insufflations and a negative hysterosalpingography. He strongly approved of Rubin's 'Viscerayopaque' which was completely absorbed in 40 minutes.—Professor NIXON had successfully used the lighter contrast medium 'Uriodone.'—Professor GREENHILL thought that in view of the risks to life and health, plastic operations on the tubes should not be done until they gave a 50% chance of a baby.—Dr. J. S. QUIN had also found the results of operation depressing.

Dr. PETER BISHOP attributed $^1/_4$–$^1/_3$ of failures in conception to failure of spermatogenesis. Semen contained hyaluronidase (75% derived from the sperms) which was capable of dissolving the viscous gel surrounding the cumulus cells of the ovum. Without adequate concentration of this enzyme near the ovum fertilisation would not take place, and to provide adequate concentration a sperm-count of more than 60 million was generally needed. Attempts to supply the deficiency by placing hyaluronidase tablets in the vagina had given some promising initial results, but there had also been successes among controls given inactive tablets. Sperm-counts were highly variable, and at least three specimens must be examined before reaching an opinion on a man's fecundity. Pregnancy could take place despite consistently poor counts—as low as 4 million.

Prof. J. S. L. BROWNE (Montreal), co-worker with J. S. Henry and E. H. Venning, said that for implantation of an ovum the luteal phase of the cycle must last some 10–12 days. Pregnanediol appeared in the urine during this phase, whose length could thus be measured. It might be less than 10 days in apparently normal cycles or might be absent in (presumably) anovular cycles. Findings in a single cycle, however, proved little: the length of the phase was far from constant, and some women might be fertile for only one or two days in the year—which explained why pregnancy might be long delayed. Endometrial biopsy was unlikely to expose a short luteal phase. Prolongation—e.g., by chorionic gonadotrophic substances—might be possible.

Prof. HILDA LLOYD said that in some women at the mid-cycle there is deficiency, absence, or abnormality of cervical mucus; the cervical os might be plugged with a thick opaque secretion. The "cervical barrier" to conception might be overcome by stilbœstrol, which stimulated secretion of mucus, or by sulphamezathine or penicillin given systemically to counteract infection.

Dr. PALMER had got much help from examining the adnexa with a peritoneoscope inserted through the abdominal wall.

Mr. CHARLES READ discussed the relative incidence of the causes of sterility, including tuberculosis, and referred to Stallworthy's observations on spastic constriction of the fallopian tubes and its alleviation with nitrites, &c.—In India, where some 15% of marriages are sterile, and women feel their disability keenly, Prof. J. CHAKRAVERTI (Calcutta) had often seen benefit from repeated short holidays in the hills or at the sea. Endocrine treatment was, he thought, overdone, to the neglect of factors such as diet, infections, hypometabolism, and emotional stress.

Prof. A. J. M. HOLMER (Leiden) said that in Holland during the hunger blockade from September, 1944, menstruation ceased in some 80% of women, and those dying of starvation showed only a few atretic follicles. Surprisingly, most women menstruated again a couple of months after the liberation. In men the sperm-counts, which had often fallen to 1–5 million, returned to normal in six weeks.

Mr. V. B. GREEN-ARMYTAGE declared that if the State does not provide enough proteins the birth-rate will go down. Much misery would be avoided if sterile girls were detected before marriage. He denounced family-planning clinics, endometrial biopsy, the Huhner test, the vitamin-E racket," and artificial insemination. he commonest cause of cervical abnormalities was rvical erosions, often induced by chemicals and mpons. Nine-tenths of trichomonas infections were ue to tampons: yet women doctors did nothing about . In sterility the good results attributed to endocrines ere more probably due to relaxation induced by onfidence in treatment.—Dr. C. CHAPMAN (Sydney) emarked that the decadence of Western Europe was en also in the Antipodes, despite more proteins. He oped for improved results from "relaxation" induced y endocrinological investigation and treatment.

Dr. R. G. CROSS said that in Ireland the gynæcologist as expected to tackle all three factors in sterility—the oman, the man, and the marriage. There was great norance about elementary sex physiology, about the isks of trauma and other damage to sex organs, and specially about tuberculosis.—Miss M. MOORE WHITE poke of the multiplicity of factors in each case. In the uture we must find means to *prevent* oligospermia and yperplasia.

Fœtal and Neonatal Mortality

Prof. A. H. DAVIDSON regarded this as the most mportant subject of the week. Neonatal mortality in Dublin was still 5%, as it had been 200 years ago.

Prof. EBBE BRANDSTRUP (Copenhagen) said that nduction of labour, already considerably used in 1795, was originally introduced in the interest of the child. His own "medico-hormonal" method employing castor il, oxytocin, and quinine sulphate, had been effective n 65% of 407 cases. When it failed, he ruptured the nembranes: in 55% of 134 cases where the os was losed rupture succeeded. Induction carried risks large enough to increase fœtal mortality if it was misused: the size of the fœtus might be overestimated, with resultant premature birth, and the incidence of forceps delivery was higher. But in selected cases it lowered fœtal mortality. For severely contracted pelvis cæsarean section was *preferable*.

Professor GREENHILL described the first fifteen minutes of life as the most critical. In New York and Chicago hospitals the main causes of neonatal death were anoxia, primary prematurity, congenital malformations, and birth trauma. For prematurity the only preventable causes were those associated with toxæmia: during delivery analgesics and anæsthetics should be used as little as possible. Nursing was the main factor in survival, and every large town in the U.S.A. had at least one hospital with facilities for dealing with premature infants. Birth injury was usually due to bad treatment or carelessness. Asphyxia of the fœtus in utero must be prevented, and he pleaded for greater use of local infiltration instead of anæsthesia. Oxygen to the mother often helped. Professor Greenhill disapproved of early induction of labour for contraction.

Prof. F. J. BROWNE (whose paper was read by Miss G. H. Dodds) thought that induction for contracted pelvis has been misused in England—being often employed in the wrong cases and before the 37th week. As regards toxæmia he protested against the prevailing view that labour must be induced to save the mother from cardiovascular injury: the critical blood-pressure level was 160 mm. Hg. Rest in bed was the best means of bringing the pressure down. Cæsarean section was not an infallible solution of all difficulties: the child gained something by vaginal delivery, which caused a gradual increase in asphyxia—an excellent stimulus to respiration. At University College Hospital during the war premature infants were treated in the basement, with a mortality of 8·1%. This low figure he attributed to a high standard of nursing with a minimum of handling —because of the nursing shortage.

Prof. DUGALD BAIRD'S main contention was that infant mortality is an index of living and social conditions. In the lowest social group (V) the stillbirth-rate started rising at the age of 20, whereas in the highest (I) it did not rise till 30 (1939, England and Wales). In class I the stillbirth-rate in second pregnancies did not start rising till the age of 35–39, and it was three times greater in class V. He compared the national stillbirth-rates with those in a series of cases treat by specialists:

—	Classes I and II		Classes III–V	
	1st preg.	2nd preg.	1st preg.	2nd pre
Specialist ..	17	8·6	37	20·3
National ..	37	20·3	39·7	24·9

Why did the national and specialists' figures differ classes I and II but not in classes III–V? In hospit practice half the stillbirths were due to prematurit The war had seen a dramatic fall in the stillbirth-rate every age-group and every parity: in Scotland it ha fallen from 42 per 1000 in 1939 to 32 in 1944. The ide conditions for motherhood were that the mother shou be well nourished from the earliest age, that she shou marry early, that she should have a reasonable number children (4–5), and that she should be well looked aft during pregnancy. Minor differences in obstetric tec nique were of little importance compared with th mother's nutrition.

Prof. JAMES YOUNG pointed out that maternity an child-welfare work had had little effect on matern mortality (which did not fall appreciably till the intro duction of sulphonamides), or on infant mortalit (which was beginning to fall anyhow), or on the stil birth-rate (which did not fall appreciably until the war —Mr. THEOBALD thought that dietetic inadequaci underlie contracted pelvis, pregnancy toxæmia, and th "unknown causes" of fœtal death.

Dr. R. M. CORBET said that "the closer you keep th baby to the mother the better." In the Coombe Hospita where babies are left in the mother's bed, there had bee only one case of overlying in 19 years, and that in a illegitimate child. Separate nurseries for babies led t epidemics.

Dr. TEN BERGE had used german-measles convalescen serum to protect pregnant women exposed to germa measles. He suggested that every mother might hav prophylactic gamma-globulin in the first two months o pregnancy.

Dame LOUISE MCILROY did not approve of bathin babies in the first six days: it lowered their temperature She used olive oil instead.

MIDWIFERY UNDER THE ACT

THE GENERAL PRACTITIONER'S POSITION

THE Minister of Health has just issued a guide[1] to local health authorities on the formulation of proposal for carrying out their duties under part III of the Nationa Health Service Act. His circular is mostly concerned with the way in which each authority should present its schemes, and the greater part of the explanatory para graphs is merely an amplification of duties already foreshadowed in the Act. The paragraphs dealing with the care of mothers and young children, however, give for the first time a detailed and explicit picture of the future maternity services, and of the parts to be played in them by the general practitioner and the present maternity and child-welfare officers of local authorities. The following are quotations:

"In the new circumstances, as *every woman will be* entitled to a family doctor, it is probable that when she thinks she is pregnant she will consult her family doctor. Subject to *Regulations which have yet to be made*, it is contemplated that every general practitioner will be *given an opportunity* to say whether or not he desires to practise midwifery under the *general medical services* of part IV of the Act, and to answer calls by *midwives* for medical aid. . . . The experience of the practitioners who desire to do so will be reviewed by a local ad-hoc committee of a wholly professional *character* (consisting of local general practitioners, a consultant obstetrician, and the Local Health Authority's medical officer of health) in each Local Health Authority's area. This local committee will draw up a list of approved local practitioners, and will be entitled to indicate to those who are not accepted for such a list the need for further obstetrical experience. The list would, of course, need to be reviewed from time to time with such objects as ensuring that the doctors on it are continuing to undertake enough midwifery to remain competent in practice, and adding the names of future entrants to the profession as they acquire the necessary experience. The duty of a family doctor, when consulted by a woman who is pregnant, will be to see that she knows how to obtain the services of a midwife and, if he himself is not on the local approved list, to help the woman to choose a 'general practitioner obstetrician' from the approved list who will give her the necessary antenatal and postnatal care and will be present, if he thinks it necessary, or is called in by the midwife, at the confinement. An inclusive fee for general practitioner obstetricians, which will be additional to that payable for other general medical services under part IV of the Act, will be centrally negotiated with the profession."

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[1] Circular 118'47. Health Services to be Provided by Local Health Authorities under Part III of the Act. Pp. 24. H.M. Stationery Office. 6d.

"Today a medical officer for maternity and child welfare commonly conducts both antenatal and child welfare clinics. A greater degree of specialisation—in either maternity or child welfare—should be encouraged. For this purpose, practical and continuing experience in the clinical field will be recognised as essential. It is suggested, therefore, that arrangements should be made whereby those of the Local Health Authority's medical officers (including those to be transferred to them under section 68 of the Act) who, by experience and choice, are best fitted to work in antenatal and postnatal clinics should gradually be assigned to that work, attached to the obstetrical team, and thus spend part of their time in midwifery work and in acquiring the necessary experience to enable them to enter full obstetrical practice, either as specialist obstetricians or as general practitioner obstetricians. Similarly, those of the Local Health Authority's medical officers—present and future—who are more interested and experienced in child welfare work should gradually be allocated to the Authority's child welfare centres, and spend part of their time participating in the work of an appropriate pædiatric department or children's hospital."

HOSPITAL SAVING ASSOCIATION

The future of contributory schemes was discussed at gatherings held on July 10 and 11 in celebration of the silver jubilee of this association. It was felt that a body of more than two million contributors, with an income of more than £1$^1/_2$ million, cannot just disappear overnight when the National Health Service Act comes into operation: the only problem was to determine its relationship with the State under the changed conditions. At a discussion following a celebrative dinner Lord Moran, P.R.C.P., summed up by saying that the occasion marked the betrothal of the association and the State. The other speakers, who included Sir Hugh Lett, Mr. Fred Messer, M.P., Sir Wilson Jameson, Mr. Ivor Back, and Mr. F. J. Angel, agreed that the H.S.A. must have some place in the future organisation. When the Duchess of Gloucester presented scholarships to nurses next evening 2000 group secretaries showed equal unanimity in desiring to continue their voluntary work. Sir Hartley Shawcross, the Attorney-General, assured them that the Government were anxious to retain individual voluntary interest in the work of the hospitals. Mr. Henry Lesser, chairman of the executive, outlined its ideas as to the future benefits to be received by the contributors, though he emphasised that the aim of the association would still be to help the hospitals. In this connexion Dr. Charles Hill suggested that some of the funds should be devoted to health education.

FAMILY-PLANNING CLINICS.—A list of voluntary and municipal family-planning clinics is published by the Family Planning Association (69, Eccleston Square, London, S.W.1) for the convenience of doctors, social workers, almoners, and others. Advice on subfertility is given at most clinics, and at all but 6 of the 62 voluntary clinics listed every patient is seen by a doctor.

Modern Care of Old People

VIII

INTEGRATED SERVICES AT ABERDEEN

SOME ninety years ago there was founded in Aberdeen a small hospital which had for its object "To provide moderate comfort and attendance for persons belonging to the Town and County of Aberdeen labouring under an incurable disease, and incapable of earning a livelihood, with a view to preventing the necessity of such persons becoming a burden to their friends or being obliged to draw or receive parochial relief." Only 10 beds were provided, and owing to shortage of funds only 6 patients were admitted when the hospital opened on Dec. 1, 1858. Until comparatively recently it was generally known by the foreboding name of the Incurable Hospital but it is now known as Morningfield Hospital, from the original name of the site on which the modern hospital is built.

Year by year the demands on the hospital grew, and by 1881 the number of patients had increased to 31. In 1882, owing to the developments in town planning, it was resolved to acquire a new site and to erect a modern hospital.

A good and spacious site with delightful views was selected on rising ground to the west of the city, in what was then the suburbs but within easy reach of the city. The new hospital was opened in 1884 with accommodation for some 55 patients. Since that time it has been extended, but even the 104 beds it now holds are still quite insufficient to meet the applications for admission. The waiting-list is long and the period of waiting anything from six to twelve months.

The hospital now has 72 female and 32 male patients; about three-fifths of them are more or less bedridden, and even the remainder can get about very little.

The nursing staff consists of a matron, an assistant matron, 26 probationer nurses, and 2 male nurses. In the last few years the type of case admitted has been increasingly helpless, requiring more nursing attention. Diseases of the cardiovascular and nervous systems bulk most largely, accounting for about half the admissions.

The medical staff consists of 2 visiting physicians; of recent years these have been 2 of the physicians to the Royal Infirmary, Aberdeen, so there is a very close link between the two institutions, and the transfer of patients from one to the other is relatively easy. Any acute surgical case or any case requiring specialised investigation or treatment is transferred to the general hospital. The orthopædic unit of the general hospital is at hand for the care of fractures and other bony injuries, and the advice and help of any members of the honorary staff of the Royal Infirmary is always generously given to Morningfield Hospital.

A certain amount of teaching in the wards is given to senior medical students, with advantage both to students and patients—the patients look forward to and welcome the visits of the students and many of them are a little flattered to have their cases demonstrated.

OCCUPATIONS AND AMENITIES

There is no visiting occupational-therapist, but the patients, especially the women, are encouraged to sew, knit, and crochet, and it is surprising how much work can be undertaken by what is apparently a helpless rheumatoid arthritic. One old lady, well into her eighties, throughout the war completed 80 pairs of socks per annum as her bit towards victory.

The wards are of varying sizes, the largest containing 12 beds. There are two single-bed wards, several wards for 2 patients, and several for 4 patients. On the whole, the four-bedded ward seems to be the ideal: it is small nough to be homely, and allows for the grouping of ongenial patients together. In the hospital grounds here are sun parlours in which, even in winter time, he up-patients spend a large part of their day.

Religious services are held every Sunday throughout he year and the secular side is not forgotten, for a large umber of concerts are given by various societies; these re looked forward to and much enjoyed by the patients.

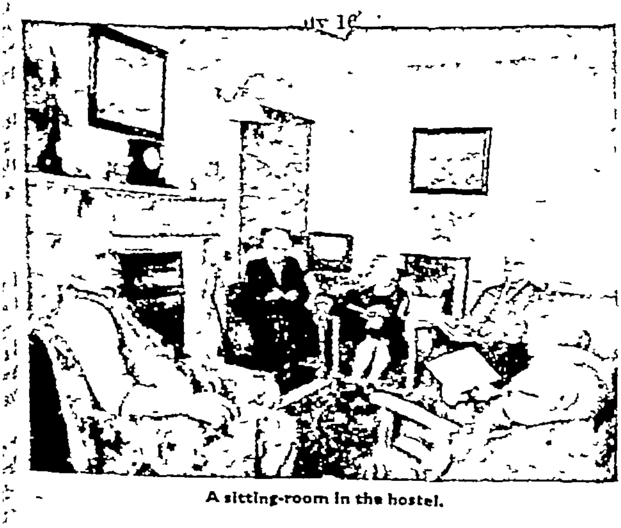
THE NEED FOR BEDS

When building is again possible, it is hoped to make room for an additional 40 to 50 beds, bringing the total up to 150. This seems to be about the optimum number for a hospital of this nature—small enough to avoid the danger of institutionalism, but allowing for close and effective coöperation with the key hospital of the area.

Before the late war accommodation for the chronic sick and elderly infirm of Aberdeen was provided by the local authority and one or two voluntary bodies. In the local-authority hospitals there were about 150 beds for the chronic sick; the Roman Catholic community had beds for 40–50 patients; and in 1937 the Church of Scotland founded an Eventide Home, taking about 40, in a converted country mansion seven miles from the city. All told, there were probably some 300 beds available, but these were quite insufficient to cope with the demand for places. In the recent hospital survey of the North-east Region the surveyors suggested as a possible figure 1·5 beds per 1000 for the chronic sick; but in the city of Aberdeen alone, with its population of 165,000, this would mean only about 250 beds, a number which under present conditions of housing would certainly be inadequate. An accurate figure could be decided on only by undertaking a thorough social survey, but a guess might put the figure at between 2 and 2·5 beds per 1000.

HOSTEL, HOME VISITS, AND AN OLD-AGE CLUB

In 1945 an Old People's Welfare Council was founded, one of its main objects being to provide a hostel or hostels for the elderly infirm, who, though unable to run a house of their own, required domestic care rather than hospital treatment. Two adjacent houses were acquired with a large and attractive garden in common. These houses, after alterations, will accommodate 30–36 residents. One of the hostels—St. Aubin's—is already active, and already some valuable experience has been gained. As in the Hill Homes, the 12 residents, who are almost all old pensioners, collect their pensions and supplementary pensions and pay the hostel 33s. per week. There are as few rules and regulations as possible. The residents are free to come and go as they please and to have their friends to visit them. The houses are within the city, on a convenient bus route, so access to the central parts is only a matter of a few minutes' ride.


A sitting-room in the hostel.

St. Aubin's Hostel.

That hostels of this description are badly needed is clear from the large number of applications made, far in excess of the accommodation available. Hitherto applications have been restricted mostly to the old pensioner class, but there is an equal if not greater need for similar accommodation for the "new poor"—the class of person who can afford perhaps 2½ to 3½ guineas a week, but whose need in a world of rapidly rising cost of living is becoming desperate.

The council has a ladies committee of 62 voluntary workers, each of whom undertakes to visit a couple of old folks living in their own homes once or twice a month. About 270 old people are thus visited, and the visits are much appreciated. The ladies committee carefully assess the needs of the old people and put them in touch with the appropriate bodies of people to help them—to treat vermin infestation, or arrange medical aid, rent relief, supplementary pensions, or domestic help, or to help them to get bedding, second-hand clothing, or whatever else they need. The council also run a library, of which the old folk take full advantage. "Meals on wheels" are under consideration and the need for such a mobile meals service is being studied.

Another aspect of the council's work is the development of an Old-age Club, open to non-residents. Fortunately within the garden of the hostels there is a very large garage which can be readily adapted to such a purpose and the council plan to complete this by the end of the year.

By the creation of such a club in association with the hostels it is hoped to build up what would in effect become an old-age welfare centre to which any old person would be encouraged to come for advice and help.

Some such coordinating centre will be welcome even when the new Health Service Act becomes fully operative. In the recent report of the British Medical Association committee on the care and treatment of the elderly and infirm the establishment of geriatric units in the key hospitals is strongly recommended. In the future such units would form the natural coordinating centre, but it may be many years before they are functioning. Meanwhile the creation of such centres could usefully be undertaken by voluntary bodies such as the old people's welfare councils which are being set up throughout the country.

In England Now

A Running Commentary by Peripatetic Correspondents

DOCTORS in Canada work, like their American colleagues, in offices, not in consulting-rooms or surgeries. Like us, they are gregarious. In consequence, complete office blocks are turned over to the medical fraternity. In Toronto, the Medical Arts Building is of skyscraper proportions—a sort of Harley Street turned up on end with over 1000 denizens. This has great advantages when second opinions are required. The switchboard and message-taking department, where each doctor's appointments book is kept, is a marvel of efficiency. Strangely enough, in all this place there are only three psychiatrists. Whether this is a tribute to the sanity or a sign of the conservatism of the Canadians I do not know. Canada is, as far as I know, the only country in the world to have had a psychiatrist as deputy minister of health. This post is not quite what it sounds, for the deputy minister, in the Dominion and provincial governments, is not a politician but a civil servant. This particular deputy minister was a very brave man, for he advocated the abolition of Father Christmas. The results were not such as to encourage Sir Wilson Jameson to follow suit.

The level of general practice in Canada is very high. A Canadian G.P. is ashamed if he cannot stabilise his own diabetics; and he has to be an all-rounder, because the distances are terrific. Canada is bigger than the United States—over 60 England and Wales's could be fitted into it—yet in this vast space there are under 12 million people. Add to this a winter below zero Fahrenheit most of the time, in parts 30° below, and you can form some picture of the life in general practice. It is nothing for a practice to extend 50 miles in each direction from the doctor's home. Saskatchewan has introduced two air ambulances which are fitted with skis in winter, and the only answer to the problem of the Canadian G.P.'s transport seems to be the owner-driven helicopter.

If the general level of Canadian medicine is high, I had the impression, confirmed by many Canadians, that at the top we could still give them points. Their hospitals, however, whether municipal or charitable (usually Catholic, and by no means confined to French Canada), are excellent. The bed : population ratio is far higher than in England, and indeed up to 90% of deliveries in some provinces take place in hospital. All patients in hospital, except those in receipt of public assistance, pay fees both to the hospital and to the doctor or surgeon. Thus, there is little free surgery, but fees are far lower, ranging from £5 to £25. A visit from a doctor may cost 10s., but the patient expects much more for it than in Britain. Often the patient calls in the specialist directly; and he has no hesitation in changing his doctor if he is dissatisfied; in consequence, sale and purchase of practices is unknown, and I found great difficulty in explaining to Canadian doctors what it was that their British counterparts in fact sold.

Very few Canadian women become doctors, but they make excellent wives and mothers. Canadian family life is as happy and stable as its great neighbour's is unstable. And the children, in this land of opportunity, have the kind of time that other children only dream about.

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Last week many hundreds of us bore witness to the fame of the Rotunda. For two centuries (remarked Eire's minister of health) rolling stones from all over the world have been going to Dublin to gather a little bit of Mosse. Yet in spite of their preoccupation with obstetrics members of the international bicentenary congress must all have found their attention wandering to the city itself—"headquarters," as Dr. Ryan put it, "of the Irish Commonwealth of Nations." The transmutation of the old régime was fascinatingly illustrated by a reception at which the President of Ireland and Mrs. O'Kelly made every visitor feel welcome at the former Viceregal Lodge. Here the rooms are doubtless much as they were in the days of the viceroys, but the pictures on the walls are strong reminders of the troubles from which Eire has emerged into unexpected stability and hope. This stability, and a measure of aloofness from British worries, offers an opportunity for cultivating civilisation on the smaller scale which it seems to prefer; and in Dublin even the poorest have something of the gentility that comes of ancient riches. I now know better why one of our loveliest roses is named Irish Elegance.

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Both crews did well to win their first heats, and on Friday they represented England against the American schools. United Hospitals met Kent School, the eventual winners of the Thames Cup, and London Hospital met Tabor Academy, the runners-up. In both races the Americans won decisively, but the United Hospitals crew gave Kent a harder race than anyone else and were probably one of the fastest English crews in for that event. For a first appearance at the regatta this was an achievement.

Apart from these two eights the profession was present in force. At least two coaches and one competitor were doctors, and many medical students were rowing for other clubs, some in "Grand" crews. Of the finalists at least two winning and two losing crews contained medical students.

On the whole, the prognosis for hospital rowing is good; the infant is lusty and is likely to thrive. Given whole-hearted support, who knows?—we may yet see a United Hospitals' crew win the Grand. It's a far cry from the days in 1885 when the challenge cup for inter-hospital fours was first rowed for on the Putney to Hammersmith course.

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Hitch-hiking down the Great North Road, my first lift was from a nature-cure practitioner. He spoke very kindly of doctors. Most of them, he said, did their best. Indeed, he had been at St. Ethelred's himself, but gave up orthodox medicine because he felt he needed more freedom and the right to advertise—only ethical advertising, of course. I asked what was the essential difference between his sort of treatment and ours. "Oh," he said, with a modest wave of the hand, "it's quite simple; we just go to the root of the trouble and remove it!"

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it only to patients whose hip-joints or knees had been jected :

The questionnaire only applies to your joint or joints.

Patient's name____________________April, 1947.

(1) *Had you, when the injections started, any :*

) *Pain ?* Standing : Yes Walking : Yes At rest : Yes
No No No

) *Stiffness ?* Yes
No

) *Walking difficulty ?* Yes
No

(2) *Have you had any relief :*

) *Of pain?* Standing : Yes Walking : Yes At rest : Yes
No No No

b) *Of stiffness ?* Yes
No

c) *Of difficulty in walking ?* Yes
No

d) *Do you wish to continue injections ?* Yes
No

Delete the words not applicable.

This questionnaire was sent to 90 patients, and 87 eplies were received, 62 of which referred to hips only, 6 to knees, 8 to both hips and knees, and 1 to knees and wrist, as follows :

HIPS

Total cases 70 : hips only 62 ; hips and knees 8.

Symptom when treatment began		*Improved*	*Doubtful*	*No improvement*	*Worse*
(1) Pain ; standing, walking, and at rest	55	46	4	4	1
(2) Pain ; standing, walking	8	5	1	2	0
(3) Pain ; standing, at rest	1	1	0	0	0
(4) Pain ; walking, at rest	2	2	0	0	0
(5) Pain ; standing only	0	0	0	0	0
(6) Pain ; walking only	3	1	0	2	0
(7) Pain ; at rest only	1	1	0	0	0
Total results :					
Pain	70	56	5	8	1
Stiffness	66	37	3*	24†	2
Walking difficulty	69	47	3	17	2

* One case improved for short time then failed to improve further.
† One case had 2 injections only.

KNEES

Total cases 25 : knees only 16 ; hips and knees 8 ; wrist and knees 1.

Symptom when treatment began		*Improved*	*Doubtful*	*No Improvement*	*Worse*
(1) Pain ; standing, walking, and at rest	16	11	0	5	0
(2) Pain ; standing, walking	7	3	0	3	1
(3) Pain ; standing, at rest	0	0	0	0	0
(4) Pain ; walking, at rest	0	0	0	0	0
(5) Pain ; standing only	0	0	0	0	0
(6) Pain ; walking only	1	1	0	0	0
(7) Pain ; at rest only	0	0	0	0	0
No pain in above category	1				
Total results :					
Pain	24	15	0	8	1
Stiffness	25	17	0	7*	1
Walking difficulty	23	15	0	7	1

* One case improved for short time and then failed to maintain improvement.

It is perhaps permissible, even after only two years' experience at the Royal Free Hospital clinic and a year's intensive experience at the British Legion inpatient unit at Arlesey, to make the following provisional remarks :

(1) The method, particularly as regards the hip-joint, appears to give better and more lasting results in suitably selected cases than previous methods, including injections and X-ray therapy.

(2) Its field of use is strictly limited, being greatest in early osteo-arthritis of hips and of little or no value where the erythrocyte-sedimentation rate (E.S.R.) is high and other signs of active arthritis are present. The only patient reporting as being worse after injection was found subsequently to have a greatly raised E.S.R.

(3) The value of the method can be greatly enhanced by suitable rest, extension, regular employment of suspension therapy, exercises, and the early use of callipers that free the hip or knee-joint from weight-bearing.

(4) From the variety of reactions encountered we consider that a valuable field of biochemical investigation has been opened up by this new technique, and that it is one likely to provide a number of answers to questions rheumatologists have long been asking themselves about the chemistry of joints during the progress of atrophic arthritis and osteo-arthritis.

London, W.1.

C. B. HEALD
A. J. MARTIN.

THE STUDENT AND THE ALMONER

SIR,—Since writing the letter published by you on June 21 I have seen an article by Prof. R. C. Browne in the *British Medical Journal* of June 14, in which he describes in full a scheme such as I had in mind. Surely some such plan might, with modification and perhaps some simplification, be applied not only to industrial health but to the health of any hospital patient. It is not every hospital which could organise such a service, but it should not be beyond the competence of any teaching hospital.

Dr. Eastwood (July 5) states that hospital almoners are already overworked ; this will not be the case when the new health service comes into force. Much of their time which is now occupied in a search for funds will then be released for more constructive work. High on the list of such work I would put the teaching of social medicine to students, in close coöperation with the medical and surgical staffs and outside doctors.

General practice does not lend itself to teaching. Many patients would object to a student accompanying a doctor when he visits them in their own homes, and a crowded surgery offers no scope for the discussion of cases. The student might as easily arrive for his month with the general practitioner when he was submerged by an epidemic as when he was thankfully relaxed in an unaccountable lull. Neither would be profitable for the student.

London, S.W.10. BERYL HARDING.

APPEARANCE OF PROTRUDED DISKS

SIR,—With reference to Mr. Charnley's criticism (June 28) of the illustrations in the article by Mr. Burns and Mr. Young (May 10), I have examined some sections of spine removed at routine necropsies by Dr. D. M. Pryce, and I can assure Mr. Charnley that the findings described by Burns and Young do occur, though I have not sufficient experience of numbers to say whether or not they are the most common type. It seems to be not unusual for the nucleus to herniate between the vertebral body and the annulus ; this is a little surprising if one accepts the orthodox view of the anatomical relations between these parts.

London, W.1. V. H. ELLIS.

SIR,—Mr. Creer's letter of July 12 will interest many radiologists who according to him do not agree on the value of a straightforward radiogram in the diagnosis of disk protrusions. Disk protrusions can be diagnosed from a straightforward radiogram[1] in approximately 50% of all the cases, and figures which are now being in Parliament. Since June 2 there has been, except in central London districts, no delivery of letters after midday until the next morning. A letter takes longer to reach London from some parts of England than does a letter from the Antipodes.

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[1] Gillespie, H. W. *Brit. J. Radiol.* 1946, 19, 420 ; 1947, 20, 37.

House of Commons. E. GRAHAM-LITTLE.

TECHNIQUE OF LARYNGEAL ANÆSTHESIA

SIR,—Prof. R. R. Macintosh's useful contribution (July 12) fails to stress the disasters which may result from the abolition of the cough reflex in the post-anæsthetic recovery period, where laryngo-pharyngeal anæsthesia has been deliberately produced by the indiscriminate use of a local anæsthetic such as cocaine hydrochloride, &c., in any strength or quantity. He obviously has this in mind when he writes, "I use a weaker solution of cocaine than that generally advocated. Analgesia from a 3–4% solution is slightly slower in onset and shorter in duration. . . ." These lines should be printed in large capitals.

The hazard of a nasal operation (which depends on ischæmia secured by the local application of cocaine hydrochloride, &c.) is the unnecessary and unwitting laryngo-pharyngeal anæsthesia produced either by the surgeon's nasal spray, by nasal packs, or by the deliberate direct application of local anæsthetic to the laryngo-pharynx. This will abolish the cough reflex, the watch-dog of the trachea; and if the reflex is still absent at the end of the operation, blood, even if the amount is small, will trickle insidiously into the trachea from the postnasal space. A gradual and fatal asphyxia will thus be produced in the early postoperative period, after the surgeon and the anæsthetist have departed and the patient has returned to the ward. The patient is there left in the charge of a nurse who is unable to recognise the gravity of the condition until too late. Should this concealed intratracheal hæmorrhage be recognised in time, immediate aspiration through a bronchoscope will yet save the patient; I was fortunate to be able to do this in a colleague's case many years ago. The amount of blood in the bronchi, viewed at necropsy, may be so small that it would be difficult to assign the fatality to it, were one not familiar with the sequence of events.

Recent records from the coroner's court have borne lugubrious testimony to the frequency of deaths after anæsthesia. I know that there have been an alarming number of sudden unexpected early post-anæsthetic asphyxial calamities in ear, nose, and throat cases, where an intratracheal anæsthetic has been used—usually following premedication with 'Omnopon' and scopolamine. I regard as deadly the combination of omnopon-scopolamine and 'Pentothal' with intratracheal anæsthesia by a laryngo-pharyngeal local anæsthetic in nose or throat cases; this sequence should be banished from the anæsthetist's armamentarium.

The early return of the cough reflex is all-important; the anæsthetist should know the exact duration of the local anæsthesia produced by the application of different strengths and amounts of solution to the laryngo-pharynx.

London, W.1. N. ASHERSON.

URTICARIAL REACTIONS TO PENICILLIN

SIR,—A number of points raised by Dr. Frankland in his letter of July 5 require further comment.

I must apologise for the confusion caused by my use of the terms penicillin X and penicillin Y. When I submitted my paper I used the terms penicillin A and B, and you, Sir, altered these to X and Y. They signified two different commercial preparations of penicillin of unknown composition and did not indicate any of the forms known in America as F, G, X, and K. I did not draw attention to this alteration, believing that the context made this clear, particularly as there is, as far as I am aware, no form known as penicillin Y.

From his further remarks I gather that Dr. Frankland believes that my pure penicillin was the commercial preparation known as "Crystalline Penicillin." This has a minimum potency of 1600 units per mg., which in recent batches has reached 1660 units per mg. This was not the case. As stated in my paper, I used a pure preparation containing 1666 units per mg. I cannot at present state the composition of this in terms of penicillins I, II, III, and IV, but since you suggested (*Lancet*, June 21, p. 877) that I had not entirely excluded the possibility of one of these being the cause of the allergy, I have inquired of the makers the nature of their preparations. This information is not yet available to me.

In view of the immediate skin responses, I cannot agree with Dr. Frankland that these cases were of the delayed type of allergy. It seems more likely that the clinical delay is an expression of the incubation period between first exposure to penicillin and the establishment of the allergic state, which, when established, is of the "immediate" variety. Prausnitz-Küstner tests were not carried out, but the results appeared sufficiently clear-cut to be worth reporting.

In conclusion, Dr. Frankland states that his results are at variance with mine. I have recently repeated these tests on a further case of penicillin urticaria with identical results. Both in this case and in the case reported, my findings were confirmed by independent observers.

Epsom. LOUIS STEINGOLD.

FILTHY RIVERS

SIR,—In your leading article (July 12) you made no mention of infantile paralysis. Many years ago my father, the late W. H. Elam, F.R.C.S., called attention to the association between this dread disease and the pollution of rivers.

My own experience, though much less than his, certainly confirms his views. I have found that young people, especially young adults, who contract infantile paralysis have in many cases been recently swimming in rivers. Recent work in the U.S.A. would certainly suggest polluted rivers as a fruitful cause of one of our most tragic diseases.

New Barnet. JOHN ELAM.

LACTIC-ACID INJECTIONS OF JOINTS

SIR,—Mr. Grant Waugh, F.R.C.S., of Sunderland, first began to use a solution of lactic acid for the treatment of osteo-arthritic joints about thirteen years ago. Some three or four times since then he has fully described in the medical journals the rationale of this treatment and his technique for various joints. Unfortunately the method has caught the public eye and much undesirable publicity has resulted. As always happens in such cases, the lay public have seen in these injections a cure-all for every form of arthritis and rheumatism. Mr. Waugh has never made exaggerated claims for it; he has, on the contrary, strictly limited what he considers to be its legitimate field of use.

Lactic-acid injections have been under intense investigation in the special clinic at the Royal Free Hospital for some two years. This clinic has had the advantage of the regular supervision and guidance of Mr. Waugh. Injections have also been extensively used during the year at the British Legion experimental unit at Arlesey, in the clinic at the British Red Cross Clinic for Rheumatism, and in private.

It had originally been intended to accumulate a large number of cases, watch them over a long time, and analyse them carefully as regards history, radiological appearances, and other factors. But, in view of numerous inquiries that have reached both the Royal Free Hospital and the British Legion, and in fairness to Mr. Waugh, it appears to us that a presentation of the figures as far as we have gone is now called for, and we give these without any attempt at a full statistical analysis.

We consider that, when a method such as Mr. Waugh's is introduced to the medical profession, the proper procedure is for someone to go over the ground covered by the author with full and loyal adherence to his recommended techniques. This has been achieved by regular contact with Mr. Waugh, and this critical survey of the results is entirely independent of his cases in Sunderland or in private.

It is hoped in due course to present results of all our cases in a detailed paper. We therefore reduced our questionnaire to the following simple form, sending it

THE PRESENT POSITION

At present 22 out of 29 metropolitan local authorities *pose of their refuse* entirely by controlled tipping; use this method for part of their refuse, and pulverisan and incineration for the remainder; 1 uses incineran alone; and 1 transports all its refuse to brickfields. e yearly amount of refuse before the war was about 50,000 tons; now it is about 820,000 tons; and it is pected to reach about 1,000,000 tons. The following ures show the extent to which the various methods of sposal were used before the war and now:

Period	*Controlled tipping*		*Incineration*		*Pulverisation*		*Transported to brickfields*
1938–39 ..	94%	..	3%	..	2%	..	1·7%
1945–46 ..	83·9%	..	11·4%	..	2·3%	..	2·4%

The removal of the refuse to the tips is very largely the hands of relatively few contractors. It is generally greed that controlled tipping, properly carried out, is e least objectionable and probably the most economic ethod. Instead of a declining proportion, the whole of ondon's refuse, apart from what is needed for brickaking, could be disposed of in this way, eliminating om the metropolis all incinerators.

THE GARCHEY SYSTEM

The quantity of refuse to be collected could be conderably reduced by the adoption of the Garchey ystem (*Journal of the Royal Institute of British Archicts* 1934, *Phœnix* 1934) and similar devices for the echanical destruction of refuse in blocks of flats. The archey system has been fairly widely adopted in France nd was installed with apparently satisfactory results in large housing scheme in Leeds just before the war.

The Garchey system eliminates the need for dustbins and ust collection and is an advance on dust chutes to basement ontainers which, because of their misuse, so often become nsanitary and a cause of complaint.

A glazed fitting takes the place of the ordinary kitchen sink and consists of an upper shallow tray fitted with a large detachable grating. (Washing up is done in a separate bowl.) The lower part of the fitting is a bowl sealed with a plug completed by a long tubular shaft with a handle at the top. The shafts acts as an overflow for surplus water in the bowl. There is a small trap on the plug.

Into this fitting all house refuse except newspapers, boxes, and tins is thrown; the grating is lifted and the waste contents fall into a soil pipe which runs to the basement, where it ends in a special sump.

The refuse is drawn from the sump along falling pipes to a container. The liquid in the pipes is drawn off from the container and discharged into the sewer, and further moisture is disposed of before the rubbish falls into a furnace, where it is incinerated.

The heat created raises the steam necessary to drive the plant and can provide central heating for the building. About 25% of additional fuel has to be added to consume the refuse, and it is estimated that the cost of converting refuse to hot water is 1*s.* 6*d.* a week per household.

The French *practice of building large blocks of flats* makes the installation of the Garchey system more easy than has been the case in England so far.

RECONSTRUCTION OF REFUSE SERVICE

The method of collection and disposal of London's refuse today has many disadvantages. There is a multitude of collecting agencies with different standards of efficiency, some of them anachronistic. There is no central agency to deal adequately and economically with the refuse. The requirements put forward in 1914 at the Westminster conference for immediate action, though no longer adequate, have not yet been implemented, and it was left to voluntary collaboration of the London boroughs to implement the recommendation made in the Dawes report that a common cleansing organisation should be established with adequate powers to serve London and the thickly populated districts on its fringe. Such voluntary collaboration has not been forthcoming.

The institution of a central cleansing authority would be particularly opportune today. Vast housing programmes make possible the planning of the collection of refuse on hygienic lines; changes in local government offer a unique opportunity for imaginative administrative action; and the transfer of hospital services from the municipalities to regional boards is an opportunity for joint action between the London County Council and the municipalities of the surrounding areas for coördinated action on health matters beyond hospital organisation.

It is for administrators to decide whether an ad-hoc body consisting of the interested authorities and embracing Greater London should be established, or a statutory organisation created. Such a body should have statutory powers to acquire low-lying land for reclamation, to acquire and operate barges, trucks, and all other apparatus and equipment necessary for its work, to set up a permanent research station, and to lay down minimal and optimal requirements for the collection of refuse in newly constructed houses and flats. Meanwhile the amenities of the countryside and Greater London, no less than the needs of the metropolis, call for the solution of difficulties that have remained unsolved over a generation.

REFERENCES

Dawes, J. C. (1929) Public Cleansing. London.
Journal of the Royal Institute of British Architects (1934) Editorial, April issue.
Metropolitan Boroughs' Standing Joint Committee (1934) Report on the Disposal of Refuse.
Ministry of Health (1930) Report of the Departmental Committee on London Cleansing.
Phœnix (1934) Editorial, May issue.

Housing in Birmingham

Like other cities, Birmingham undertook a rehousing programme at the end of the war; and a complete survey[1] made in 1946 displays alike the problems and the opportunities. Whereas a previous survey, ten years before, dealt only with "working-class houses," this time every dwelling in the city, including staff quarters in hotels and hospitals, was covered.

In all, 286,869 houses, or their sites, were visited, but 3258 were unoccupied—1916 because of war damage. The number of occupied houses in the city is therefore 283,611, and these are inhabited by 299,144 "family units."

Overcrowding was assessed in two ways: taking the standard of the Housing Act of 1936, overcrowding amounted to 1·92%; but if living-rooms used for sleeping purposes were left out of account, the figure was 11·26%. Back-to-back houses numbered 29,182; those without a separate water-supply 6429; those without a separate water-closet 34,965; those without bathrooms 142,523; and those without gas or electricity 417.

Trends since 1936 are in some ways unexpected. In the houses surveyed then taken as a whole, 3·77% *of families were overcrowded on the Housing Act standard*; and among families in the corporation housing estate, 8·75% were overcrowded. In 1946 overcrowding in the corporation estate had risen to 5·40%. A number of things have been responsible for this increase: families have grown; children have married and had children of their own; some families have moved in during the war, and others have come to the estate from the centre of the city; husbands have returned from war service; and building has been at a standstill. The 1946 figure for the city as a whole cannot be compared, of course, with the 1936 figure, when only working-class dwellings were covered. Moreover, warfare destroyed more of the small working-class dwellings than of the larger houses. Dr. H. P. Newsholme, the medical officer of health, estimates that, in comparable types of house to those surveyed in 1936, the overcrowding is now worked out suggest that the proportion may possibly be even higher. Dandy[2] concluded that more than half could be diagnosed in this way, so it would be interesting to know Mr. Creer's percentage of accurate diagnoses from straightforward radiography.

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[1] Report of the Medical Officer of Health on the Housing Survey, 1946. City of Birmingham Public Health Department. Pp. 31.

On the other hand, it must be recognised that technical errors, such as inaccurate centring or faulty positioning of the patient, may produce very misleading radiograms. With imperfect technique the radiologist may well be somewhat more hesitant in his diagnosis than the orthopædic surgeon who, on the strength of his clinical investigation, may be tempted to read more from the radiogram than is justified.

One has to be equally careful in localising a disk protrusion largely on the strength of a radiogram. In double disk lesions, for example, only one intervertebral space may show radiographic signs of a disk protrusion. This can at times be most misleading, and, at the present stage, it is doubtful whether the radiogram always indicates accurately which disk is affected and giving rise to disability.

Clinical examination with corroborative straightforward radiography enables us to diagnose about 98% of all disk protrusions. Luckily, myelographies for the diagnosis of disk lesions have been largely abandoned, for, they are time-consuming, harassing to the patient, and, in Dandy's words, "They just don't make sense."

St. Peter's Hospital, Chertsey, Surrey. H. W. GILLESPIE.

SIR,—Mr. Burns and Mr. Young, in their zeal to describe unusual types of prolapsed disks, have omitted from their article (May 10) a description of the usual type. This forms, as Mr. Charnley has said (June 28), a sessile bulge at the level of the disk space.

I have found in seven cases pedunculated disks at a different level from the disk space as described by Burns and Young; sometimes they were posterior to the vertebral body, while sometimes they presented into the foramen along the course of the nerve-root. I have not yet met the lesion of the annulus fibrosus where "the torn piece of annulus can swing in and out, mimicking a torn cartilage of the knee."

I cannot agree with Mr. Creer (July 12) in his reliance on a straightforward radiogram for localising the lesion. One of the greatest contributions Burns and Young have made, in my opinion, is in pointing out that one can dispense with radiograms as a method of localisation.

Norwich. H. A. BRITTAIN.

CALORIE INTAKE IN HOT PLACES

SIR,—Your annotation of May 24 (p. 720) implies that our data[3] not unexpectedly show that in colder climates men consume an increased proportion of fat in their diet. This is not so. Table I in our paper demonstrated that, *regardless of environment*, the percentage of fat voluntarily chosen from the rations was "high" by traditional criteria. For example, in temperate climates 43% of the calories were provided by fat, while in the arctic this percentage was slightly reduced to about 40% of the calories.

We are intrigued by the fact that young men living on a luxus diet choose to eat what by usual standards are rather high fat intakes.

ROBERT M. KARK
Tinley Park, Illinois. ROBERT E. JOHNSON.

CLICKING PNEUMOTHORAX

SIR,—Dr. Thompson may care to have my further observations on a subject which interests us both (*Lancet*, May 10, p. 630, and May 31, p. 766). I have now had a thoracoscopy performed, but I regret, on his account, that since no adhesions were found the effect on the clicking sensations of pneumolysis could not be observed. It was postulated that there was probably a small adhesion anteriorly, near the chest-wall, out of view. At any rate, now that I am having large refills, these annoying and interesting sensations have disappeared. I have no doubt myself that a small adhesion is present—so small that it does not present adequate collapse of the lung. MEDICO.

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[2] Dandy, W. E. *J. Amer. med. Ass.* 1942, 120, 605; 1944, 125, 1175.

[3] Johnson, R. E., Kark, R. M. *Science*, 1947, 105, 378.

Public Health

COLLECTION AND DISPOSAL OF LONDON'S REFUSE

MAX SORSBY
L.M.S.S.A.
LONDON COUNTY COUNCILLOR

THE collection and disposal of London's refuse have been under consideration for more than thirty years by many authorities, including the Ministry of Health and its predecessor, the Local Government Board; but, though some improvements have been effected, the reconstruction of the entire service, repeatedly recommended, has not yet been carried through.

Londoners can still see house refuse carried through houses in wicker baskets or dilapidated uncovered bins and tipped into uncovered carts. The possible danger from these insanitary methods to the health of the public and of the men who handle the refuse is not sufficiently recognised. The disposal of the collected refuse is an even more serious problem, and the refuse dumps in particular have attracted much unfavourable comment.

Refuse disposal used to be, and to some extent still is, little more than a haphazard dumping of refuse by one local authority into the area of another local authority. This uncontrolled dumping led the Westminster City Council to convene in May, 1914, a conference which called for concerted action by the London boroughs. In the report (published in 1920) crude dumping was deprecated and alternative methods were discussed.

In 1922 the Ministry of Health, spurred on by many complaints, called a conference of the London County Council and the metropolitan borough councils. The outcome was a letter addressed by the Ministry to all the authorities concerned, setting out the measures commonly referred to as "controlled tipping" and now followed throughout the country. The Ministry also pointed out that "it must not be taken for granted that, even with the adoption of these precautions, tips can be made absolutely sanitary, or that this method of disposal of refuse is one that can be regarded as wholly satisfactory." This note of caution was justified by the increasing and ever more insistent complaints made by those authorities whose areas continued to be used as dumping-grounds.

Dawes, in his report of 1929, noted that more than 29 different authorities were responsible for the cleansing of London. Most of them had to transport the refuse sometimes over considerable distances and generally in a crude state and in uncovered wagons; and in all but three of the dumps to which this refuse was transported conditions were unsatisfactory, and some of the dumps were not far distant from dwellings. He concluded that the service was for "the most part unsatisfactory and in a number of cases manifestly unsanitary . . ., from the technical point of view, the system is wrong in principle, and that the only way of securing effective refuse disposal arrangements for London is by establishment of a common cleansing organisation."

The Ministry of Health (1930) confirmed the findings in the Dawes report, and agreed that there should be central service controlled by one authority for the disposal of refuse from London, but held the view that a voluntary scheme would be preferable to a compulsory measure.

The Metropolitan Boroughs' Standing Joint Committee (1934) emphasised the need for coöperation between the borough councils, and called for action on unsatisfactory refuse tips and to ensure that barges, trucks, and other vessels conveying refuse should be covered and should not be used for foodstuffs.

ra food for manual workers, extra food to be pro- ced from our own land are all demands being made, l demands whose importance will become more clear ring the autumn, when our economic resources may at their ebb.

MEDICUS, M.P.

QUESTION TIME

Regional Hospital Boards

olonel M. STODDART-SCOTT asked the Prime Minister if, view of the fact that in the appointment of regional hospital ards, members of the House of Commons from one party y had been appointed, although members from other parties l similar qualifications of hospital work administration d management, he would set up a select committee to nsider the effect of such political appointments on the spital services of this country.—Mr. C. ATTLEE replied: repudiate the suggestion that these appointments are litical; examination of the boards' membership will prove at persons with suitable experience have been chosen thout any shadow of political exclusiveness. The last rt of the question, therefore, does not arise.—Colonel ODDART-SCOTT: Is the Prime Minister aware that 6 mem- rs of this House, all members of the Labour party, and 4 embers of the House of Lords, none of whom is Conservative, ve been chosen to sit upon these boards; and is he further vare that such political appointments will mean an inevitable ange in these hospital boards after the next general election, d will be to the detriment of the hospital service?—Mr. TTLEE: I do not think that the hon. and gallant gentleman s his facts correct. I believe that there are 5 members om this side of the House, and from the House of Lords ere is Lord Cunliffe, the Earl of Cranbrook, and Lord enley, who are certainly not members of this party, and rd Eustace Percy, a very eminent Conservative. I really think it is unjustifiable to complain just because now, ter many years, some Labour people are appointed to these rious boards.

Sir HENRY MORRIS-JONES: Is the Prime Minister aware at some of the names on these boards, particularly in orth Wales, have been received with perplexity, and may ask whether he can tell the House why people who have ven their lives to hospital service are omitted?—Mr. TTLEE: Perhaps they are too old.

Three in One

Commander A. H. P. NOBLE asked the Minister of Defence hat progress had been made towards merging the three ervice medical branches.—Mr. A. V. ALEXANDER replied: his question is still under examination. I ought, however, make it clear that it has not yet been established that e complete merger of the three medical services is to be referred to the alternative of the maximum degree of ordination between those services.

Colonel STODDART-SCOTT: Does the Minister realise that e merger of these services will result in great economy in ilitary man-power, and will he consider at the same time e merger of the three nursing services?—Mr. ALEXANDER: have been looking into the question of economy of man- ower that might be effected by the merger. Not only I, ut other departments which have examined the matter, far have not been convinced of the actual economy to e effected. As I say, however, the matter is still under nsideration.

Employment of Disabled

Replying to questions, Mr. G. ISAACS stated that on May 19 e number of disabled persons recorded at employment changes as unemployed was 64,754. The total number of ersons on the register of disabled is 700,000.

National Hearing-aid

Sir E. GRAHAM-LITTLE asked the Lord President of the ouncil if, in view of the claims that the national hearing-aid as superior in performance to any other hearing-aid yet ade, he would publish, for the information of the deaf ublic and other interested persons, the results of the National hysical Laboratory performance tests, or any other per- rmance tests carried out on the national hearing-aid.— Ir. H. MORRISON replied: Information about this hearing- id, including particulars of performance tests, is given in he report of the electro-acoustics committee of the Medical esearch Council. This is now in the press and will be issued y H.M. Stationery Office in due course.

Notes and News

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION

THIS association's fifth congress, held at Amsterdam between June 24 and 28, was attended by 350 delegates from sixteen countries. The congress was opened by the Minister of Social Affairs, with Miss L. Martindale, F.R.C.O.G., the president, in the chair. At the council and general meeting Dr. A. Ruys, professor of microbiology in the University of Amsterdam and a leading figure in the resistance to German occupation, was unanimously elected president for the next three years. The following vice-presidents were elected: Dr. Braestrup, Denmark; Dr. Eriksson-Lihr, Finland; Professor Gauthier-Villars, France; Dr. Edna Guest, Canada; Dr. Miloshevitch, Poland; and Dr. Stimson, U.S.A. Dr. Doris Odlum was re-elected hon. treasurer, and Mme. Montreuil Straus hon. secretary. It was decided to hold the next council meeting in Finland and the next congress in the United States; the office is to remain in Paris for the next three years.

At the scientific sessions the association discussed the responsibility of medical women in the reconstruction of the world. The wide variation in their status and influence in different countries was emphasised. The proportion of women in the medical profession ranges from 1·5% in Belgium to 25% in Poland. Canada has 3%, France 5%, U.S.A. 5%, Sweden 7·5%, Norway 8%, Denmark 9·1%, Holland 10%, Hungary 10%, Great Britain 14%, Czechoslovakia 15%, and Finland 17%. In Poland, where all posts are open to them, women doctors exert great influence; but in some countries there is still prejudice against their appointment to senior hospital posts. It was agreed that in post-war reconstruction men and women should take equal responsibility. Hitherto the bulk of the work has been done by men, and one delegate suggested that women are sometimes too timid to make their voices heard. A strong effort by women themselves is needed to bring home to the governments the valuable part that women doctors can play in reconstruction.

PLANT CHROMOSOMES

UNTIL fossils were studied scientifically, attempts to classify plants and animals rested on comparison of the macroscopic characters of existing types, and the origins of cultivated forms were traced mainly through their similarities to known wild forms. Investigation of the geological record led to big advances in knowledge, and still greater strides were made with the coming of knowledge on the mechanics of heredity. Only in recent years, however, has it been realised that the study of the chromosomes, the carriers of the heredity factors, can throw light on the relations between familial types, and that the counting of chromosomes may enable us to distinguish the more recent from the more primitive.

Before any attempt can be made to use such a criterion in a revised system of classification an immense mass of data on chromosome numbers must be collected. Fortunately, during the past twenty years workers in many countries, in the course of cytological studies often undertaken for quite other purposes, have recorded chromosome numbers in a great number of plants; and since much of this work has been in connexion with plant-breeding much of the information relates to plants of economic or æsthetic importance.

Darlington and Janaki Ammal[1] have performed a bibliographical feat in collating all these scattered records, and have compiled an imposing list of known chromosome numbers. Arguing from their wide experience in the mechanics of polyploidy that in general those species, within a genus, which possess the smaller chromosome numbers will represent, or be nearest to, the primitive forms, and that those with higher numbers will probably derive in a logical manner by polyploidy, they have put forward a tentative revised classification of the higher plants. Their book is thus both a list of chromosome numbers and a classification which takes cognisance of these numbers and throws light on the origins of cultivated plants. The geographical relationships, possibly suggested by the word "atlas" in their title, are only a secondary, though derivable, implication.

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[1] Chromosome Atlas of Cultivated Plants. By C. D. DARLINGTON, F.R.S., and E. K. JANAKI AMMAL, D.SC. London: Allen & Unwin. 1945. Pp. 397. 12s. 6d.

about 2·52%; so it may be fairly claimed that overcrowding has been reduced by a third in the ten years. The housing schemes of the city council have certainly played an important part in this improvement, though reduction in the size of families must also be a factor. He notes that when married couples have to share a house with their parents or others, though they may not be overcrowded by any official standards, they are sometimes irritated and unhappy.

In the 1936 survey, overcrowding in the central wards was 8·7%, as compared with 3·3% in 1940; in the middle ring the figure has fallen from 2·7 to 1·3%, and in the outer ring from 2·0 to 1·9%. The excess of families over houses is 15,533, and 25,000 houses are due for demolition. The net housing requirement cannot be exactly assessed, because much could be done by redistribution. Moreover, when an overcrowded family is moved into a new house, their former house can be used for a smaller family. The number of new houses needed is therefore smaller than the number of cases of overcrowding: the Ministry of Health put it at 55% of the overcrowding figure. Dr. Newsholme thinks that, quite apart from future slum clearance and redevelopment, some 7000 houses are needed to meet this due proportion of the present excess of families over houses, plus some 18,000 to get rid of an equivalent proportion of bedroom overcrowding, plus 20,000 houses, to be built over ten years, to meet natural increase of population. The last two figures overlap to some extent.

Smallpox

Willenhall.—The first patient in this district, which is near Bilston, was removed on July 9. She is aged 19 and unvaccinated. She sickened on July 3 and a confluent rash appeared on July 6. Numerous contacts are under surveillance.

At *Bilston* the diagnosis in a boy, aged 10, removed on July 3, has now been confirmed. Modified rash appeared on July 2. He had been vaccinated for the first time on June 23. Contacts are still under surveillance.

Barnsley.—The daughter and son-in-law of the woman, aged 62, admitted to the smallpox hospital on June 30 were removed on July 11 when smallpox rashes appeared. Both had been vaccinated on July 2, one primarily and the other after an interval of 30 years.

Southampton.—The suspected case removed from the *Carnarvon Castle* on July 8 is suffering from chickenpox.

The *Times* of July 14 reports that the first case in Dublin since 1900 was discovered on board an American ship which has arrived from California.

Up to July 12 there had been 10 cases of smallpox in two generations in Calais, and 1 in Lille, secondary to the focus in Calais.

Poliomyelitis

The Registrar-General's returns for the week ended July 5 record 79 notifications, compared with 9 in the corresponding week of 1946. This figure has rarely been exceeded since the disease became notifiable in 1912. The maximum recorded incidence was in 1938 (1489 cases); in the first twenty-seven weeks of that year 127 cases were notified. The figures for the corresponding periods of 1946 and 1947 have been 206 and 435 (uncorrected).

The disease is widely spread. Notifications in the week ended July 5 were received in 65 sanitary districts, and were mainly singletons. However, since July 5 multiple cases have been reported from several districts, and in all probability a "new high" occurred in the past week. An unprecedented prevalence is to be expected.

Acute onsets with sharp meningeal reactions, leading to a diagnosis of meningitis or meningo-encephalitis, appear to have been a feature in the present outbreak. In such cases the preparalytic stage lasts some days, and it may be presumed that infectivity is greatest in this period. Early isolation on suspicion before the onset of paralysis is probably the most effective action towards preventing the spread of the disease.

Bulbar and respiratory paralysis is unusually frequent, and respirators are in demand. In one extrametropolitan borough 7 children have been admitted to the isolation hospital since June 18, 5 of them in the first eleven days of July; of these, 2 required treatment in respirators. Tonsillectomy had been performed on 1, aged 4 years, a fortnight before signs of bulbar paralysis appeared. It has been advised[1] that when poliomyelitis is prevalent nose and throat operations should, if possible, be postponed.

An assistant master at a preparatory school at Aldenham, Herts, has died of poliomyelitis, and another master and a boy have contracted the disease. The school has been closed.

During the week ended July 5, 64 cases of cerebrospinal fever were notified. The increase in notifications, contrary to the expected seasonal decline, may be an expression of the increased incidence of anterior poliomyelitis with well-marked meningeal signs at the onset.

PLAGUE IN EAST PRUSSIA.—Epidemic bubonic plague appeared in Königsberg during June and has caused many deaths among the civilian population.

Infectious Disease in England and Wales

WEEK ENDED JULY 5

Notifications.—Smallpox, 3; scarlet fever, [illegible]; whooping-cough, 2240; diphtheria, 188; paratyphoid, 8; typhoid, 15; measles (excluding rubella), 10,[illegible]; pneumonia (primary or influenzal), 353; cerebrospinal fever, 64; poliomyelitis, 79; polioencephalitis, 9; encephalitis lethargica, 4; dysentery, 57; puerperal pyrexia, 144; ophthalmia neonatorum, 61. No case of cholera, plague, or typhus was notified during the week.

Of the 3 smallpox cases, 2 were notified at Bilston, Staffs, and 1 at Barnsley, Yorks.

Deaths.—In 126 great towns there were no deaths from enteric fever or scarlet fever, 2 (1) from diphtheria, 5 (1) from measles, 11 (1) from whooping-cough, 52 (4) from diarrhœa and enteritis under two years, and 5 (0) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 238 (corresponding to a rate of 25 per thousand total births), including 31 in London.

Parliament

ON THE FLOOR OF THE HOUSE

THE Indian Independence Bill came before the House for discussion on July 10 and passed its second reading. So after over 250 years a British chapter of Indian history is ending. The power of government in India is to be handed over to the two Dominions by Great Britain on August 15, and it is significant that the sobering effect of responsibility on India has been great. It is now clear that the British business community will remain, and it is hoped that many British civil servants, doctors, and perhaps soldiers will remain too in the employ of one or other of the Indian governments. The great problems of India are food, health, and agriculture. Industry on any very large scale has yet to be developed. How will India deal with her recurrent famines and epidemics? How will India raise the standard of health of her peoples? There certainly will be in India vast scope for great health and nutritive changes.

Turning from East to West, Parliament has paid attention during the week to problems of the reconstruction of Europe. Can we reconstruct before the dollar line of credit runs out? Or must we willy-nilly get help from the Marshal offer on some new basis? That we shall need all our ingenuity in planning to keep our nation fit and well is clear. Extra food for children is honorary radiologist to the Queen Elizabeth Hospital. In 7 he was awarded the Robert Jones medal of the British Ortho- lic Association for his essay on Deformities of the Lumbo-sacral ion of the Spine. He is also author of *Radiology of Bones and ts*, and he has twice—in 1934 and again in 1943—delivered nterian lectures to the Royal College of Surgeons. In 1939 was elected a fellow of the Faculty of Radiologists, and he was first president of the British Association of Radiologists. In 1 he was elected F.R.C.P.

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[1] *Lancet*, 1946, i, 972.

iversity of Manchester

On July 5 degrees were conferred on the new graduates ned in our issue of July 12 (p. 77). The degree of M.D. s also conferred on F. P. Ellis (gold medallist), R. W. rslem, A. I. Goodman, A. D. Leigh (in absentia), T. P. rell, and Isaac Sutton.

iversity of Glasgow

On July 9 the following degrees were conferred:

M.D.—Jean L. Buchanan, Ben Couts, Margaret S. Ferguson, enah J. M. Russell, Elizabeth B. S. Scobbie, A. B. Semple, via J. Strachan, A. M. W. Thomson (with commendation); T. Boyd, James Caldwell, Robert Hillman, W. B. McKenna, L McNeil, Kwao Sagoe, J. F. Swan.

M.B., Ch.B.—Anne S. McNaughton (with honours); A. D. y, W. P. Crane, Robert Pirrie, W. A. J. Crane (with commenda- n); H. M. Adam, James Aitken, K. J. Alexander, A. C. Anderson, an Angus, A. S. Arnell, John Barr, J. B. Bell, Alexander Boyd, W. Boyd, J. M. Boyd, Anne N. M. Brittain, J. O. Brocklehurst, H. Brown, James Brown, John Brown, R. W. Bryson, Margaret S. Calder, Margaret Cameron, M. W. Clark, John Craig, A. S. llen, John Currie, Pamela A. Davies, E. D. B. Denovan, M. B. vertie, Irene E. Donald, Lilian I. Donald, Robert Donald, A. N. wie, Alison M. T. Drimmie, Margaret B. Eadie, Alexander rley, W. R. Falconer, Margaret M. Ferguson, J. J. Flanigan, H. S. Forrest, W. T. Fullerton, Rosamund M. H. Fulton, L. A. landers, W. J. Gordon, Archibald Guinea, Jessica M. S. Hamilton, S. Happel, L. L. D. Hodge, J. R. R. Holms, J. G. Inglis, W. T. ine, David Irwin, Bernard Isaacs, Agnes B. Johnstone, G. D. , J. M. Kay, Teresa Kelly, J. W. Kerr, Agnes F. W. Laughland, ce F. P. Lightbody, G. S. Macadam, Ian McAlpine, H. S. Callum, Lorna G. Macdougall, Christine R. Macgregor, Susanne M. cGregor, Iain MacIntyre, Sheila Macintyre, D. M. McKean, D. McKee, D. I. MacKenzie, S. D. MacKenzie, William McKerrell, n I. Mackinnon, Alastair MacLean, A. I. MacLeod, R. C. Macleod, B. McMillan, A. L. McNab, D. L McNab, Alan Macpherson, stair Mair, Helen M. Mair, D. B. Meek, J. C. Merry, J. S. Moffat, mes Morgan, Agnes A. M. Muir, Alexander Munn, D. B. Neilson, rjorie G. Nisbet, Mary K. P. Pollock, F. B. Proudfoot, Helen J. G. msay, D. A. Rice, Sheila C. S. Richard, A. A. Robin, Thomas ssell, W. I. Russell, Goldwyn Sclare, Alison Shannon, James npson, J. T. Smith, James Stanners, Isobel M. W. Stark, James ewart, Margaret P. Stewart, Robert Strang, A. M. P. Thomson, H. Thomson, W. O. Thomson, William Todd, David Turnbull, exander Urquhart, W. B. Waddell, Joan L. Wakeham, Mary C. allace, Camilla M. Walton, J. A. Watson, A. A. Wilson, T. A. lson, C. M. Wylie, F. O. Young, M. A. C. Young.

niversity of Dublin

On July 2, in connexion with the Rotunda bicentenary lebrations, the honorary degree of M.D. was conferred at inity College on Sir Eardley Holland, F.R.C.O.G., and Dr. enry Stander, obstetrician and gynæcologist-in-chief to w York Hospital.

oyal College of Surgeons of England

At a meeting of the council held on July 10, Sir Alfred ebb-Johnson was re-elected president for the ensuing year d Sir Cecil Wakeley and Mr. L. E. C. Norbury were elected ce-presidents.

The council issued invitations to 21 dental surgeons to rve as the first members of the board of the faculty of ntal surgery of the college, and the following were invited become the first 18 fellows in dental surgery:

H. F. Humphreys, O.B.E., M.C., Harry Stobie, F.R.C.S., A. D. lward Shefford, O.B.E., W. K. Fry, M.C., M.R.C.S., Vivian reenish, Major General A. B. Austin, C.B., Surgeon Captain James homson Wood, C.B.E., Edward Samson, A. C. Deverell, Air Com- odore G. A. Ballantyne, C.B.E., D.F.C., F. S. Warner, R. V. radlaw, M.R.C.S., H. A. Mahony, F. C. Wilkinson, M.D., E. W. sh, C.B.E., M.D., T. T. Read, F.R.F.P.S., W. G. Senior, O.B.E., T. Roper-Hall, M.B.

The following were elected lecturers for the ensuing year:

Hunterian professors: Mr. A. W. Badenoch, Congenital Obstruc- on of the Bladder Neck; Mr. A. D. Beattie, Treatment of Peptic lcer by Vagotomy; Mr. Denis Browne, Hare Lip and Cleft alate; Mr. Murray Falconer, Lumbar Intervertebral Disk Surgery; r. Hassan Ibrahim, Bilharziasis and Bilharzial Cancer of the ladder; Mr. Robert Guy Pulvertaft, Repair of Tendon Injuries the Hand; Mr. Victor Riddell, Carcinoma of the Breast; Mr. rancis Stock, Hypertension; Mr. A. Hedley Visick, Failure after astrectomy; Mr. Stanley Way, Lymphatic Drainage of the Vulva nd its Influence on the Radical Operation for Carcinoma; Mr. M. C. Vilkinson, Skeletal Tuberculosis; Harold Wookey, Malignant isease of the Pharynx and Œsophagus. *Arris and Gale lecturers:* r. E. M. Darmady, Acute Uræmia; Mr. Leon Gillis, Arm Amputa- ons, Cineplastic Surgery, and Arm Prostheses; Mr. H. F. Lunn, natomy of Hernia. *Erasmus Wilson Demonstrators:* Mr. V. achary Cope, Mr. R. J. McNeill Love, Mr. Philip Mitchiner, Dr. W. Proser, Mr. R. W. Raven. *Arnott Demonstrators:* Dr. R. J. ast, Mr. Lunn.

A diploma of fellowship was granted to D. P. Robertson and a diploma of membership to A. J. Ruzicka.

The following diplomas were awarded jointly with the Royal College of Physicians:

D.P.M.—E. H. Cranswick, J. A. Crawford, P. B. de Maré, J. J. Fleminger, E. H. Hare, A. B. Hegarty, R. F. Hobson, J. G. Howells, Wallace Ironside, John Johnston, G. N. Jones, V. L. Kahan, Julian Katz, L. G. Kiloh, A. B. Kinnier Wilson, C. C. Lack, A. F. McLean, Morris Markowe, D. A. R. Pond, K. C. Royes, Peter Sainsbury, A. B. Sclare, Salo Tischler, P. M. Turquet, A. H. Williams.

D.L.O.—James Ackerley, J. N. Appleton, L. F. Day, P. F. King, J. A. Langille, J. M. Marquard, P. K. L. Orton, C. C. Ring, R. V. Tracy-Forster, K. L. Wilson.

D.I.H.—W. E. Broughton, Caroline J. Brown, Alan Butterworth, J. V. Manning, H. B. Melzer, Niaz-ud-Din, Dorothy Williams.

D.A.—N. C. Smiedt.

Order of the Hospital of St. John of Jerusalem

Promotions and appointments recently announced include:

Knights.—Major J. F. Hamilton, M.D., R. D. Thomas, L.R.C.P.E., Air Vice-Marshal Sir William Tyrrell, K.B.E., D.S.O., M.C., M.B.

Commanders.—F. L. Richard, M.B., P. S. Selwyn-Clarke, C.M.G., M.C., F.R.C.P., Brigadier G. S. McConkey, O.B.E., M.D., Surgeon Rear-Admiral A. E. Malone, C.B., M.B., Surgeon Rear-Admiral H. M. Whelan, M.R.C.S. (since deceased), C. C. B. Gilmour, C.B.E., M.B., J. M. Hermon, M.D., G. P. Huws, M.B., Major G. S. Phillips, M.D., Prof. N. Hamilton Fairley, C.B.E., F.R.C.P., F.R.S.

Officers.—Lieut.-Colonel F. A. Bevan, M.B., Lieut.-Colonel T. F. Briggs, M.R.C.S., Anacletus Byrne-Quinn, M.B., J. A. L. Roberts, M.B., Major T. W. Carrick, R.A.M.C., Lieut.-Colonel C. P. Stevens, M.B.E., M.B., Ivy MacKenzie, M.D., Surgeon-Captain L. F. Strugnell, M.B., Surgeon-Captain R. C. May, O.B.E., M.C., M.R.C.S., Kypros Chrysanthis, M.D., H. G. Davies, M.R.C.S., Lieut.-Colonel M. P. Atkinson, I.M.S., H. H. Warren, M.B., T. W. David, M.R.C.S., G. R. Jones, M.D., G. P. Williams, M.R.C.S., Colonel C. R. Croft, M.D., Surgeon Captain K. D. Bell, M.R.C.S., Colonel T. J. L. Thompson, O.B.E., M.C., M.B., J. W. Reid, M.D., C. A. Bence, M.R.C.S.

Royal Society of Edinburgh

On July 7 Sir Edward Appleton, D.SC., F.R.S., Sir Alexander Fleming, F.R.C.P., F.R.S., and Sir Arthur MacNalty, F.R.C.P., were elected honorary fellows of the society.

Food and Drugs (Milk and Dairies) Act, 1944

The Minister of Health, after consultation with the Minister of Agriculture and Fisheries, has decided that in view of the many technical difficulties involved it will not be practicable to bring this Act into operation this year.

Rheumatology Congress

The first European Congress of Rheumatology will be held at Copenhagen and Aarhus from Sept. 4 to 8 under the presidency of Prof. Cai Holten. The topics chosen for discussion include the ætiology and pathogenesis of rheumatic fever and rheumatoid arthritis, the treatment of rheumatoid arthritis, the social importance of the rheumatic diseases, and bioclimatological problems of rheumatology. Further information may be had from the Empire Rheumatism Council, Tavistock House, London, W.C.1.

Dr. Jessie Macgregor Prize and Lecture

Applications are invited from medical women who are graduates in medicine of the University of Edinburgh or who have taken the Scottish triple qualification, after studying medicine for at least one year in Edinburgh, for this prize which is of the value of £50. It is awarded for original work in the science of medicine, which may be published or unpublished, but must not have been published earlier than three years ago. Applications must reach the convener of trustees, 9, Queen Street, Edinburgh, 2, not later than July 31.

Medical Sickness, Annuity and Life Assurance Society

On July 15, at the 62nd annual general meeting of this society, Mr. R. J. McNeill Love, F.R.C.S., the chairman, reported that membership now exceeded 10,000 and that the new business written in 1946 was a record in their history. New policies were issued to secure sickness and accident benefit of over 6600 guineas per week and life assurance of over £500,000. The funds of the society had increased last year by £228,000 and now stood at nearly £3½ million, of which half are in British Government securities. The last valuation took place during the war and a declaration of a bonus on the life fund was therefore deferred. The directors, Mr. Love announced, now felt justified in recommending a reversion bonus of 15*s.* per cent. for each of the ten years 1937–46, a rate which it was hoped to maintain. Policies for sickness and accident insurance had received a bonus at a reduced rate in 1941, but it had now proved possible not only to restore the pre-war rate but slightly to improve it, and the directors were recommending a reversionary bonus on the A/65 and A/60 tables at the rate of 16*s.* for each one guinea per week insured.

A brilliant introduction by Darlington explains the underlying theories and correlates these studies with the classical work of Vavilov on plant origins based on genetic investigations. The value of the book for reference is increased by abbreviated information on the uses of the plants listed and on their geographical distributions. Of more questionable value is the addition of popular names. Many widely accepted popular names are omitted, while others are included for which the justification is, to say the least, obscure. The book will, however, become a standard reference work for all plant-breeders and geneticists and for many horticulturists.

CONDENSED MILK FOR INFANT FEEDING

The Ministry of Food inform us that the allowances of full-cream condensed milk for infant feeding, obtainable on a doctor's certificate from food offices, without surrendering points, are as follows (see The Lancet, June 14, p. 853):

Age of infant	*Sweetened (tins per month)*	*Unsweetened (tins per month)*
Under 5 months ..	Up to 10	Up to 18
5–6 „ ..	„ 11	„ 21
7–9 „ ..	„ 12	„ 23
10–12 „ ..	„ 13	„ 24

The tins of sweetened milk contain 1¾ pints (14 oz.)
„ „ „ unsweetened „ „ 2 pints (16 oz.)

The infant should also be able to obtain sweetened or unsweetened condensed milk on his own points coupons.

UFAW SUMMER SCHOOL

In nothing is a scientific mentality more patently needed than in the ethics of man's relations with animals. At one extreme there is the callousness engendered by the ghost of Descartes' theory of automatism, at the other the sentimentality that puts feeling in the place of knowledge. The Universities Federation for Animal Welfare has tried to put the whole subject on an objective basis. During the last week in September (20–27) Ufaw is holding a summer school for students of both sexes at the field study centre at Flatford Mill, in the Constable country. The programme will comprise lectures and discussions on the care of laboratory animals, whaling, methods of dealing with harmful animals, animal psychology, and various other topics; there will be visits to a bird sanctuary and other places of interest, social events, and free time for recreation (including bathing). It is hoped that a good number of medical students will attend. The inclusive fee is £2 12*s*. 6*d*., and details will be supplied by the secretary, Dr. F. Jean Vinter, 284, Regent's Park Road, Finchley, London, N.3.

VOICE-RECORDING IN SPEECH THERAPY

Northwood House Clinic, Leicester, is using gramophone records to detect progress in the treatment of defective speech. The patients' efforts at reciting nursery rhymes and making general conversation are recorded from time to time, and the recordings are played back after about three months to see whether treatment has resulted in improvement. The apparatus is supplied by Recorded Sound Ltd., of London.

MEDICINE IN THE THEATRE

In his play "The Gleam," lately running in London and now published in book form,[1] Mr. Warren Chetham Strode takes three quite pleasant acts to tell us that doctors work best when they have to be responsible to and for their patients. Here most of us will go all the way with him, but unfortunately he tangles this honest principle with a number of less evident propositions. The play is really a protest against the National Health Service, in which Mr. Strode sees a dangerous fettering of the doctor's liberty. Not content to let what facts there are speak for themselves, he unworthily presents all the opponents of his view who appear in the play either as mild knaves or honest fools. Moreover, he panders too freely to popular nonsense, with his talk of "surgeon's hands," and of the one man capable of doing successful "trepanation" in a given case. Without being particularly dramatic the play moves well from point to point, and the characters hold the interest. It is a pity, though, that he will not own what so clearly appears from the behaviour of his own chief character: that the Service makes the man only when the man is of poor quality. Where the men are good they make the Service, as the Navy brilliantly testifies. If we doctors are all that Warren Chetham Strode believes us to be, we have nothing to fear from the National Health Service.

CANADIAN RETIREMENTS

The University of Toronto's new age-limit of sixty instead of sixty-five for teachers in the faculty of medicine has led to several retirements in the four hospitals associated with the university. A complimentary dinner was given on June 11 by St. Michael's Hospital to Dr. Gordon S. Foulds, head of the department of genito-urinary surgery, who retires under this rule, to Dr. George Ewart Wilson, who leaves his post as surgeon-in-chief after a distinguished service of 20 years, and to Dr. N. D'Arcy Frawley, Dr. J. I. Robert, Dr. T. A. Robinson, and Dr. J. Harris McPhedran, former president of the Canadian Medical Association.

On June 12, at a dinner given by his colleagues in his honour, Prof. Duncan Graham, for 28 years Eaton professor of medicine, was presented with his portrait. Professor Graham is an honorary fellow of the Royal Society of Medicine, and a past president of the Royal College of Physicians and Surgeons of Canada and of the Canadian Medical Association. He is succeeded in his chair by Prof. R. Farquharson who is this year's president of the Canadian college and the chief consultant to the Royal Canadian Air Force.

On June 19, colleagues and graduates of the Gallie course in surgery gave a dinner to Prof. W. E. Gallie on his retirement from the professorship of surgery in the University of Toronto. Graduates of this course are granted a master of surgery degree by the university, and the surgeons-in-chief of six Toronto hospitals and the professors of surgery in two Canadian Universities are among its graduates. At the dinner Professor Gallie was presented with his portrait and with 52 essays on surgical subjects written by his colleagues and students. The collection, which filled three large volumes of typewritten manuscript, will be printed this year.

University of Oxford

In a congregation held on June 26 the degree of D.M. was conferred on J. M. Walker and G. S. Dawes.

Wellcome Laboratory of Human Nutrition.—The trustees of the will of the late Sir Henry Wellcome have offered the university £25,000 to buy and equip this laboratory on condition that the university provides £5000 annually for its upkeep during the next five years. The university has accepted the gift and is establishing the laboratory for the promotion of "the scientific study of human nutrition and for the collection and integration of existing knowledge." A reader in human nutrition with a stipend of £1100 a year is to be appointed.

University of Liverpool

At recent examinations the following were successful:

M.D.—T. C. Gray.

M.Rad. (*Part I*).—H. G. Frank, A. M. Fraser, J. R. Macleod, D. E. Paterson, I. Pierce-Williams, M. Robinson, H. L. Ross, G. B. Scarrow, W. I. Walker, J. Winter.

M.B., Ch.B.—F. G. Anderson, I. S. J. Crosbie, E. Dewsbury, Nancy V. Dilling, W. Ellenbogen, Sheila K. Frazer, G. I. T. Griffiths, Elizabeth Howorth, A. B. Jones, F. P., Lennon, G. L. Levy, G. E. Lucas, J. E. Riding, Audrey A. Shone, G. C. Sloo, M. H. Turner, L. C. Wolfman.

D.P.H. (*Part II*).—L. C. Allan, G. H. Ball, T. W. Brindle, A. M. Brown, Mary F Brownlie, W. F. Christian, D. J. Doherty, Catherine S. Ellams, D. J. Fraser, J. A. Gillet, Patricia F. M. R. Gould, M. D. Kipling, Ann Prysor-Jones, B. Pujari, K. V. Robinson, C. D. Rosenwald, K. C. Sahu, Irene W. Simpson, W. G. Tasker, A. R. Unsworth, E. Walker, S. R. Warren, E. B. Weeks.

University of Birmingham

Dr. T. L. Hardy has been appointed to the chair of gastro-enterology in the university. This is the first chair in the specialty to be established in this country. Dr. J. F. Brailsford has been appointed honorary director of radiological studies in living anatomy.

Dr. Hardy was educated at Radley College and Selwyn College, Cambridge. A graduate in arts and medicine of the University of Cambridge, he took the Conjoint qualification from the Middlesex Hospital in 1912. After service with the R.A.M.C. in the first world war he settled in consultant practice in Birmingham and was appointed to the staff of the Birmingham United Hospital. He has examined for the universities of Cambridge and Glasgow. In 1944 he delivered the Croonian lectures on Order and Disorder in the Large Intestine, to the Royal College of Physicians, to whose fellowship he had been elected in 1929. Dr. Hardy was one of the group who founded the British Society of Gastroenterologists in 1937 and until lately he was its secretary. His published work includes papers on hyperchlorhydria and ulcerative colitis.

Dr. Brailsford, who took his M.B. at the University of Birmingham in 1923, at present holds the appointment of radiological demonstrator in living anatomy in the university. He is also consulting radiologist to the Birmingham Accident Hospital and City Hospital.

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[1] London: Sampson Low, Marston & Co. Pp. 90. 6s.

CARCINOMA OF THE LUNG

REVIEW BASED ON 122 CASES TREATED BY PNEUMONECTOMY

T. Holmes Sellors
D.M., M.Ch. Oxfd, F.R.C.S.
HORACIC SURGEON, MIDDLESEX OSPITAL; SURGEON, LONDON HEST HOSPITAL, AND THORACIC UNIT, HAREFIELD

Gordon Cruickshank
F.R.C.S.E.
SURGEON, THORACIC UNIT, LEICESTER; LATE FIRST ASSISTANT, LONDON CHEST HOSPITAL

B. R. Billimoria
F.R.C.S.
URGICAL REGISTRAR, THORACIC SURGICAL UNIT, HAREFIELD HOSPITAL, MIDDLESEX

Whether pulmonary cancer is on the increase or not s still debatable, but there is evidence that there is a eal increase. Everyone will admit that more cases are ecognised, a fact due to improved diagnosis and a greater awareness of the protean nature of the disease, but we do not know how many deaths formerly registered as pneumonia or bronchitis should have had pulmonary cancer recorded as the primary cause. Our knowledge of the early symptoms is still far from perfect, and many —apparently unimportant—are overlooked. The thoracic surgeon would willingly investigate fifty cases with negative result rather than miss one whose life may be saved by an early operation; and this can only be accomplished by radiography.

Pulmonary cancer is not necessarily a disease of old age; nor are wasting, cough, and hæmoptysis constant symptoms. Therefore it must not be assumed that youth, increase of weight, loss of cough, cessation of hæmoptysis, or absence of pain excludes a diagnosis of cancer. Nor in old age must the possibility be overlooked that cancer may be the primary cause of an unresolved pneumonia, bronchitis, or a failing heart. An important and common characteristic of these tumours is their insidious and silent growth. Several of our cases could have been diagnosed by radiography a year before pneumonectomy—eighteen months in one case. In short, whenever a chest condition does not fit an accepted pattern, cancer must always be suspected.

SYMPTOMS AND SIGNS

The symptoms are determined by the relation of the growth to the thoracic organs. A centrally placed mass may attain considerable size before producing severe symptoms, whereas a growth invading structures within the thorax or in the chest wall is more likely to produce early pain, cough, hæmoptysis, dyspnœa, or other definite symptoms.

Pressure Effects.—The chief symptoms are due to effects produced on the lung and bronchi, and vary with the type of invasion. Complete obstruction of a large bronchus, as happens with many squamous-celled carcinomata, leads to atelectasis peripheral to the block. Imperfect obstruction associated with infection causes suppuration to dominate the clinical picture, and lung abscess may result. A lung abscess may also result from breakdown of the tumour, in which case it is not segmental, it is radiologically eccentric to the main shadow, and it may have an irregular outline.

Invasion of the pleura produces pain or discomfort and effusion, which may be clear (when it makes diagnosis difficult), bloodstained, or purulent. Malignant cells may be found in the effusion. The growth tends to spread along the pleura rather than to the chest wall, but at the apex the ribs may be involved, producing a subcutaneous mass.

Interference with mediastinal tissue is usually the result of glandular involvement, which is most often seen with the oat-celled or undifferentiated type of carcinoma. The great veins may be obstructed, and paralysis of the phrenic or of the recurrent laryngeal nerves is one of the more common early signs. The tumour may infiltrate the pericardium, and then it tends to spread along the pulmonary veins; this may explain the auricular fibrillation which is found in some of these cases and may even be the first sign.

Metastases.—Metastasis is common in the oat-celled type of growth where the hilar glands are heavily involved, and a spread to adjacent nodes, such as the paratracheal, abdominal, and supraclavicular chains, makes surgery impracticable. Regional metastasis is less common in squamous carcinomata and adenocarcinomata, but in all cases secondary deposits may develop. There is a predilection for bone (ribs, vertebræ), and liver, skin, and brain may be involved. Secondary deposits in the brain should be carefully sought, because they can develop silently without producing any clinical neurological signs until the final stages. In our series three deaths within a few weeks of operation were due to this complication. Another unusual form of metastasis is invasion of the suprarenal glands, producing the Addisonian syndrome of severe asthenia, low blood-pressure, and bronzed skin.

Early symptoms are often slight and passed over as unimportant, especially if the patient is outside the traditional age-group for malignant tumours. If medical advice is sought, little or nothing may be detected, and weeks or months may elapse before the essential aid to diagnosis—radiography—is invoked. The classical signs, such as lassitude, persistent cough and sputum, dyspnœa, and loss of weight, *may, as already mentioned,* not develop for a long time. It has been estimated that, on an average, a year elapses between the initial symptom and the assessment for surgery. Delay occurs all along the line: the patient is slow in seeking medical advice; a period of conservative treatment or observation follows before there is any suspicion of something radically wrong; after admission to a general hospital the establishment of diagnosis may take some weeks; and further time may be lost before surgery is made available.

Only a few of the early symptoms have any apparent significance. Cough persisting after an "influenzal" attack, or associated with a supposed slowly resolving inflammation, may be accompanied by sputum. In middle-aged or elderly men with a chronic cough any alteration in its character should be suspect. Hæmoptysis, however, ought never to be ignored and demands immediate radiography. An initial hæmorrhage may not be succeeded by further bleeding for some time; but, if there is persistent and daily staining, carcinoma is the only condition, apart from hydatid disease, that can produce this. Shortness of breath on exertion, or transitory "asthma," may indicate the onset of atelectasis which otherwise remains symptomless. Pleuritic pain is often ignored if there is no subsequent effusion or disability. One interesting fairly early sign is pulmonary arthropathy, painful and disabling, mainly affecting wrists, fingers, and ankles. It is remarkable that pneumonectomy immediately relieves the pain and restricted movement of the joints.

Other signs and symptoms depend on the natural history of the disease: a secondary bronchiectasis will cause cough and sputum to dominate the clinical picture; and a pulmonary atelectasis will produce dyspnœa and distress until the body compensates for the disability.

When the patient is under treatment, symptoms may abate, and an increase in weight is common and misleading.

INVESTIGATIONS

Radiography.—The essence of early recognition of pulmonary cancer lies in radiography. Some cases are

American Surgeon Honoured

Dr. Philip D. Wilson, surgeon-in-chief to the Hospital for Special Surgery, New York, and clinical professor of orthopædic surgery of the College of Physicians and Surgeons, Columbia University, who organised and brought over the American Hospital in Britain in 1940, has been appointed honorary O.B.E.

London College of Osteopathy

A course in osteopathy is to be held at the college from Sept. 30, 1947, to July 6, 1948. The course is open to anyone holding a medical qualification registrable in Great Britain. Further information may be had from the secretary, 25, Dorset Square, N.W.1.

Institute of Almoners

In an account of its first full year's work, the report of the Institute of Almoners for 1946 records that the demand for qualified almoners continues to increase; during the year the institute was asked to advertise 294 posts, of which 99 had not previously been held by certificated almoners. The number of appointments made rose slightly from 208 in 1945 to 216 in 1946. Although the demand for qualified almoners is not being fully met, the number accepted for training cannot be greatly increased, because a social-science qualification and training in general family case-work are prerequisites, and in both these fields there is at present a serious shortage of training facilities.

Appointments

CANNEY, R. L., M.B. Camb., F.R.C.S.: general surgeon, Kent and Canterbury Hospital and Ramsgate General Hospital.
JONESCU, PIERRE, M.D. Jassy: physician, Rumanian Embassy, London.
SEYMOUR-JONES, J. A., M.B. Camb., F.R.C.S., D.L.O.: asst. surgeon, ear, nose, and throat department, Portsmouth and Southern Counties Eye and Ear Hospital.
SMALL, J. M., M.B. Birm., F.R.C.S.: asst. surgeon, neurosurgical department, Birmingham United Hospital.

Maudsley Hospital, Denmark Hill, S.E.5:

ANDERSON, E. W., M.D. Edin., F.R.C.P., D.P.M.: physician.
DAVIES, D. L., B.M. Oxfd, D.P.M.: senior registrar.
WARREN, WILFRID, M.B. Camb., D.P.M.: senior registrar.

Runwell Hospital, Essex:

CRANSWICK, E. H., M.B. Sydney, D.P.M.: asst. physician.
SCOTT, P. D., M.B. Camb., D.P.M.: senior physician.

Diary of the Week

JULY 20 TO 26

Monday, 21st

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
3.45 P.M. Dr. T. E. Barlow: Lungs.
5 P.M. Dr. C. E. Dukes: Pathology of Genito-urinary Tuberculosis.
INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, W.C.1
4.30 P.M. Mr. W. M. Mollison: Nose, Nasopharynx, and Paranasal Sinuses.

Tuesday, 22nd

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Prof. G. R. de Beer, D.SC.: Segmentation of Vertebrate Head.
5 P.M. Mrs. G. M. Bonser, M.D.: Pigmented Tumours of the Skin.

Wednesday, 23rd

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Dr. James Whillis: Mouth and Pharynx. (First lecture.)
5 P.M. Mrs. Bonser: Experimental Cancer of the Bladder.

Thursday, 24th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Dr. Whillis: Mouth and Pharynx. (Last lecture.)
5 P.M. Prof. R. J. V. Pulvertaft: Postoperative Pulmonary Embolism.
6.15 P.M. Prof. E. Sprawson: Foods and Feeding as they Affect Teeth and their Environment. (Charles Tomes lecture.)

Friday, 25th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Dr. Albert Peacock: Nasal Sinuses and Cavity.
5 P.M. Dr. R. E. Rewell: Diseases Common to Man and other Animals.

Saturday, 26th

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos Street, W.1
3 P.M. Colonel L. W. Harrison: Venereal Disease in the National Health Scheme.

Society of Public Analysts and Other Analytical Chemists

At a meeting of the physical methods group and the polarographic discussion panel of this society to be held at 3 P.M. on Friday, July 25, in the chemistry department, University College, Gower Street, London, W.C.1, Prof. J. Heyrovský will speak on Polarographic Analysis, and Dr. R. Brdička on Analytical Applications of the Cystine and Protein Reaction in Biochemistry and Medicine.

International Organisation for Standardisation

The first meeting of the council of the I.S.O. was held in Zurich from June 17 to 20. The council consists of the National Standards bodies of the following countries: Australia, Belgium, Brazil, China, France, India, Norway, Switzerland, United Kingdom, U.S.A., and U.S.S.R. The council appointed M. Henri St. Leger to be general secretary, and his office will be in Geneva.

Extension of Welfare Foods

Children at day nurseries are now, like those at nursery schools, to have two-thirds of a pint of liquid, or dried, milk daily free of charge. Each child is also to have one 6-oz. bottle of cod-liver oil compound every 12 weeks free of charge. From August 1 every mother will be entitled to vitamin A and D tablets free of charge for 30 weeks after the birth of her child at the rate of one packet each 6 weeks. The tablets will be distributed at the same centres as other welfare foods.

A new periodical, the *Chronicle of the World Health Organisation*, will regularly describe the activities of that body. The first number contains accounts of the origin, constitution, functions, and objectives of the organisation. Specimen copies may be had from the WHO interim commission, at the Palais des Nations, Geneva, or at 350, Fifth Avenue, New York, U.S.A.

CORRIGENDUM.—F. E. Adair's paper on the Use of Male Sex Hormone in Women with Breast Cancer appeared in *Surgery, Gynecology and Obstetrics* (1947, 84, 719) and not in the *Journal of the American Medical Association* as stated in our editorial (July 12, p. 61).

Births, Marriages, and Deaths

BIRTHS

ADKINS.—On July 6, the wife of Mr. E. W. O. Adkins, F.R.C.S.—a son.
AUGER.—On July 6, the wife of Dr. Harold Auger—a son.
BALL.—On July 5, in London, the wife of Major P. H. Ball, R.A.M.C.—a son and a daughter.
CARSTAIRS.—On July 12, at Okayama, Japan, the wife of Lieut.-Colonel L. S. Carstairs, R.A.M.C.—a son.
DODD.—On July 9, in London, the wife of Mr. Harold Dodd, F.R.C.S.—a son.
ELVERSON.—On July 4, at Marlborough, the wife of Captain H. J. Elverson, R.A.M.C.—a daughter.
GRIFFITHS.—On July 10, in London, the wife of Dr. A. J. M. Griffiths—a son.
HILL.—On July 4, at Stonehaven, the wife of Captain Adrian Hill, R.A.M.C.—a son.
HUDSON.—On July 5, in London, to Dr. Jessie Hudson, the wife of Dr. E. H. Hudson—a daughter.
LANGFORD.—On July 6, the wife of Dr. C. C. Langford—a son.
MACARTNEY.—On July 7, in Manchester, the wife of Dr. Donald Macartney—a son.
PERFECT.—On July 10, at Awali, Bahrein Islands, Persian Gulf, the wife of Dr. John Perfect—a son.
POCHIN.—On July 3, in London, the wife of Dr. E. E. Pochin—a daughter.
TETTMAR.—On June 28, at Westcliff-on-Sea, the wife of Dr. F. Tettmar—a son.
WHITING.—On July 4, in Boston, Mass., the wife of Dr. R. C. Whiting—a son.

MARRIAGES

BURROWES—WEST.—On July 5, at Bramshott, D. E. St. J. Burrowes, M.B., to Kathleen Ruth West.
BURTON—DE MARCHI.—On July 6, in London, L. J. H. Burton, M.R.C.S., to Isabella De Marchi.
LUSH—GEE.—At Hutton, Essex, on July 12, Brandon Lush, M.R.C.P., to Margaret Gee, M.R.C.S.
PATON—PEPYS.—On July 12, at Newbury, Alexander Paton, M.B., to Ann Jennifer Pepys.
SERGEL—STILEMAN.—On July 8, in London, Charles Sergel, M.B., to Elizabeth Joan Stileman.
SYKES—CUNNINGHAM.—On June 19, at Wolfenbüttel, Robin Sykes, B.M., captain R.A.M.C., to Jean Cunningham.

DEATHS

FLINT.—On July 9, at Surbiton, Harold Edwards Flint, M.R.C.S.
MANSIE.—On July 10, in London, James Mansie, M.B. Aberd.
NICHOLSON.—On July 9, at St. Leonards-on-Sea, Charles Rowley Nicholson, M.R.C.S., aged 74.
PETERSON.—On July 8, in London, Helen Peterson, M.D., D.P.M.

The deformity consequent on pneumonectomy is slight and only shown by some falling in of the chest wall and pulling over of the mediastinum. The general function is often excellent, depending on the state of the cardiovascular and respiratory systems, and may allow full normal activities short of strenuous exercise.

Local recurrence of the growth is a common cause of later death, the dead space becoming slowly filled with growth in 12–18 months. Distant metastases may develop at any time. Patients with only one lung are clearly liable to risks from respiratory infections, and with increasing years there is no doubt that the loss of pulmonary tissue throws an added strain on the cardiovascular system. Three patients unexpectedly committed suicide some time after operation, and in the absence of cerebral secondaries anoxia should be considered as a factor in any alteration of mentality that may be noted.

The results clearly leave much to be desired; but, as in all cases of malignancy, the uncertainty of the result cannot deter the surgeon from undertaking legitimate risks.

It should also be realised that in earlier years cases were operated on which would not now be regarded as operable. The selection has become more exact, technique has developed, and earlier diagnosis has paved the way for improved results.

REFERENCES

Brock, R. C. (1943) *Brit. med. J.* ii, 257.
— (1947) personal communication.
Edwards, A. T. (1946) *Thorax*, 1, 1.

BACTERIOLOGY OF THE COLLECTION AND PRESERVATION OF HUMAN MILK*

JOYCE WRIGHT
D.M. Oxfd
MEMBER OF THE MEDICAL RESEARCH COUNCIL'S SCIENTIFIC STAFF

PÆDIATRICIANS in general agree that newborn infants, particularly if premature, thrive best on human breast-milk; its wider provision is therefore important in the improved care of young babies. The suggestion was made that expressed breast-milk might be collected from maternity hospitals and preserved, possibly by dehydration, for distribution elsewhere.

The results presented here are those of an investigation of the bacteriology and of the safeguards required for ensuring an uncontaminated supply. Samples of human milk were obtained from three maternity hospitals in or near London (hospitals A, B, and C) and from a country maternity home (hospital D).

METHODS OF COLLECTING HUMAN MILK

Current methods of collecting human milk in maternity hospitals were first reviewed to find out whether any improvements in technique were required. Bacterial counts of milk samples were made by the roll-tube method (Wilson 1935). 'Yeastrel'-milk-agar was used as the medium, and the tubes were incubated aerobically for 3 days at 37°C.

Hospital A

As a routine, mothers emptied their breasts of excess milk after each breast-feed. Manual expression was usual, but some patients preferred to use a breast-pump. Collecting-bowls were washed between each use but were not boiled. Mothers' nipples and hands were not cleansed either before breast-feeding or before withdrawal of milk. Raw pooled milk was stored in a jug at room temperature and fed to infants as required.

Hospital B

Routine manual expression after each breast-feed was usual here also; breast-pumps were only exceptionally used. Milk, if for a mother's own infant, was collected in a boiled bowl and given raw. Milk for general infant feeding was expressed into unboiled bowls; it was then boiled and stored in a refrigerator until required.

Hospital C

Removal of excess milk after breast-feeding was the routine for all mothers, who withdrew it either by manual expression or by pumping. Collecting-bowls were boiled between each use. The breast-pumps were washed only between use, as they were of a type not readily sterilisable. The mothers' nipples and hands were cleansed before expression. Pooled milks were boiled and stored in a refrigerator until required for infant feeding.

Hospital D

Mothers' breasts were not emptied after feeding unless it was thought necessary on clinical grounds.

Table I shows, from roll-tube bacterial counts of milk collected in hospitals A and C, that high counts result when milk is collected by methods at present in use in some maternity hospitals. It is possible for these highly contaminated milks to be stored at room temperature and to be fed raw to premature and other newborn infants.

TABLE I—BACTERIAL COUNTS OF HUMAN-MILK SAMPLES COLLECTED BY METHODS CURRENT IN MATERNITY HOSPITALS

Hospital	Pooled or individual samples	Counts per ml.	Hospital	Pooled or individual samples	Counts per ml.
A	Pool	3,800,000	A	Ind.	600,000
A	,,	63,000	A	,,	2,500,000
A	,,	600,000	C	Pool	850,000
A	,,	3,600,000	C	,,	1,700,000
A	,,	8,000,000	C	,,	530,000
A	,,	5,000,000	C	,,	890,000
A	,,	3700	C	,,	3,000,000

MINIMAL BACTERIAL COUNT OF HUMAN MILK

Since the existing methods of collection were evidently unsatisfactory, work was next directed to establishing the lowest bacterial counts obtainable under the most favourable conditions—i.e., by direct spray into autoclaved bottles after the nipples had been cleansed with sterile cotton-wool, forceps, and water. The object was to establish an ideal standard against which could be measured bacterial counts obtained later by a practicable clean technique. Samples were placed in the refrigerator immediately after being taken and were prepared for counts within an hour of chilling.

Table II shows the bacterial counts of human-milk sprays collected in this way.

TABLE II—BACTERIAL COUNTS OF HUMAN-MILK SPRAYS COLLECTED FROM ONE BREAST ONLY IN EACH PATIENT

Case	Counts per ml.	Case	Counts per ml.
1	130	4	17
		,,	13
2	260	5	40
,,	260	,,	30
,,	45	,,	10
		6	2500
3	10	,,	850
,,	0		
,,	0	7	4500

In cases 2–6 the counts shown are for successive sprays from the same patient. In case 7 the sample contained numerous *Staph. aureus;* this patient had mastitis of the opposite breast.

SOURCES OF BACTERIAL CONTAMINATION

The bacterial counts given in table II show that the milk was exposed to heavy contamination during collection. Investigation was therefore directed to finding the major causes of the contamination.

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* Following unpublished studies by Mr. Arnold Walker at the Willesdon and Perivale Maternity Hospitals, the Medical Research Council, at the request of the Ministry of Health, appointed a small committee, of which Mr. Walker was a member, to inquire into the conservation of human milk. Some of the work done for the committee is reported in this and a subsequent paper.

discovered on routine investigation or on mass radiography, and an abnormal shadow may be detected before any clinical signs have developed. The interpretation is not always straightforward, owing to secondary changes, in which case the picture is often that of the secondary change, and further investigation is necessary.

Blood.—Apart from routine clinical investigations, a careful hæmatological survey should be made. Anæmia may be present, and a raised sedimentation-rate is regularly found.

Bronchoscopy has to be performed as a routine if surgery is contemplated, since the growth may be seen and be available for biopsy. Pressure on the bronchi from growth or glands, and infiltration, deformity, or rigidity of the bronchi can be observed. Bronchoscopy, however, gives only a restricted view of the bronchial tree: the upper-lobe bronchi are visible only over a small length; but usually the information obtained is most valuable.

Bronchography can help in defining obstruction of bronchi beyond the range of the bronchoscope, but it is a subsidiary examination and should not take priority over bronchoscopy.

Sputum.—Investigation of the sputum for malignant cells has proved of great diagnostic importance. It is essentially an examination to be made by an expert and must not be undertaken within a fortnight of bronchoscopy or any manipulation which leads to desquamation of bronchial epithelium.

SURGICAL TREATMENT

The type of growth has considerable bearing on the duration of the disease and on the possibility of surgical removal. Oat-celled carcinomata with heavy regional metastasis are not suitable for excision, and few victims survive for any length of time. Squamous-celled tumours which produce early atelectasis are often localised and removable. A peripheral adenocarcinoma, which in our experience is uncommon, may be anatomically suitable for excision. The presence of secondary infection in the lung clearly adds to the hazards but does not preclude surgery.

It is generally admitted that the only hope of successful treatment lies in radical surgery. Radiotherapy has been disappointing in its long-term results, though sometimes it has been palliative. The possibilities of combined surgery and radiotherapy have not been fully explored.

Operation consists of dissection pneumonectomy, in which the lung and glands are excised after the individual elements of the hilum have been secured. Occasionally the excision may be confined to a lobe when the general condition does not permit of the more radical operation. The procedure was in the experimental stages ten years ago, but in the last six or seven years the work of the thoracic team has produced results which, as regards the actual operation, can be considered satisfactory. In our last 53 cases there was only 1 death due to operation. Certain types of case which used to be operated on are now excluded—e.g., pleural effusion, obvious glandular involvement, infiltration of the mediastinum and phrenic and vagus nerves, and extension into diaphragm and chest wall. These complications are not absolute contra-indications to operation, but they make its success doubtful.

The proportion of patients with pulmonary cancer suitable for radical surgery is depressingly low. Only a few are referred to the surgeon, and the figures of Brock (1943) and of Tudor Edwards (1946) show that only a few of these are operated on. Out of 224 patients Brock only found 40 suitable for consideration; out of the 36 treated, excision was only practicable in a half. In other words pneumonectomy was performed in 8% of the total. The current figure is, however, almost double this (Brock 1947). Tudor Edwards recorded 70 pneumonectomies and lobectomies out of 1016 patients seen.

In our series the chest was opened in 246 cases, and the growth excised in 130.

PNEUMONECTOMY: 122 cases

Deaths		*Survivals*	
Within 6 weeks ..	18	6 months to 1 yr.	14
6 weeks to 6 months ..	24	1–2 yr.	23
6 months to 1 yr. ..	11	2–3 yr.	5
1–2 yr.	8	3–4 yr.	5
2–3 yr.	4	4–5 yr.	4
3–4 yr.	1	5–6 yr.	2
		6–7 yr.	2
		7–8 yr.	1
	66		56

LOBECTOMY: 8 cases

Deaths		*Survivals*	
Within 1 yr.	3	1–2 yr.	1
1–3 yr.	2	2–3 yr.	1
		3–4 yr.	1
	5		3

THORACOTOMY: 116 cases (excision not practicable)

The limits of age at the time of operation were 28 and 71 years. Of the deaths between six weeks and two years after operation, 3 were occasioned by suicide, 3 from established coronary disease, 1 from accident, and 3 from incidental causes—i.e., 10 out of 47 in these groups died from causes unconnected with the original disease.

As a result of operation 19 patients died, 18 (15%) after pneumonectomy and 1 after lobectomy. These figures include deaths not only directly after operation but also up to six weeks after. The causes of early death included shock, hæmorrhage, heart-failure, and air embolism, but the chief danger lay in bronchial fistula and pleural infection. This complication, though not necessarily lethal, throws a considerable strain on the patient and causes protracted disability. Most of the patients who died from six weeks to six months after operation had developed metastases, some probably unrecognised at the time of operation, others from imperfect removal, or very rapid recurrence, of the tumour.

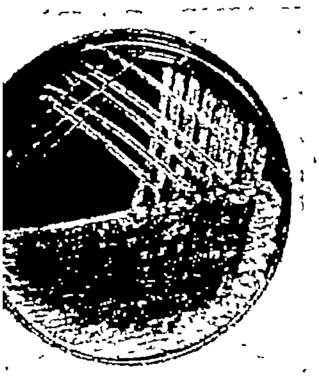
The technical problem of effective bronchial closure has been the biggest difficulty and, in spite of considerable recent improvements, has not yet been solved. Carefully placed sutures, penicillin, and pleural and intercostal muscle-grafts now maintain permanent closure in most cases. Penicillin has proved of inestimable value in controlling pleural infections.

The assessment for operation requires the most careful consideration. The respiratory and cardiovascular systems must be capable of withstanding the strain of a severe operation, and routine measurement of the vital capacity and pulse pressure should be made. Any deficiency in the hæmoglobin content should be restored by blood-transfusions before operation is undertaken. A preliminary pneumothorax may give information about the extent of pleural adhesions and, if it produces an efficient collapse, gives some idea of the ventilating capacity of the opposite lung.

The importance of having an experienced anæsthetist cannot be over-emphasised. Blood-transfusions are always given during the operation. The technique of pneumonectomy has been described on various occasions, and the methods used in this series showed no special variations. In 6 cases the pericardium was partially excised, and in 5 cases a wide section of chest wall was removed, to ensure adequate removal of the growth.

POSTOPERATIVE COURSE

The main feature in the postoperative course is the behaviour of the vacant space left after the pneumonectomy. In the absence of infection the space is slowly obliterated in a few months with an increasing deposit of fibrin over the walls. Pleural infection is often controlled with penicillin; but, if a large bronchial fistula develops, drainage will become necessary, with the result that closure is indefinitely delayed. Later a limited thoracoplasty may sometimes be used to obliterate the space.


l—Bacterial growth from unboiled collecting-bowl.

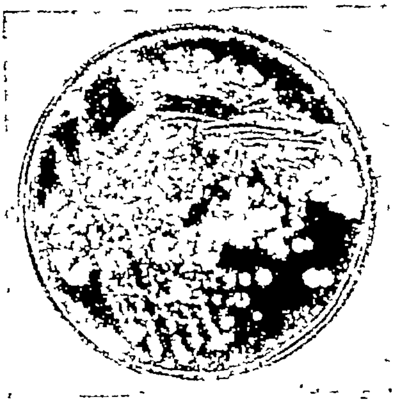


Fig. 2—Bacterial growth from unboiled breast-pump.

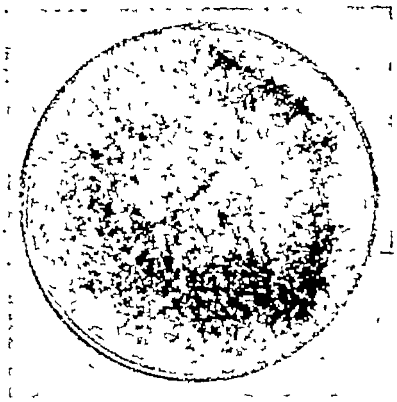


Fig. 3—Bacterial growth of human milk collected by clean technique.

h a few exceptions, the samples were taken by the n ward technique. Not all the samples came from rent mothers, as some mothers had their milk tested e than once. Aerobic cultures from 95 samples were le on blood-agar plates incubated at 37°C for 24–48 rs ; anaerobic cultures from 30 samples were made on d-agar plates and/or cooked-meat broth subcultured, r 48 hours' incubation, on to blood-agar plates. erobic plates were incubated at 37°C for 48–72 hours. results are shown in table III.

BLE III—BACTERIAL FLORA OF HUMAN-MILK SAMPLES

Bacterial flora	Aerobic culture	Anaerobic culture
rococcus :		
npigmented	73	24
ellow	11	5
olden	7	2
ph. aureus (coagulase-positive)	18	8
eptococcus :		
lpha-hæmolytic	20	10
on-hæmolytic	28	10
htheroid bacillus	8	4
obic spore-bearing bacillus	5	0
liform bacillus	0	2
isseria catarrhalis	0	1
vobacterium	1	0
nilia	1	0
rcina	2	1
ctobacillus	0	1
identified	1	0
Total no. of samples examined	95	30

icrococci

Thirty-one strains of micrococci from human milk were bjected to the tests (pigment formation, gelatin liquefaction, duction of nitrates, and utilisation of ammonium phosphate) ed by Hucker (1928) in his classification of the micro- cci. According to this scheme, 15 were *Micrococcus casei*, *M. candidus*, 4 *M. aurantiacus*, 1 *M. conglomeratus*, and *M. ureæ-freudenreichii*.

Lipolysis by micrococci may have a bearing on the splitting fats in raw human milk during storage. Thirty-three rains of micrococci were tested for their lipolytic activity growing them on 1% tributyrin-agar for 24 hours at 37°C. xcept one unpigmented strain, all showed a clear zone of olysis round their colonies. Twelve strains were grown on uman-cream-agar, and all, except one yellow strain, showed olytic action.

aph. aureus

Table III shows that, of 95 milk samples, 18 contained *Staph. urcus* (coagulase-positive), an incidence considerably lower than the 92% found by Duncan and Walker (1942), who collected their samples by expressing drops of milk on to sterile swabs, whereas in the present investigation the milk was collected in amounts rarely less than 20 ml. These larger volumes would ensure a thorough washing out of the nipple ducts ; further, staphylococci, if scanty, might be diluted to the point of absence in one loopful. When samples were collected by the method of Duncan and Walker, 8 out of 10 produced *Staph. aureus* (coagulase-positive). Six out of eight pooled samples of human milk collected by nurses using a clean ward technique produced this organism.

When considering the safety of pooled human milk collected by nurses in maternity wards, it would be safe to assume that a high percentage will contain coagulase-positive staphylococci ; it is unlikely that the comparatively low figure shown in table III would be maintained where milk is collected routinely every three to four hours.

Streptococci

Fifteen strains of alpha-hæmolytic streptococci were investigated. All were heat-sensitive (at 60°C for 30 min.) ; fermented glucose, lactose, sucrose, and maltose ; and produced acid, or acid and clot, in litmus milk. None of the strains grew at 45°C ; reduced methylene-blue in milk ; liquefied gelatin ; split æsculin ; hydrolysed sodium hippurate ; fermented inulin, mannite, sorbite, or xylose ; or grew mucoid colonies of *Strep. salivarius* (Niven et al. 1941) on sucrose-agar. Three strains fermented trehalose, five raffinose, and seven salicin. Six of the fifteen strains reacted with group-G serum (one cross-reacted with group-E serum), three reacted with group-H serum (two cross-reacted with group-D and group-K sera, and one with group-K only), and one reacted with group-D, group-H, and group-K sera ; the remaining five strains did not react with sera from group A to group M.

In the early stages of the work limited tests were made on twenty-one strains of streptococci. Eleven strains were non-hæmolytic on horse-blood agar ; four of these were heat-resistant and grew on MacConkey's medium, and two of the four fermented mannite. The remaining ten strains were alpha-hæmolytic. One of these was heat-resistant, grew on MacConkey's medium, and fermented mannite. The other nine were heat-resistant.

Coliform Bacilli

Seven strains of gram-negative coliform bacilli were investigated. Five of these were *Bact. alcaligenes* and two *Bact. aerogenes*.

Samples of human milk collected in a clean manner contained bacteria commonly found on the skin or in the upper respiratory tract and showed little evidence of fæcal contaminants. In samples collected into unboiled vessels, on the other hand, coliform bacilli (*Bact. coli*, *Bact. aerogenes*, and *Bact. alcaligenes*) were often numerous.

DISCUSSION

With the current methods of collecting human milk in maternity hospitals the danger of spreading infection between and among mothers, infants, and staff is too obvious to require elaboration. The risk of spread of

Collecting-bowls

The inner surfaces of six unboiled bowls in use in the wards were swabbed with dry or broth-moistened swabs. These were spread on blood-agar plates, which were incubated aerobically for 24 hours at 37°C. All six bowls examined in this way yielded a heavy bacterial growth. In two cases a "sweep" of the growth was examined microscopically and showed abundant gram-positive cocci and gram-negative coliform bacilli. Fig. 1 shows the growth on a plate spread with a swab dipped into the milk in an unboiled bowl standing ready for use in the ward.

Breast-pumps

In hospital A the Toronto breast-pump was used. This is a heat-resistant glass flask with curved neck and a side-arm for connexion by rubber tubing with a rubber bulb. Swabs of the inner surfaces of three unboiled pumps ready for use in the wards yielded a confluent foul-smelling growth when plated on blood-agar and incubated aerobically for 24 hours at 37°C (fig. 2).

One defect of the Toronto breast-pump is that, by suction and by gravity, milk is sucked back into the rubber bulb; bacteria multiply in the bulb and are forced back into the glass flask at its next use. Milk squeezed from the rubber connexion of a breast-pump on to a blood-agar plate produced numerous *non-hæmolytic streptococci and some micrococci.*

In hospital C a breast-pump fixed to its rubber bulb was used. It could not easily be sterilised and was therefore obviously unsuitable for use in maternity wards. Two samples of milk collected with this type of pump had bacterial counts of 1,730,000 and 2,960,000 per 1 ml.

Mothers' Hands

Fingers of ten mothers were swabbed immediately after manual expression; they yielded a heavy bacterial growth in seven instances and a scanty growth in three.

Nipples

One nipple of each of five mothers was swabbed before and after breast-feeding. The swabs were spread on blood-agar plates (incubated aerobically for 24 hours at 37°C), and a note was made of the amount of bacterial growth yielded by swabs taken before and after breast-feeding, and of any flora added to the nipple during the feed. Non-hæmolytic streptococci were apparently added during breast-feeding to four of the five nipples, and *Staph. aureus* (coagulase-positive) to two. In three instances bacterial growth from the nipple swabs was less after breast-feeding than before; in one it was heavier and in another unchanged.

Droplets

Since the mothers did not wear face-masks during manual expression, droplets emitted through talking or coughing over collecting-bowls were a possible source of milk contamination. Bacteriological observations were not considered necessary on this point.

Dust

Mothers were usually in bed when expressing their milk; hence dust contamination by blankets and garments could not be avoided. Milk after expression was further exposed to dust as it stood in the uncovered bowls awaiting collection by a nurse.

Towels and Face-cloths

During manual expression mothers were apt to use their towels and face-cloths for mopping milk from their breasts and hands. Soiled towels were therefore a possible source of contamination, as a liberal supply of clean towels was not available during the war.

A CLEAN AND PRACTICABLE METHOD OF COLLECTING MILK

The need for improvement in methods of collecting milk was obvious, and the following method, simple enough to be practised under conditions of shortage of staff and materials, was worked out by Sister E. M. C. Edwards.

Collecting-bowls

Bowls are boiled in the ward steriliser before each use. They are then stacked one in another until required for use, and a cover is placed over the top one.

Breast-pumps

The glass flasks and rubber connexions of the Toronto breast-pumps are boiled in the ward steriliser before each use.

Hands

Mothers are provided with bowls of water for washing their hands before breast-feeding and again before the withdrawal of milk. Nurses are instructed to wash their hands before touching a mother's breasts.

Nipples

A no-touch technique is used. Before mothers start breast-feeding, the nurse in attendance cleanses each mother's nipples and areolæ with sterile water and sterile cotton-wool held in boiled forceps. With her forceps she then places a piece of sterile gauze over each nipple. The gauze is held in place by the mother's brassière until she starts feeding from the breast. The whole procedure is repeated for each mother when she has finished feeding her baby and therefore before she starts expression or pumping.

Face-masks

Any mother with an infection of the upper respiratory tract wears an impermeable mask during breast-feeding and withdrawal of milk.

Towels and Face-cloths

Mothers are instructed to bring two towels into hospital with them. One is for general purposes, and the other is reserved for the breasts and hands during breast-feeding and withdrawal of milk. (Normally a liberal supply of clean towels would be provided by the hospital, but at the time of the investigation this was impossible.) The use of face-cloths during the withdrawal of milk is not permitted.

Heat Treatment

All the milk is brought to the boil immediately after collection.

Twelve milk samples collected in hospitals A and B into boiled bowls (without hand or nipple cleansing) had bacterial counts ranging from 120 to 100,000 (mean 13,330) per 1 ml. This striking reduction from the high counts, running into millions per ml., when unboiled bowls were used indicated that the main source of milk contamination lay in dirty vessels.

Similar reductions in bacterial counts resulted from the boiling of breast-pumps. Seven samples of milk collected in unboiled pumps had counts ranging from 530,000 to 3,000,000 (mean 1,440,000) per 1 ml., whereas six samples from boiled pumps had counts ranging from 1000 to 24,000 (mean 10,700) per 1 ml.

Of thirty milk samples collected by the clean technique described above—i.e., including hand washing and nipple cleansing—bacterial counts ranged from 70 to 39,000 (mean 8600) per 1 ml. Fig. 3 shows a typical blood-agar plate spread with a loopful of raw milk collected by the clean ward technique and incubated aerobically for twenty-four hours at 37°C.

HEAT TREATMENT OF HUMAN MILK

Three methods of heat treatment of human milk were tested—holder pasteurisation at 63–65°C for 30 min.; high-temperature flash pasteurisation at 80°C; and boiling.

Holder pasteurisation reduced the bacterial counts of thirty-four milk samples, ranging from 70 to 37,000 (mean 9200) per 1 ml., by 99·9%. The seven surviving bacteria were four aerobic spore-bearing bacilli and three unpigmented micrococci. The method is impracticable for ward use, because a heat-controlled water-bath is required for holding milk at the correct temperature.

High-temperature pasteurisation in a saucepan, with a guarded thermometer, gave less satisfactory reductions of bacterial counts than did the holder method.

After pasteurisation by either method, rapid cooling of the milk is required; without special equipment this is impracticable in wards. An added difficulty in ward pasteurisation is that the procedure of heating, cooling, and bottling milk, when repeated five or six times daily, takes too much of the ward sister's time.

Bringing the milk to the boil in a lidded saucepan is the most satisfactory method of heat treatment of milk in wards. A thermometer is not required, and, owing to the almost complete sterility of the milk, slow cooling can safely be allowed.

BACTERIAL FLORA OF HUMAN MILK

The bacterial flora of 85 individual and 10 pooled samples of milk from hospitals A and B were investigated.

denly at a time when the patient felt himself to be victim of grave injustice. In each case there was a scious attitude of "ability" or "having deserved l." As soon as the facts were elicited, a discussion ued in which the relationship between the skin dition and the past emotion was indicated.

At first I attempted to achieve all this in one interw. The effect, however, was rarely satisfactory. st patients became uneasy and took the discussion lly. Some ultimately did well, but most never came k. In the latter cases, where the consequences became own to me, I discovered that my precipitate probing d provoked an aggravation of the skin lesion. It came apparent therefore that, in bringing back to e patient's conscious mind half-forgotten wrongs, his otions relating to past injustice were kindled afresh, d that an alarming exacerbation of dermatitis was ble to follow. Premature discussion clearly not only ded to the patient's discomfort but was likely to terrupt treatment.

Case 2.—A male school-teacher, aged 60, had dermatitis the left leg below the knee. Five years earlier an eruption d appeared in the lumbar region and rapidly spread over e trunk and limbs. The axillæ and scrotal regions had been fected most severely. There had been redness, oozing, aling, and intolerable itching. He had been confined to d for months, and for nine months had not been able to llow his employment.

Since the onset he had never been quite free from the erupon; at no time had there been a smaller area involved than hen I first saw him. He blamed a woollen belt for his condion. However, he had worn this and similar belts for many ears previously because of "lumbago." He had been tended by many doctors, chiefly dermatologists.

Life Situation.—His wife and four children were all in good ealth. For over thirty years he had been teaching in a wellnown school, and he had been very keen to obtain a headastership; but invariably his application for the coveted ost had been passed over, simply because (he said) his subject as science and not classics, English, or mathematics. It is a ule with the education authority that no application for eadmastership is likely to be entertained if the applicant s over 55 years of age. During the month before his reaching he critical age two headmasterships had become vacant, but gain he had been disappointed. The eruption had appeared few days after his birthday and rapidly covered him from the rown of his head to the soles of his feet.

Treatment.—At his first interview the elicitation of the above tory was followed by a full discussion. But the first interview was also the last—he did not come back. I learnt that within few days of the interview the dermatitis had become almost s widespread and severe as it was at its worst five years earlier.

Further experience showed that the mere outpouring of the essential features of a life story in relation to the onset of dermatitis might exacerbate the condition, even when care was taken not to discuss their significance. As successful treatment depends on the capacity of the patient to face his past tragedy and yet no longer to feel under a sense of injustice, the problem is by no means easy. Success in treatment requires as a preliminary the establishment of a good transference during the first one or two consultations by making a most complete general physical examination coupled with a careful inquiry into all symptoms of any kind. Then the life situation before the onset may be discussed, and, at the next sitting, the relationship between emotion and skin. Finally, if possible, a solution of some practical kind must be put forward for discussion.

Case 3.—A factory manager, aged 44, had had dermatitis herpetiformis for two years. The eruption was well marked, especially over the trunk, showing the typical appearances of erythema, vesicles, bullæ (many of them dry, like a two-weekold vaccination scab), and scaling.

Six years earlier he had had itching of the skin; this had become worse in the next four years, but an eruption had not appeared until two years ago. The hands and arms had been first affected, but soon the whole body had been covered. Six months after the onset of the rash his doctor had referred him to a dermatologist, whom he had attended until now. The appearance of the eruption was much as it had been eighteen months ago.

Life Situation.—He had entered his present employment many years ago as manager. Some years later he had married the owner's daughter. The administration of the business had been carried out jointly by the owner and the manager in perfect harmony. The owner had led him to believe that, on his retirement, the patient would have an opportunity of buying the business for £10,000. But the owner, just when about to retire, had died suddenly, a little over six years ago. His son (patient's brother-in-law), who had not hitherto been associated with the business, had decided to take over control. He knew little or nothing about running the business, and the administration had remained in the hands of the patient. However, the new owner had given him no credit for any successful transactions but had invariably found fault with him over trifles.

Two years ago the patient had discovered that the business was being advertised for sale. When he had reminded the owner that he had been promised an opportunity of buying at an advantageous figure he had been laughed at. The business had been sold to an outsider about eighteen months ago for £20,000, a sum considerably in excess of what the patient could raise or believed it to be worth. He had been retained in his previous position of manager but with less authority and with a smaller salary.

Treatment.—I began with a searching physical examination, including scrutiny of the skin, examination of heart, lungs, blood-pressure, reflexes, urine, and sedimentation-rate. At the second consultation his symptoms were noted in great detail. For example, which parts of his body itched most? At what time of day did he suffer greatest discomfort? Did climate or diet affect him? Other symptoms, such as his tendency to nasal catarrh, were studied no less meticulously. These consultations established confidence. At the third consultation the patient felt better, and his skin had notably improved. On this occasion his life situation was elicited, and he confessed to a keen sense of being treated badly ever since the late owner of the business had died six years ago (itching appeared soon after this), and that his sense of injustice had reached a climax two years ago.

Three days later I was called to his home, where he presented a pitiable picture. He was covered with vesicles and complained bitterly of itching and burning. I explained that such a relapse was to be expected as a result of *recall* of disturbing emotional experiences—just as the primary onset of the skin trouble had been provoked by the actual experience. He saw the point and accepted the logical conclusion not only that his present exacerbation was the result of his emotions being stirred but also that cure would follow his ability to escape from the sense of injustice which had burdened him these last six years.

With this realisation he now began to improve; and, when he revisited my consulting-room a month later, there were no fresh vesicles, and he was almost free from itch. He had decided to find employment elsewhere. A month later he told me he had obtained another post and was now entirely free from itch and eruption. I saw him again a year later, when he said he was applying for and hoped to obtain a still better post, that he had had no recurrence of skin disorder, and that he felt better than he had done for years.

EFFECTS OF PHYSICAL IRRITATION

Many of us find that certain areas of skin, notably the backs of the hands, crack and even bleed during a spell of cold frosty weather. However, it is also common experience to find that after a few mild days the skin has regained its normal texture without any treatment whatsoever. The removal of the environmental cause of the disorder is sufficient to bring about cure. It seems curious that, when a patient complains of a skin disorder, accepted as being due to a physical irritant, such as cracks behind the ears which he attributes to the metal frame of his spectacles, the eruption may fail to clear when he ceases to wear the offending glasses, and may spread over large areas of skin.

Case 4.—A theatre manager, aged 40, complained of four weeks' irritation, followed by cracks, behind both ears. The cracks looked like streptococcal fissures. He attributed the cutaneous lesion to his metal spectacle frames but admitted epidemic neonatal diarrhœa owing to laxity in handling milk was emphasised by Sakula (1943); some of the infants affected in his ward were fed on additional bottle feeds of human milk. Since mastitis is not uncommon among nursing mothers, the possibility of staphylococci being carried from one mother's breast to another's by unboiled collecting-bowls and breast-pumps must be borne in mind. Storing raw milk at room temperature for infant feeds is a dangerous practice; *Staph. aureus*, some strains of which produce enterotoxin, is prevalent in maternity hospitals and may unwittingly be contributed in large numbers to a human-milk pool by a donor with unrecognised mastitis. Growth of staphylococci, if allowed to occur, may produce a "toxic" milk for infants fed by bottle.

It is recommended that maternity hospitals should overhaul their methods of collecting human milk and pay particular attention to the boiling of all collecting-vessels; breast-pumps which cannot readily be sterilised should be replaced by more hygienic types, human milk should be boiled *immediately* after collection, and refrigerators should be supplied for its storage.

SUMMARY

Human milk collected by methods current in maternity hospitals had bacterial counts ranging from 3700 to more than 8,000,000 (mean, more than 2,230,000) per 1 ml. In some wards pooled raw human milk was stored at room temperature and used without heat treatment for infant feeding.

Human milk collected with strict precautions by direct spray into autoclaved bottles had bacterial counts ranging from 0 to 2500 (mean 298) per 1 ml.

Contamination of human milk was mainly due to unboiled collecting-bowls and breast-pumps. The introduction of boiled collecting-vessels, without other precautions, reduced the mean bacterial count by 99·3%.

A clean and practicable method of collecting human milk in maternity units is described. Bacterial counts of thirty milk samples collected in this way ranged from 70 to 39,000 (mean 8600) per 1 ml.

Heat treatment of human milk by holder and by high-temperature flash pasteurisation was tested. A reduction of the mean bacterial count by 99·9% was effected in thirty-four milk samples pasteurised by the holder method. High-temperature flash pasteurisation (80°C) was less effective in reducing the bacterial count. Both methods were considered impracticable for routine ward use, mainly owing to the difficulty of correct temperature regulation and of rapid cooling. Bringing the milk to the boil was considered the quickest and safest method of heat treatment in wards. Emphasis is laid on the importance of heat treatment of milk *immediately* after collection.

Micrococci were the bacteria most commonly found in human-milk samples collected in a clean manner, followed closely by non-hæmolytic and alpha-hæmolytic streptococci. *Staph. aureus* (coagulase-positive) was found in 18 of 95 samples examined. Milk collected in unboiled vessels often contained coliform bacilli (*Bact. coli*, *Bact. aerogenes*, and *Bact. alcaligenes*).

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EMOTIONAL ASPECTS OF SKIN DISEASE

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M.D. Glasg.

Halliday[1] in 1944 noted a common factor in the emotional life of a series of middle-aged men who, for the first time, had suddenly contracted widespread dermatitis which was particularly resistant to treatment. The patients were upright good-living men keenly conscious of their own virtue and rectitude; the onset of the skin eruption followed closely some disaster; and the patients felt that their misfortunes were undeserved, that other men less righteous had escaped such a catastrophe, and they laboured under an acute sense of injustice. Halliday recalled an observation made thousands of years ago and labelled the condition "Job's dermatitis."

This association of ideas—Job and dermatitis—was brought to memory when I encountered the following case.

Case 1.—A Jewish storekeeper, aged 66, had had extensive "eczema" for three years. Almost the whole of his skin had been involved at one time or another. The onset had been sudden, and the dermatitis had spread rapidly, accompanied by intolerable itching. In the first year he had consulted his family doctor and three or four dermatologists. In the past two years he had attended weekly at an outpatient department.

Life Situation.—He was living alone in a single apartment. Twenty-five years ago, at the age of 41, he had married a beautiful girl aged 17, an orphan without dowry. Five months after the marriage she had given birth to a daughter—not his child. He had forgiven her and brought the child up as his own. He had lavished kindness and money on both wife and daughter.

He had been successful in business and owned two retail shops besides having an interest in a wholesale establishment. Except for a few hundred pounds, he had placed all his assets, including his business, in his wife's name. Five years ago, when he was 61, she, then aged 37, had formed an attachment with another man, dispossessed her husband of his entire fortune, and sacked him from his own business. Litigation had followed and dragged on for two years. His capital had been exhausted, which had prevented him from contesting the matter further. At this point his skin eruption had made its first appearance.

As he related his story, he repeatedly emphasised his goodness to his wife and the rectitude of his past life. He seemed also to link his past business and material success with his righteous way of living.

Treatment.—In the course of discussion I said to him, "You will no doubt have heard of Job?" He replied, "Doctor, I was born and brought up in Russia. I knew the book of Job almost by heart before I was 14 years old." I said, "Then you will remember that he was the most prosperous man in the land, and that he regarded his great wealth as no more than a just reward for his righteousness? And you will remember how thieves and robbers stole his flocks and herds and burned his crops, and how a whirlwind destroyed his seven sons and three daughters. You will remember also how his soul was torn in pieces. It was beyond his comprehension how such disaster could befall a man so good as he, who believed the tally of his riches was the measure of his righteousness. You will remember what happened to him. His body itched and oozed intolerably. So has yours."

He was greatly moved and said nothing for a few minutes. Then with tears in his eyes he informed me that I was the first person to give him some inkling into the real nature of his trouble.

After this initial interview there was a severe exacerbation of the dermatitis, followed by gradual improvement, until six weeks later the skin became normal. There has been no recurrence, though he has complained of itch from time to time.

INITIAL EXACERBATION AS RESPONSE TO PSYCHOLOGICAL APPROACH

During the next few years I saw several patients in middle or late life in whom dermatitis had appeared sions draws one to the conclusion that, when a patient obsessed with a sense of injustice, resentment, and lf-pity, changes in the skin sometimes take place. A ime comes when irritants, such as flannel binders, pectacle frames, oil, flour, sugar, or a new fur, may ppear to be the last straw to break the camel's back. Iow partial is the importance of these things in the tiology of the dermatitis is shown by the fact that the emoval of the alleged irritant is not followed by melioration of the dermatitis. Indeed one surmises that, no irritant had been applied, the skin would soon have rupted spontaneously.

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[1] Halliday, J. L *Practitioner*, 1944, **152**, 6.

In treating such cases it would of course be a mistake o suppose that the patient is ill because he tried to be l, or that a desire to be better will rid him of the illness. he doctor will do him no good by adopting an aggressive ttitude, by displaying exasperation, or by employing uggestion. The technique of treatment should be amed at extirpating "a sense of injustice" from the atient's emotional life.

SUMMARY

Patients with intractable dermatitis may sometimes e found to labour under a deep sense of grievance. nquiry into the emotional difficulties associated with the nset of the dermatitis may cause an acute exacerbation. On the other hand, when these difficulties are resolved r even when the patient is given insight into them, he dermatitis may rapidly clear.

Often industrial dermatitis cannot be satisfactorily xplained by the action of the irritant substances to which the skin is exposed. The underlying cause may be n emotional disturbance.

EFFECT OF MASS OF INOCULUM ON VIRULENCE OF BACTERIA

INJECTED INTRAPERITONEALLY IN MICE

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THE induction of infection by the intraperitoneal oute in mice is a common laboratory practice. I wish o draw attention to a technical point in it that may be ignificant in the comparison of results obtained by lifferent workers using the same strain of a pathogenic rganism. No claim is made for the originality of these bservations.

Albino mice weighing 18–20 g. were used, and all injections vere made with 1 ml. tuberculin-type syringes. For the nthrax experiments, diluted samples of a stock concentrated pore suspension fully lysed were used. In every experiment sample of the material injected into the mice was counted y the method of Miles et al.[1] The infected mice were housed ingly or in pairs in small metal boxes, and deaths were ecorded daily. A blood-smear was prepared from all dead nimals.

For the experiments with the staphylococci, a strain pathogenic to mice was obtained from Dr. M. A. Jennings, of Oxford. The mice were infected with 18-hour cultures in ryptic meat-broth or with suspensions in distilled water repared from growths on tryptic meat-agar and standardised n the Brown opacity scale.

EXPERIMENTS AND RESULTS

A series of mice were infected by the intraperitoneal njection of the same number of anthrax spores suspended n different volumes of distilled water. The results table I) show that the death-rates among the groups f mice receiving the same numbers of spores rose as the olume of the inoculum was increased from 0·1 ml. per mouse to 1 ml. The same experiments were repeated with the anthrax spores suspended in saline (0·85% sodium chloride) instead of distilled water. The results (table II) show that with saline an increase of the mass of the inoculum was without significant effect in raising the mortality.

TABLE I—EFFECT ON MORTALITY AMONG MICE OF INCREASING VOLUME OF DISTILLED WATER IN WHICH A GIVEN NUMBER OF ANTHRAX SPORES ARE INJECTED INTRAPERITONEALLY

Volume of distilled water (ml.)	Average no. of spores per dose					
	30		300		3000	
	No. tested	Mortality (%)	No. tested	Mortality (%)	No. tested	Mortality (%)
0·1	30	*21*	30	*53*	30	*90*
0·25	40	*30*	40	*77*	10	*100*
0·5	110	*72*	110	*97*	100	*100*
1·0	30	*90*	10	*90*	..	..

In a preliminary attempt to investigate the mechanism of this action of distilled water, groups of mice were infected with anthrax spores suspended in 0·1 ml. of distilled water. At different intervals before and after receiving the spores, the mice were given an intraperitoneal injection of 1 ml. of distilled water. The results (table III) show that the death-rate among mice receiving the additional 1 ml. of water is only increased above those receiving the 0·1 ml. of spore suspension alone when the distilled water is administered within two hours either before or after the injection of the spores. The lower death-rate among mice receiving the distilled water twenty-four hours before the spores may be the result of some mild non-specific irritation enhancing the local tissue defences. Further studies of the mode of action of the distilled water have not been undertaken.

TABLE II—FAILURE TO INCREASE MORTALITY AMONG MICE RECEIVING SAME NUMBER OF ANTHRAX SPORES BY INJECTING SPORES IN GREATER VOLUMES OF NORMAL SALINE

Volume of saline (ml.)	Average no. of spores per dose					
	30		300		3000	
	No tested	Mortality (%)	No. tested	Mortality (%)	No tested	Mortality (%)
0·1	30	*16*	30	*50*	30	*97*
0·25	20	*10*	20	*25*	10	*90*
0·5	70	*17*	70	*43*	70	*91*
1·0	30	*23*	30	*60*	10	*90*

TABLE III—EFFECT ON DEATH-RATE OF MICE RECEIVING ANTHRAX SPORES BY INTRAPERITONEAL INJECTION OF 0·1 ML. OF SUSPENSION WHEN AN ADDITIONAL 1 ML. OF DISTILLED WATER IS INJECTED INTRAPERITONEALLY AT DIFFERENT INTERVALS BEFORE OR AFTER INJECTING THE SPORES

Average no. of spores per dose: 100

Interval between injection of water and injection of anthrax spores	No. tested	No. dying
24 hr. before	30	4 (*13·3%*)
4 „ „	90	13 (*14·4%*)
2 „ „	90	23 (*26·5%*)
1 „ „	70	25 (*37·1%*)
½ „ „	20	11 (*55·0%*)
0 „	120	83 (*69·3%*)
½ „ after	20	9 (*45·0%*)
1 „ „	70	25 (*35·7%*)
2 „ „	100	47 (*47·0%*)
4 „ „	80	24 (*30·0%*)
24 „ „ ..	20	4 (*20·0%*)
No additional distilled water	60	16 (*26·7%*)

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[1] Miles, A. A., Misra, S. S., Irwin, J. O. *J. Hyg., Camb.* 1938, 38, 732.

that these had been worn by him for over ten years without previous trouble.

On my advice he temporarily discarded the spectacles. Ointments containing antiseptics, chiefly sulphathiazole, were applied. The fissures healed but soon reappeared and now seemed resistant to these and various other local remedies. A few weeks later dermatitis appeared on the back of the neck and the face.

Life Situation.—He had married twelve years ago. Before marriage his wife had been a dancing instructress. She had an extreme mother-attachment, and he said that even yet he felt that her mother meant much more to her than he did. Like most such women she was sexually frigid. Her only pregnancy, ten years ago, was terminated because of hyperemesis gravidarum—as might be expected.[2]

He did not usually leave the theatre at night until *10.45*, reaching home about *11.15*. It was his custom to telephone his wife when some untoward happening made it possible for him to come home earlier. About five months before the onset of his illness he went home one night at 9.30 without making the usual telephone call. On going upstairs he found a man, unknown to him, in his wife's bedroom with her. There was no definite evidence of misconduct, but he became obsessed with doubts and suspicions.

He was an uncompromising type of man, with a limited capacity for seeing another's point of view. He adhered to his own principles and standards, judging others by them; nor, having once formed an opinion, did he readily change his mind. Since the bedroom episode his wife and he met only at meal-times and rarely exchanged a word. He maintained a cheerful exterior to his business associates but ruminated unceasingly on his domestic crisis. Providence had been unkind to him. For many years he had endured a wife who was not in love with him and who had now perhaps added infidelity to her failings.

Progress.—Though I knew this man personally and the transference was good, in a day or two he became covered from head to toe with a papulovesicular eruption. After further discussion he agreed that his skin disease was determined by his recent emotions, and that the present state of affairs should be terminated, either by reconciliation with his wife or by a complete break. He took a month's sick leave, which he spent in his native town. After a week he came to a decision and instigated proceedings for a divorce. By the end of his month's holiday he was free from dermatitis. No treatment other than psychological investigation and discussion was used. During the next four months, pending legal hearing and judgment, he had repeated crops of boils, but this affection also came to an end when he was granted a divorce. He has now resumed wearing his spectacles and has remained trouble-free for many months.

INDUSTRIAL DERMATITIS

During the war years there was an increase in the incidence of so-called industrial dermatitis. The vast majority of the cases occurred among munitions-workers, and the oils used in the engineering industry have been blamed for them. Yet it is extraordinary that a person should be able to work with oil for months or even years without discomfort and then should develop dermatitis, which is rarely limited to the parts of the skin which came into contact with the oil. Moreover, if the oil was the sole ætiological factor in the production of the dermatitis, one would expect that withdrawal from the noxious agent would be rapidly followed by spontaneous cure, or at least by obvious improvement. But this never happens. On the contrary, the dermatitis, is liable to drag on for months, to spread all over the body, and to resist external medicaments. During this period the patient becomes anxious about his earning ability, and, besides drawing his weekly compensation, often consults a solicitor with a view to obtaining a capital sum to reimburse him for the damage inflicted on his skin, "because, as everyone knows, the dermatitis may return at a later date."

Case 5.—A male munitions-worker, aged 33, had four months' dermatitis affecting arms, hands, trunk, and legs. He had been attended by one of my assistants for three months, but on his own request was referred to the outpatient dermatological department of a hospital a month ago.

He had been employed for $2^1/_2$ years in an aero-engine factory. There was no previous history of dermatitis. The eruption, at first consisting chiefly of dry red papules but later tending to become vesicular and to weep, appeared originally on the backs of the hands and forearms. He was at once taken from work, but the disease spread all over his body, improving here and becoming worse there. The general severity had remained unchanged over the past three months.

Life Situation.—He had been married ten years and had three children. He was a skilled engineer and ambitious to "get on." His wife and he were well educated, but owing to his small salary had to live in a two-apartment flat, with an outside lavatory, in a poor part of the city. At the time of marriage their names had been placed on the corporation waiting-list for a new house; but, though new houses had been granted to others, they were still waiting.

At the outbreak of war he had been switched to aircraft engines. He had accepted his present job with fairly good grace, though it entailed longer travelling to and fro, night-shifts, and long hours of work, until six months ago, when he found that other men in certain factories were earning much more than he, with less travelling, shorter hours, and no night-shift. When he sought transfer to one of these factories nearer his home, he came up against the Essential Work Order.

Progress.—He admitted that his feelings of being unjustly baulked and frustrated at every turn reached an extreme pitch four or five months ago. When I indicated that his dermatitis appeared precisely at that point of time, and inferred that his emotional state might have been a causal factor, he resented intensely the implication that there was anything psychological about his condition and asserted that he was determined to obtain his rights at last by making the factory pay handsomely for what he was suffering. Next day he complained to my assistant that I was trying to swindle him out of his just and lawful compensation. His heightened sense of injustice was accompanied by such an exacerbation of the dermatitis that my assistant removed him forthwith to the local hospital. However, his wife came to see me later and assured me that a more discontented man than her husband never lived, and that she believed my interpretation of his illness to be correct.

After a few weeks he was discharged from hospital, but the skin condition dragged on for months much as it had been in the earlier stages. Eventually he received a sum of money in compensation. This was followed by steady improvement. Soon afterwards the authorities permitted him to enter the factory of his choice. Within a week the last vestige of dermatitis disappeared. He has continued to work there for the past eighteen months and has kept completely free from skin eruption though, I believe, the composition of the oil used in this factory differs in no way from the oil used by his previous employers.

Case 6.—A single woman contracted erysipelas of the face three times, had a crop of boils, and finally was affected with dermatitis involving the trunk and inner thighs. The hypersensitivity of her skin began after a junior worker was promoted over her head to the position of forewoman.

Case 7.—A single woman, working in a tobacco factory, contracted dermatitis of the hands. She had worked with tobacco for five years without trouble. Her forewoman had taken a fancy to her and asked her to accompany her to dances and places of entertainment in the evenings. She disliked the forewoman and stalled the invitations. When the forewoman grasped the situation she made the girl's life a misery. Unpleasant jobs were given her, and fault was found with everything she did. When later she was transferred to another department (in the same factory and handling tobacco as before) the skin cleared in a few days.

Case 8.—A man cut his leg accidentally in a shipyard. The cut showed no sign of healing. Dermatitis appeared round the wound and commenced spreading up the leg. He had been taken from his own work and sent to a shipyard two months ago. He could see no reason for the change other than the tendency of the labour exchange to delight in expressing authority by forcing round pegs (and good hickory pegs too) into square holes. Incapacity continued for some months, but wound and dermatitis healed in a very short time when it was made known to him that pressure had been brought to bear on the directors of labour, and that he was to return to his old peace-time job.

A survey of the life situation and underlying emotions of patients afflicted with dermatitis and many other skin

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[2] See Robertson, G. G. *Lancet*, 1946, ii, 336.

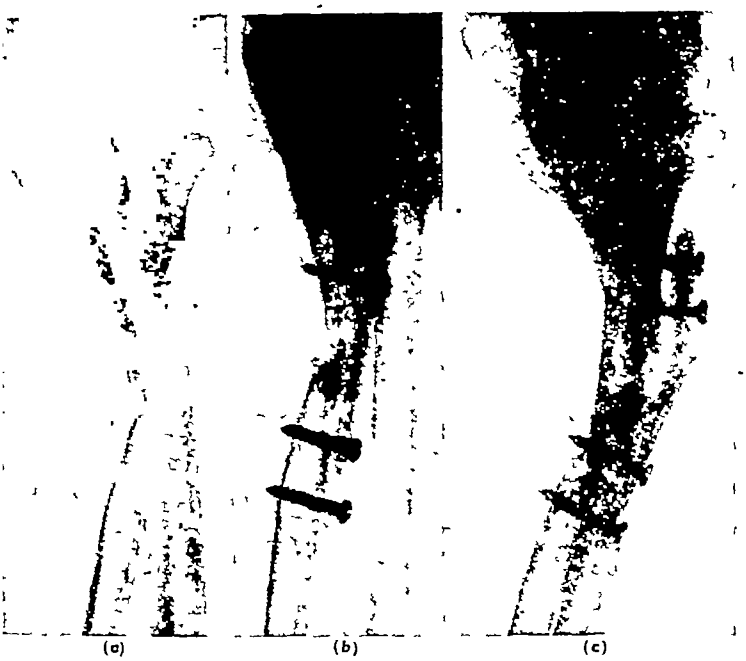

Fig. 1 (case 3)—(a) On admission 2 years after fracture. (b) After onlay grafting. (c) 3 months later: the graft has been applied under a strain and has fractured.

ntroduction of dead material into the wound) further equestrectomies may become necessary, greatly prolonging the time of disability. Grafting with cortical bone should never be done unless the dangers of introducing infection can be avoided. With old compound fractures, previously infected, penicillin makes operation safe at an earlier date than would have been considered before its use, but even with penicillin at least three months must elapse, after sinuses have healed, before grafting should be done. Failure will always result if there is dead bone at a fracture site, even if the sinus has been long healed. The presence of a sequestrum contra-indicates grafting.

Grafting under Strain

Bone-grafts do not survive a serious bending strain. This fact is more important in some situations than in others, and success depends on the surgeon's realising the danger and so planning his operation as to avoid a strain passing across the graft. This can be done by placing the graft on the correct aspect of the bone, by added protection externally, and if necessary by the use of a bone plate as well as the graft. The most notable example of this particular difficulty is the upper shaft of the ulna. The liability to angulation in fractures in this situation is well known. The ulna usually bows towards the radius, the radius and the lower ulnar fragment falling inwards. Unless the graft is properly placed, or the fracture plated also, the graft will gradually fade away under the strain, angulation will increase, and non-union will persist.

Nutrition of the Graft

This will depend both on the sort of bone that is used for the graft and on the bed in which it lies. We have not found that the removal of periosteum from the graft or the presence or absence of muscles overlying the graft has any appreciable effect. It is of course important that grossly sclerosed bone is not used, and in some tibial fractures a graft from the opposite leg may be more valuable than the usual sliding type. More importance attaches to the bed in which the graft lies. If the graft crosses a gap, or an area of avascular fibrous tissue or sclerosed bone, its revascularisation will be delayed or prevented, and the operation may fail.

The most useful adjunct to cortical grafting in these cases is the use of cancellous bone chips. The chips should be used to fill the cavity beneath the graft after the removal of poorly nourished scar and bone. They may be inserted at a previous operation or at the same time as the cortical grafting.

It should be remembered that the general condition of the patient may affect the nutrition of the graft, the speed of union, and the success of the operation. Case 6 (see below) illustrates this. Age seems to have little effect, but prolonged illness, and such diseases as syphilis, cause delay in the union of fractures whether after grafting or not.

Immobilisation

This must be considered both in fixation of the graft and of the ends of the fractured bone. Success ultimately

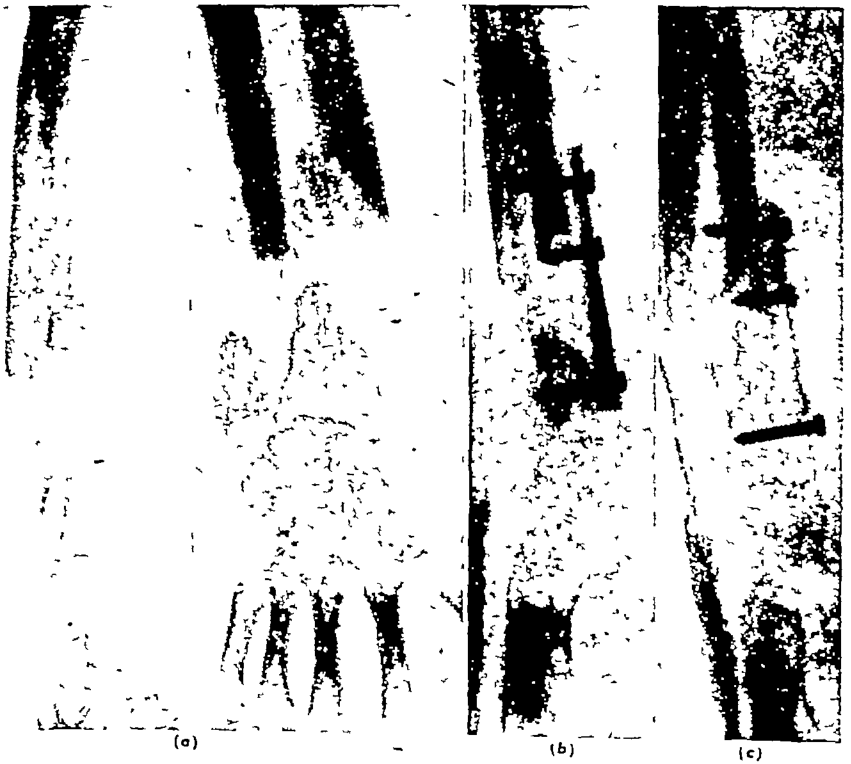

Fig. 2 (case 5)—(a) On admission. (b) After onlay grafting. (c) 4 months later: the nutrition of the graft is inadequate and the graft is fading away.

TABLE IV—EFFECT OF VOLUME OF NUTRIENT BROTH ON DEATH-RATE AMONG MICE INJECTED INTRAPERITONEALLY WITH 18-HOUR CULTURES OF *Staph. aureus*

Culture fluid injected (ml.)	No. tested	No. dying
Undiluted 1·0	74	72 (97·3%)
" 0·1	90	4 (4·5%)
Diluted 1 : 10 1·0	70	59 (84·3%)

A smaller group of experiments were carried out with a strain of *Staph. aureus* pathogenic to mice. The number of organisms needed to kill the mice when injected in 0·1 ml. of distilled water was about 1×10^{10}. The strain was not, therefore, very virulent.

Table IV shows that the virulence of a given number of organisms can be greatly increased by injecting them in 1 ml. of broth rather than in 0·1 ml. of broth. A similar effect was observed by varying the amount of distilled water in which a given number of cocci were injected (table V).

TABLE V—EFFECT ON VIRULENCE OF ADDING DISTILLED WATER TO SUSPENSIONS OF *Staph. aureus* INJECTED INTRAPERITONEALLY INTO MICE

Suspension injected (ml.)	No. tested	No. dying
Opacity 40 (Brown scale) 0·1 ..	14	11 (78·5%)
" 4 " " 0·1 ..	30	1 (3·3%)
ditto plus 1 ml. water ..	24	17 (70·8%)

CONCLUSION

The virulence of a particular organism used for the intraperitoneal infection of mice should be expressed in terms of the mass of the inoculum besides the number of viable organisms. The effect on the activity of antibiotics by the enhancement of virulence as a result of increasing the mass of the inoculum seems to be worthy of attention.

I wish to thank Dr. D. W. Henderson, chief superintendent, Microbiological Research Department, Porton, for his help and advice, and the Chief Scientist, Ministry of Supply, for permission to publish.

FOLIC ACID IN MEGALOBLASTIC ANÆMIA AFTER TOTAL GASTRECTOMY

REPORT OF A CASE

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FOLIC acid has been shown to be effective in the treatment of pernicious anæmia, nutritional macrocytic anæmias, and the megaloblastic anæmias associated with sprue. The response of megaloblastic anæmia following gastrectomy to folic acid treatment has been described in America,[1] but the cases are so rare, and the data on them of such theoretical importance, that it may be of interest to record a further case.

A commercial artist, aged 42, was admitted to University College Hospital on July 19, 1946, with three months' history of lassitude. In July, 1943, his stomach had been resected from 3 in. above the cardia to the second part of the duodenum by Prof. R. Pilcher for lymphosarcoma. His diet had been adequate in all respects.

On examination patient was a little pale but not icteric. Tongue and nails normal. Spleen not palpable. Abdomen showed a midline supra-umbilical scar. No evidence of recurrence of tumour. Central nervous system showed evidence of subacute combined degeneration of the cord of peripheral neuritis.

Blood: Hb 72%, red cells 3,280,000 per c.mm., cell diameter 8·3 μ, mean cell volume 100·6 c.μ, mean puscular Hb concentration 30·1%; reticulocytes 0·5%, cells 4500 per c.mm. (polymorphs 70%, lymphocytes monocytes 2%).

Bone-marrow megaloblastic (July 12, 1946).

Van den Bergh reaction showed an indirect positive, 0·8 bilirubin per 100 ml.

Fractional test-meal showed a histamine-fast achlorhydria.

Stools: six specimens examined for occult blood negative.

Radiography: no evidence of secondary deposits in skeleton and barium meal showed no recurrence of lymphosarcoma.

No detectable porphyrins in blood and urine.

Treatment and Progress.—A course of folic acid 10 m intramuscularly every 24 hours was begun on July 23. There had been no reticulocyte crisis on the eighth day when the dosage of folic acid was doubled, and the reticulocyte count rose to 4·2% and thereafter subsided.

On August 6 blood examination showed Hb 90%, red cells *3,500,000* per *c.mm.*, mean *cell diameter 8·2 μ*, mean c volume 100 c.μ, mean corpuscular Hb concentration 33 At this time (the fourteenth day) the marrow was wholly normoblastic. At this stage folic acid was discontinued and patient then received 'Hepolon' 4 c.cm. on alternate days.

On discharge from hospital on August 26 his Hb was 90%, red cells 4,260,000 per c.mm., mean cell diameter 8·0 μ, mean cell volume 100 c.μ, mean corpuscular Hb concentration 29%.

Though there was not a large reticulocyte response in this case, the replacement of a definitely megaloblastic by a normoblastic marrow when folic acid was exhibited shows the drug to have been hæmopoietically effective.

We wish to thank the Lederle Laboratories Ltd. for their generous supply of folic acid through Cyanamide Products Ltd.

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[1] Bethell, F. H., Swendseid, M. E., Bird, O. D., Meyers, M. C., Andrews, G. A., Brown R. A. *Univ. Hosp. Bull. Ann Arbor*, 1946, 12, 42.

FAILURES IN CORTICAL BONE-GRAFTING

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FORMERLY SURGEONS TO AN E.M.S. ORTHOPÆDIC CENTRE

BONE-GRAFTING with cortical bone is done in fractures of the shafts of the long bones for three main reasons: (1) for non-union; (2) as part of the reduction and fixation of fractures that are uniting or have united in an unacceptable position; and (3) to expedite delayed union. With these indications we operated on 94 out of *1085 fractures of the shafts of the long bones:*

Bone	*No. of shaft fractures*	*No. of grafts*
Humerus	130	13
Radius and ulna	187	23
Femur	266	12
Tibia	502	46
Total	1085	94

CAUSES OF FAILURE

Whatever type of cortical graft is used—inlay, onlay, sliding, or intramedullary—the same five factors are of chief importance in influencing failure: (1) sepsis; *(2) application of the graft under strain; (3) inadequate* nutrition of the graft; (4) lack of immobilisation of graft and/or fracture; (5) lack of protection before union is solid.

Sepsis

If a grafting operation is followed by sepsis of bone not only is its success endangered but also (by the

It is therefore necessary for any laboratory under-king serious Rh-testing to have available a panel of nors, preferably among the laboratory staff, whose N, P, and, if possible, Lutheran and Willis types are own besides their ABO and Rh types, and for any usual agglutinin to be tested against a much larger nel of cells representing various combinations of ctors than the conventional Rh_1, Rh_2, and rhrh cells.

Only three previous examples of anti-N agglutinins ve been recorded, one of which, a naturally occurring ti-N agglutinin, was noted by the late G. L. Taylor ut not published. Taylor's observation was recorded Callender and Race[1]; the other two, described by nger[2] and by Callender and Race,[1] are regarded as mune anti-N agglutinins produced in M-patients by ansfusions with N-containing blood. The evidence for allender and Race's agglutinin being an immune one incontrovertible, but from the published data it seems st possible that that of Singer may have been a aturally occurring one.

CASE-RECORD

A married woman was referred to us by Mr. Arnold Walker r investigation because of two unexplained miscarriages, ach at about 5½ months' gestation. She had never had a ansfusion.

The patient's cells belonged to group A and were Rh-positive. hen her serum was tested for agglutinins, the sediment attern on removal from the incubator was regarded as egative.

When, however, after standing on the bench for some time and so attaining room temperature, which often was as low s 14°C) the sediments were examined microscopically, ery powerful clumping was seen with the Rh_1Rh_1 and rhrh ontrol cells, but none with the Rh_2 cells.

From the general appearance we thought it unlikely that his was a Rh-agglutinin, though on theoretical grounds it ould have been anti-e or anti-d, if certain assumptions were ade about the true genotypes of our control cells.

However, when the patient's serum was tested against a panel of group-O and group-A bloods, agglutination took place with all cells of types N and MN but not with type M, irrespective of ABO, Rh, or P groups.

It was therefore clear that we were dealing with an anti-N agglutinin, and this was confirmed by Dr. R. R. Race on a further panel of donors of known MN group.

The patient's husband, who belonged to group A, was Rh-negative and M, so there seems no doubt that this agglutinin is a natural and not an immune agglutinin; further, the agglutinin-titre has remained constant.

Properties of Agglutinin.—The optimal temperature for the agglutinin was room temperature (14–19°C). There was no agglutination at 37°C, and results were obscured by a non-specific cold agglutinin at 2°C. Even at this low temperature, however, agglutination of N and MN cells was much more powerful than that of M.

The temperature effects were reversible: an incubated sample gradually developed clumping as the temperature fell, and the non-specific 2°C agglutinins disappeared on warming to room temperature, giving quite clear N readings.

The thermal amplitude of his agglutinin is not mentioned by Singer, but we are informed by Dr. Race that his anti-N serum also works best at room temperature.

Characters of Agglutination.—The clumps of cells formed at room temperature were very large and firm and were not broken up on tapping the tube; they resembled much more the ABO type of agglutination than the Rh type.

The agglutinin titre, determined by mixing neat or diluted serum with an equal volume of 2% red-cell suspension and allowing the mixture to stand on the bench at room temperature for at least two hours, was 1/8 on three separate samples.

The result with the 1/2 dilution was absolutely massive clumping, much more like an ABO effect than the Rh type, but at 1/8 there were small clumps with many unagglutinated cells. (The figures indicate the actual final dilution: *not* the dilution of serum before the cell suspension is added.)

Sediment Pattern.—As mentioned above, when agglutination was carried out at 37°C, the sediment pattern was negative. At room and lower temperatures there was a tendency to a "positive" type of pattern, though generally not so clear as in a good Rh agglutination. If the cells were allowed to settle, and then shaken up and allowed to resediment, a clear sediment pattern was usually obtained.

Since these agglutinins show little action at 37°C, it seems questionable whether they are likely to cause any serious troubles during transfusion. It is possible that, if cold blood were transfused quickly, there might be some clumping in the recipient's circulation, and, in fact, Singer's patient had a reaction. With a slow transfusion or warmed blood it seems unlikely that harm could result. On the other hand, it is clear from Callender and Race's work that repeated immunisation with N-containing blood can cause the development of powerful immune antibodies in some persons, and any transfusions in such a patient should be observed very carefully.

SUMMARY

Several abnormal agglutinins acting at low temperatures, including one anti-N and three anti-P agglutinins, have been met with. These are regarded as of natural, rather than immune, origin.

Though the agglutinins did not act at 37°C, agglutination took place in tubes which had been incubated at 37°C and subsequently allowed to stand on the bench before microscopical examination.

It is necessary to be on guard against such atypical agglutinins when testing for Rh antibodies. Any laboratory undertaking serious Rh-testing must have a panel of available donors whose MN and P characters are known besides their ABO and Rh groups.

Our thanks are due to Mr. Arnold Walker for allowing us to investigate the case with anti-N agglutinins, and to Dr. R. R. Race for confirming the anti-N and one of the anti-P sera and for his coöperation in many other problems.

HEPATIC DYSFUNCTION IN PEPTIC ULCER

OBSERVATIONS WITH THE HIPPURIC-ACID TEST*

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THERE are few studies demonstrating hepatic dysfunction in patients with peptic ulcer.

Pathological evidence of liver damage in peptic ulcer in man seems to have been first mentioned by Gandy (1899, 1910) and was demonstrated by biopsy by Vilardell and Corachán (1932), but this was only partly confirmed by the work of Schnitker and Hass (1934). Reviewing the large necropsy material of the Philadelphia General Hospital, Gordon and Manning (1941) noted again, apparently independently, a high incidence of hepatic lesions in ulcer patients. Boles et al. (1939) observed the association of hepatic lesions with acute ulceration.

Clinical evidence of hepatic dysfunction in ulcer patients is scanty.

Kalk (1931) noticed, in about a third of all cases of duodenal ulcer, various symptoms suggesting an involvement of the liver, such as enlargement and tenderness, a tendency to a raised serum-bilirubin, decreased bilirubin tolerance (Eilbott-Bergmann test), and an increase of urobilinogen in the urine. These changes tended to subside under strict treatment. A raised serum-bilirubin has been found in 10% of duodenal-ulcer patients by Johnson and Bockus (1943).

Jegersen and Simonds (1934) reported an increase in an enzyme (lipase), capable of splitting olive oil, in the blood of 38 out of 50 patients with peptic ulcer. This, in their opinion, points to a disturbance of function of liver or pancreas or both.

Sjöström (1937), who, in an extensive study, found the citric-acid content of the blood-serum to be a sensitive gauge of liver function, observed a moderate hypercitræmia in a large proportion of patients with peptic ulcer. This was

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1. Callender, S. T., Race, R. R. *Ann. Eugenics*, 1946, 13, 102.
2. Singer, E. *Med. J. Aust.* 1943, ii, 29.

* Paper read at the annual meeting of the European Association of Clinical Pathologists, London, Nov. 27, 1945.

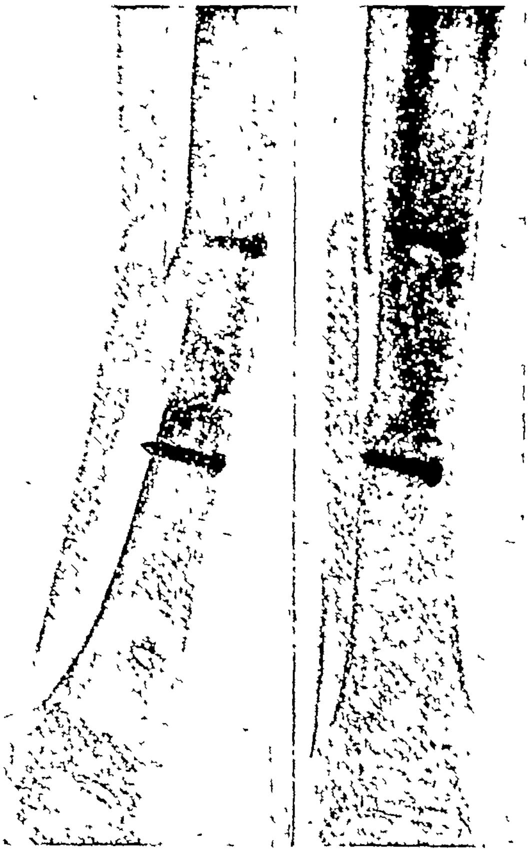

Fig. 3 (case 6)—A year after inlay sliding graft. The graft has become well incorporated, but there is practically no union of the fracture.

depends on the union of the fracture and not of the graft. The fixation of the fracture is much more difficult when the position has been changed at operation. When grafting is done in a fracture that is slow in uniting, but in which the position is adequate, the fibrous union is usually firm enough to prevent undue movement, provided external fixation is adequate.

Protection

Protection of the grafted fracture must continue until the graft has been revascularised. This period of protection is necessarily much longer when a gap has been filled. It will vary with the amount of strain thrown on the bone, and will of course be much longer in a weight-bearing bone. The other important factor is the leverage associated with a neighbouring stiff joint.

In this series 94 cortical grafts on long bones have been done, and there have been 8 failures. By "failure" we mean that we have failed to ensure union at the first attempt, and a further operation has been necessary. Success is due to a product of judgment and technique, and we think our failures have been due to errors of judgment rather than of technique. Our 8 failures occurred through offences against one or more of the five principles stated above.

ANALYSIS OF FAILURES

Case 1.—Male, aged 25. Compound fracture of tibia and fibula. Non-union 3 years. Cross leg skin flap from opposite calf. Sliding inlay bone-graft with 'Vitallium' screw fixation. Done too soon after skin-graft. Wound broke down. Bone sepsis. Failure. Regrafted. (Principle 1 transgressed.)

Case 2.—Male, aged 29. Gunshot wound; compound fracture of tibia and fibula. Ununited in poor position at 6 months. Sliding inlay. Few small sequestra found, though wounds had been healed at least 3 months. Wound broke down. Bone sepsis. (Principle 1 transgressed.)

Case 3.—Male, aged 20. Compound fracture of upper shaft of ulna, with dislocation of head of radius. Reduced. A with non-union and angulation 2 years after fracture (fig. Screwed onlay graft, and position corrected. Gradual " away" of graft. Angulation. Non-union. (Principle 2 gressed: this graft should have been accompanied by a plate

Case 4.—Male, aged 30. Compound fracture of lower tibia and fibula, with fracture of femoral shaft in same leg. Ununited at 7 months. Sliding inlay. Lower fragment was poorly nourished bone. Union not sound 8 months later. Regrafted. (Principle 3 transgressed.)

Case 5.—Male, aged 21. Compound fracture of lower of radius and ulna, with 2-in. gaps (fig. 2). Radius grafted without preliminary filling of bed with chips. Graft faded away. (Principle 3 transgressed.)

Case 6.—Male, aged 26. Simple comminuted fracture of middle of lower shafts of tibia and fibula. Reduced late in good position. Hæmatemesis from gastric ulcer at 3 months. Fracture ununited at 5 months. Sliding inlay graft. Partial gastrectomy for ulcer 6 weeks later. Uneventful convalescence. Fracture still ununited 1 year after grafting (fig. 3). (Failure of nutrition of graft from general causes.)

Case 7.—Male, aged 22. Compound fracture of mid-shaft of humerus. Had been distracted. Ununited in poor position at 4 months. Position corrected and inlay graft. Inefficiently immobilised in poor spica. Angulation at fracture. Graft shifted position. Ununited 5 months later. Regrafted. (Principle 4 transgressed.)

Case 8.—Male, aged 27. Gunshot wound; compound fracture of upper $^1/_4$ of tibia. Inlay sliding graft for non-union at 6 months. Clinically and radiologically united 4 months later; 6 months after grafting patient stumbled and put all his weight on the grafted leg. Refracture. (The knee movements were limited in this case and protection of some sort should have been further prolonged. Principle 5 transgressed.)

ANTI-N AND OTHER LOW-TEMPERATURE AGGLUTININS IN HUMAN SERUM

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During the recent winter an unusual agglutinin, subsequently found to be anti-N, was encountered in routine tests for anti-Rh agglutinins; its properties are described below.

Several other unusual agglutinins, which acted on some control cells but not on others, and resembled the anti-N in being more active at temperatures lower than 37°C, were later met with: three sera containing agglutinins with the specificity anti-P; and several others whose specificity was not related to ABO, MN, P, or Rh groups.

All these sera gave apparently negative "sediment patterns"; but, when the sediments were examined microscopically, agglutination was found to have occurred with some test cells, in some cases very powerfully. The phenomenon was due to the cells having attained the low temperature of the laboratory, often as low as 14°C, before microscopical examination. Probably the increase of routine Rh-testing will show that these agglutinins are less rare than has been supposed, and it is necessary to beware lest they be mistaken for immune anti-Rh agglutinins.

One of the anti-P agglutinins was definitely misleading at first. The test Rh_1Rh_1 and Rh_2 cells both showed microscopically powerful agglutination, though the sediment patterns were negative; the Rh-negative control cells were unaffected. When, however, the serum was tested against a larger panel of cells, only the P-cells were agglutinated, the pp-cells being unaffected, entirely irrespective of Rh type; purely by chance on this occasion both Rh-positive control cells were also P-positive, and the Rh-negative was pp-.

the values indicated occurred in normals; in the lower portion is shown the same for the ulcer group. On a statistical basis the results falling below three times the standard deviation from the mean in the normal group are significantly abnormal. There is an obvious tendency for the ulcer patients to have a lower output of hippuric acid as compared with the control group, though the impairment in function was, on the whole, moderate. The age is of importance, though it does not explain the difference in function between normals and patients. In the normal group there is little difference between the younger and the higher age-groups, but it is noteworthy that the reduction in output of hippuric acid is much more marked in the older patients. Some patients, and among those were a few with intractable ulcers, showed persistently low figures, but in most who were serially studied the output of hippuric acid tended to increase with improvement in general condition (fig. 3). This took place within a few days in some cases, while in others it took weeks. An impairment in function may therefore be easily missed when the test is done *some time after admission, if the patient has already* begun to improve clinically. The results with the intravenous modification (Quick 1939), though for various reasons not strictly comparable, showed changes in the same direction. It can also be seen from serial tests that a figure which appears but slightly subnormal as judged by the "normal range" may be considerably below the subject's maximum function. The reduction output of hippuric acid was, on the whole, greater in tients whose general condition was poor.

DISCUSSION

Though the possible *dissociation of functions* of the ver necessarily limit conclusions drawn from a single st, comparative studies with various current tests by ateer et al. (1942) and others have demonstrated the alue of the hippuric-acid test as an index of the functional pacity of the liver. Our data indicate a tendency to epressed liver function in a selected group of peptic-lcer patients, the impairment in function being greater the active phase of the disease.

There are three ways in which this disturbance may be lated to peptic ulcer:

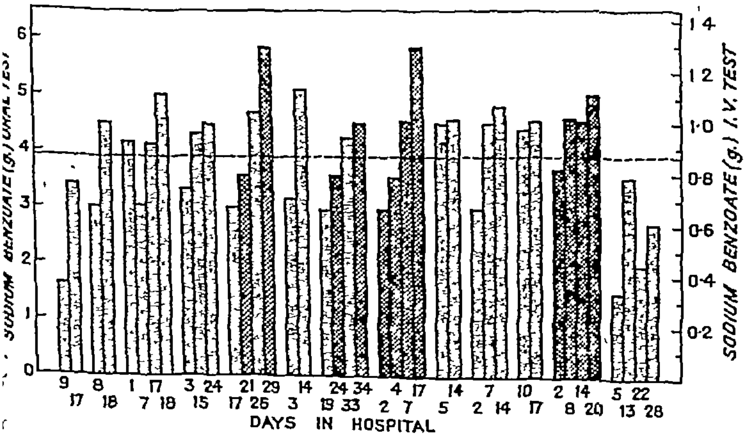
(1) *Hepatic dysfunction may be secondary to the gastric sion and its sequelæ.*—It is possible that pain, or disturbances the stomach and duodenum associated with or responsible or it, may reflexly create disturbances in the liver and iliary tract, as suggested by a correlation between pain and yperbilirubinæmia observed in duodenal ulcer (Kalk 1931). uch a possibility is further exemplified by the observation hat upper intestinal distension may depress liver function (Schnedorf and Orr 1942, Mann 1943). The possible effect of reduced food intake through pain, loss of appetite, and fear of eating appears to be a more obvious factor. The impairment in liver function, however, could not be explained in all cases solely by reduced food intake, though this may have been a contributory factor in many cases.

(2) *Both hepatic dysfunction and ulcer may be related to common factors.*—This includes the possibility of a metabolic inferiority as part of the "ulcer diathesis."

(3) *Hepatic dysfunction may affect the resistance of the gastroduodenal mucosa.*—There is much evidence suggesting that damage to the liver favours ulceration. Many types of liver injury (Eck fistula, ligation of the common bile-duct, bile fistula, hepatic toxins) are followed in a high proportion of instances by ulceration of the duodenum or of the stomach (Ivy et al. 1932, Schnitker and Hass 1934); and Crandall and Ivy (1938) have pointed out that most of the methods used experimentally to produce peptic ulcer seemed to depend on interference with hepatic function. As supporting evidence in human pathology, a high incidence of peptic ulcer in hepatic disorder, particularly hepatic cirrhosis, has been mentioned (Schnitker and Hass 1934, Ask-Upmark 1940a and b).

The idea of such a relationship does not necessarily imply hepatic dysfunction as a primary cause of ulceration in most peptic-ulcer cases, but it may be considered as a conditioning mechanism, particularly in relation to nutritional factors. One of the possible ways of explaining the connexion between hepatic damage and ulcer would be to assume an interference with the metabolism of dietary factors essential to the protection of the gastroduodenal mucosa (Ask-Upmark 1940b). Theoretically, most known dietary factors might be considered in this respect, particular emphasis having been laid on the rôle of protein (see Riggs et al. 1941) and various vitamins. Cheney (1942) has shown that ulcers produced with cinchophen in chickens may be prevented or modified by a new fat-soluble dietary factor (anti-gizzard-erosion factor, "vitamin U"), a lack of this factor in the diet producing similar lesions. Ask-Upmark (1940b) further considers the possibility of an intrinsic factor, stored and managed by the liver, being the "ulcer-protecting substance."

Apart from the possibility of such a causal relationship between hepatic dysfunction and ulcer through "conditioned deficiencies," the existence of metabolic disturbances possibly arising from hepatic dysfunction is of interest here as complementary evidence. Mackie et al. (1940) and Thiele and Scherff (1939) found in the blood of ulcer patients subnormal levels of vitamin A which were not explained by inadequate diet but might be due to reduced capacity of the liver to store vitamin A (Moore 1937) or to mobilise it normally. In view of this and the known association of liver disease and hemeralopia (Baas 1894, Feldman 1937, Patek and Haig 1939) it was not unexpected to find in our patients a tendency to impaired dark-adaptation which, as already noted by Stewart (1941), could not in many cases be explained by dietary vitamin-A deficiency but in the absence of evidence of malabsorption was explained by hepatic dysfunction (Pollak 1943). Both dark-adaptation and excretion of hippuric acid seemed particularly poor in patients with a "hepatic" complexion, and patients of this type were to some extent selected for study. Though there was in this group of patients an obvious tendency for both of these functions to be outside the range found in the normals, there was no strict correlation between them. The impairment in dark-adaptation, though more evident in the active phases of disease, did not depend on the presence of an ulcer, and possibly



ig. 3—Serial hippuric-acid tests on inpatients on standard ulcer régime. Stippled columns denote oral tests, cross-hatched columns intravenous. The broken horizontal line marks approximately the lower limit of normal.

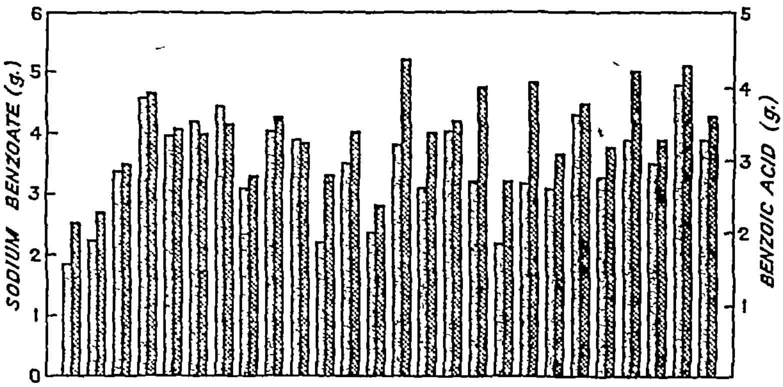


Fig. 1—Comparison of results of Quick's method and Probstein and Londe's method of determination of hippuric acid in the urine in 26 tests in normal subjects and patients. (Cross-hatched columns, Probstein and Londe's method ; stippled columns, Quick's method.)

attributed to a disturbance in liver function. A similar tendency was found also in patients with negative X-ray evidence but with a history suggesting ulcer dyspepsia.

Ask-Upmark (1940a and b), studying 28 cases (8 of gastric ulcer, 12 of duodenal ulcer, 3 of "pseudo-ulcer," and 5 post-operative), often found a pathological galactosuria (Bauer's test), and also a hypergalactosæmia after oral administration of galactose in 4 out of 7 cases. This and a hypercitræmia (in 7 out of 22 cases) were attributed to a functional impairment of the liver. The possibility that a rapid emptying of the stomach might alone be responsible for the excessive galactosuria was considered unlikely, since abrupt introduction of galactose into the duodenum of normal subjects did not produce a pathological galactosuria. This was observed also in ulcer cases without acceleration of the emptying of the stomach.

A pathological galactosæmia after oral administration of galactose has been independently observed by Meranze et al. (1942), who, however, leave open the question to what extent this may be due to increased intestinal absorption or liver dysfunction.

Morrison (1942) found "accidentally" that of 50 patients with peptic ulcer 36 had liver dysfunction ; this was tested by determining quantitatively (stalagmometrically) the bile-salt concentration in non-surgical biliary drainage, which is considered a most sensitive index of liver function.

Marino and Saladino (1937) noted an increase in certain *polypeptides in the serum in gastric and duodenal ulcer.* They put it down to functional disturbances of liver and kidney.

METHOD AND STANDARD OF NORMALITY

The analytical method of Weichselbaum and Probstein (1939) was used, following in detail the instructions given by Londe and Probstein (1941), except that an excess of concentrated hydrochloric acid was found an advantage (Kraus and Dulkin 1941). Weichselbaum and Probstein found that the addition of 30% of NaCl to the urine appreciably decreased and stabilised the solubility of hippuric acid, as was confirmed by Hepler and Gurley (1942) and others who used ammonium sulphate. The dose of the oral test was 6 g. of sodium benzoate, and the hippuric acid excreted was estimated in a pooled four-hour specimen of urine, the results being expressed in terms of sodium benzoate (see Pollak 1947).

Our "normal" figures with this method were higher than those given by Quick and others using his original precipitation method but agree closely with those reported by Probstein and Londe (1940) and Hepler and Gurley (1942). This is probably due in the first place to the improvement in the analytical technique and secondly to the selection of normals. *Fig. 1 shows a direct comparison* of the two methods carried out in 26 tests from aliquot parts of urine ; in half the tests the difference was more than 10%, the increase in the yield of hippuric acid by the NaCl modification being up to about 33%. Similar results were reported by Hepler and Gurley (1942). This in itself will appreciably reduce the standard deviation of a "normal" sample. It must be emphasised that our normal figures and those found by the above-mentioned investigators were obtained from perfectly healthy subjects.

There is evidence that many different illnesses, such as acute and chronic infections—pneumonia, rheumatic fever, endocarditis, and arthritis—low-grade illness due to chronic infection (Stiles et al. 1942), allergic conditions (Shay et al. 1939), pernicious anæmia, peptic ulcer, and surgical operations may be associated with hepatic dysfunction. A survey of the literature reveals that this has not always been *taken into* account in the selection of "normal" controls, who were often recruited from hospital patients "with no signs of obvious liver disease" but often with one of the above-mentioned conditions. Though this may have been justifiable, if not desirable, in the early work intended to demonstrate that the test was "positive" in liver disease, for the detection of subclinical impairment of liver function a stricter standard of normality was chosen. Our normal controls were subjects in perfect health, and special care was taken not to include those with, or giving a history of, any of the above-named conditions or dyspepsia. The observations in normals were also extended to a higher age-group, since liver function tends to deteriorate in old age (Rafsky and Newman 1943). Further, the two sex-groups were treated separately, since we found appreciably lower figures in healthy female subjects.

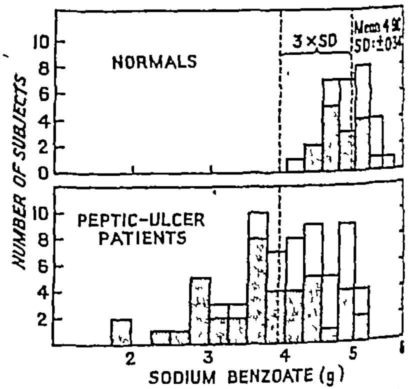


Fig. 2—Comparison of results of oral hippuric acid test in 67 male peptic-ulcer patients and 30 normal males. Stippled areas denote men aged 45-60, plain areas denote controls.

OBSERVATIONS IN ULCER PATIENTS

The following observations were carried out between May, 1941, and October, 1943, on inpatients. The subjects do not represent a random sample of ulcer patients. Patients with severe symptoms tend to be admitted to hospital for treatment, and those with a long history and severe symptoms resistant to treatment or those whose general condition was poor were preferred for study. Most came from a poorer social and economic level. 68 male patients, aged between 26 and 60, with uncomplicated gastric and/or duodenal ulcer were studied. The diagnosis was established by radiography and/or gastroscopy. The renal factor was controlled by blood-urea estimation (Londe and Probstein 1941), and the emptying-rate of the stomach was checked by the result of the standard fractional test-meal (Ryle 1926).

The existence of hepatic dysfunction in this selected group can be shown in two ways : *(1) by comparing* the results of the test in the ulcer patients with those obtained from the normal group ; and (2) by following up individual patients with serial tests during the course of the illness. Fig. 2 shows the comparative results with the oral hippuric-acid tests in the two groups. In the upper portion is shown the frequency with which eck were tense and prominent, making the neck look it. Movement of the neck appeared to be painful, though nderness was not severe; there was no true head-traction.

On lumbar puncture only two or three drops of clear fluid ere obtained, in spite of jugular compression. Aspiration ith a syringe, however, yielded 5 c.cm. of slightly blood-ained cerebrospinal fluid, which showed 1 6% protein, with "great increase" of globulin, 5000 red cells and 25 white ells per c.mm.

A course of sulphamezathine (0·25 g. four-hourly for five ays) was started, which appeared to have some good effect n the fever. After the first week he began to gain weight, nd the arms steadily improved in power and tone until three eeks after admission they appeared to be normal. The eck also assumed a more normal appearance.

A month after admission a lump suddenly appeared in the udline of the back of the neck. It became larger and uctuant. Aspiration produced thick greenish pus, which ontained very large numbers of *Staph. aureus*; 5 c.cm. of us was aspirated, and penicillin 15,000 units in 1 c.cm. f water was injected into the abscess cavity through the ame needle.

The swelling was aspirated twice in the next three days, enicillin being injected on each occasion. On the last spiration the fluid was brown and clear; after this the lump isappeared. A general course of penicillin was given for days, starting from the first aspiration—17,000 units ee-hourly for forty-eight hours, then reduced to 3000 ts four-hourly, a total of 440,000 units being given (locally l generally). The baby was kept for three weeks longer der observation but was to all intents and purposes a rmal baby, and gained weight.

Radiography.—Within a few hours of the baby's readmission liography revealed some erosion of the left transverse process C.4. A week later this was much more definite, and a lateral w showed erosion of most of the neural arches of C.3 and C.4, th fusion by means of thin bone of part of the laminæ, dicles, and spines of C.3, C.4, and C.5. Radiography a ek after discharge showed these three vertebræ fused egularly, rather bunched together, and fully recalcified. ere was never any evidence of a sequestrum.

DISCUSSION

The inflammation of the bone probably started in the ft neural arch or pedicle of C.4, as this appeared to be e centre of the decalcification.

The infective organism appears to have been derived om the paronychia, as these are nearly always due to aphylococci; if so 64,000 units of penicillin did not terilise this focus.

It is common for osteomyelitis to follow focal infection lsewhere. Thus, in Green and Shannon's series, 55% f the cases were preceded by boils, paronychia, chest fections, &c.

The paralysis of the arms was probably due to pressure n the cervical nerve-roots by granulation tissue and dema, rather than by pressure on the cord, since ecovery was so rapid and the legs were so little affected. levertheless there was a complete "spinal block" for erebrospinal fluid.

Osteomyelitis in infants differs from the osteomyelitis f older children and adults in the following particulars:—

(1) *Strep. hæmolyticus* occurs nearly twice as often s *Staph. aureus* in the lesions of infants, whereas nine-enths of the cases of osteomyelitis in adults are due to *taph. aureus*. This is probably due to the fact that the receding infection in infants is often a lung infection, hich is usually of streptococcal origin.

(2) The infection shows less tendency to spread widely, ften "coming to a head" and forming an abscess, hich works into the soft tissues spontaneously. There little necrosis of bone; it is rarely possible to demon-trate a sequestrum, and if one forms it is usually bsorbed spontaneously. The bone is more easily bsorbed and more quickly replaced by new bone; thus absorption of bone is radiographically demonstrable much sooner than in adults, and healing takes place rapidly. This is probably because infantile bone is porous, the cortex thin, and the periosteum loosely attached, compared with adult bone. Thus the abscess is not kept walled in under high tension and can work to the surface.

(3) The disease very rarely becomes chronic, and deformities are usually quickly rectified by growth.

(4) The treatment recommended is very different from the treatment of adult osteomyelitis. More attention must be paid to the general state of the infant than to the diseased part. With rest and splinting the infection will usually be localised. In many cases an abscess forms under the skin, which may be relieved by minor surgery or aspiration through a wide-bore needle. It may well be that a general course of penicillin would avert the necessity for major surgery much more effectively than in osteomyelitis in adults. If an abscess forms, the combination of local and general penicillin should lead to cure, since there is usually no dead bone to harbour the organisms, and if some dead bone is present it is usually quickly absorbed.

Reviews of Books

Studies of the Renal Circulation

JOSEP TRUETA, M.D., Hon. D.SC. Oxfd, ALFRED E. BARCLAY, D.M., F.R.C.P., F.F.R.; KENNETH J. FRANKLIN, D.M., F.R.C.P.; PETER M. DANIEL, M.B.; MARJORIE M. L PRICHARD, M.A. From the Nuffield Institute for Medical Research, Oxford. Oxford: Blackwell. 1947. Pp. 187. 25s.

THIS monograph fulfils the promise given a year ago in the authors' preliminary note (*Lancet*, 1946, ii, 237), which briefly described experiments pointing to the existence of two alternative routes for the circulation of blood through the kidney. They now recount, lucidly and in detail, the experimental stages leading to this conclusion, beginning with the observation by Trueta and Barnes that constriction of one femoral artery by a tourniquet will lead, in the rabbit, to prolonged spasm not only of the constricted artery but of the artery of the opposite limb, and also a retrograde spasm of the proximal intra-abdominal segment of vessel extending as far back as the renal arteries. Having later shown this effect to be under nervous control they were able to observe, by the expert use of contrast media in radiography and accurate timing of the exposures, that, in the circumstances of these experiments, the passage of blood through the kidney seemed abnormally rapid. Further study led to the demonstration of a shunt mechanism in the kidney, and it is to the elucidation of this, and in particular the anatomy of the vascular pathways involved, that the main part of the work is devoted. The numerous excellent photographs illustrating the book testify to the skill and industry spent on the preparation of neoprene casts of the more delicate renal vessels: the results are both beautiful and convincing. Their study forms the basis of a new conception of the function of the medullary vessels, and it is reasonable to expect that physiologists and pathologists will revise all aspects of renal function both in health and in disease in the light of this work. Many of the problems involved are outlined in the final chapter; not the least fascinating is the suggestion that essential hypertension may prove to be based on a too oft-repeated cortical ischæmia, of a functional character, effected by the diversion of blood through the medullary pathway.

Though rabbits were mainly used in these experiments, the investigation of the intrarenal vascular pattern has been extended to a variety of other mammals, including man, with consistent results. If, as these suggest, the renal circulation obeys the same laws in man as in the rabbit the new concept will prove an important and revolutionary contribution to medical science.

the tendency to this deviation from normal function reflects a metabolic disturbance related to the ulcer diathesis. Improvement in dark-adaptation was observed after treatment with large doses of vitamin A (though the patients appeared generally rather resistant to this treatment) and after treatment with crude liver extract and brewers' yeast. Mention may be made here also of the observations of Boles and his colleagues (see Riggs et al. 1941), who found in ulcer patients subnormal levels of serum proteins which were apparently not correlated to dietary intake.

It has been pointed out that the disturbances in vitamin-A metabolism just mentioned are not simply dietary in origin (though they may be aggravated by primary deficiencies), since this fact (if correct) by itself points to a metabolic disorder which is the main theme of this paper; but there is obviously an indirect relation to dietary factors which may be considered in the treatment. The correction of what may be interpreted as "relative" or "conditioned" deficiency of vitamin A seems indicated, but more emphasis should be laid on the underlying disturbance—i.e., hepatic dysfunction—which is likely to cause more complex deficiencies. With regard to the latter, a diet rich in dairy and vegetable protein and carbohydrate, supplemented by brewers' yeast and/or crude liver extract, vitamins A and C, seems to be indicated and has been used with encouraging results by Patek (1937), Patek and Post (1941), and Fleming and Snell (1942) in the treatment of hepatic cirrhosis and for the preoperative treatment of patients with hepatic damage (Walters and Snell 1940). Usually liver function was rapidly restored in most patients on a standard ulcer régime, particularly in those under 45 years of age, but in selected cases such a therapy seemed to improve the synthesis of hippuric acid and to have a beneficial effect on general condition and postoperative course.

Evaluation of liver function is of importance in the preoperative management. The postoperative depression of hepatic function is more serious in patients with damaged livers, and in these patients the operative mortality is higher and the postoperative course less favourable (Graham et al. 1929, Kohlstaedt and Helmer 1936, Boyce 1941, Mateer 1943). The detection of impaired liver function, which may be clinically unsuspected, is believed to be of assistance in assessing the surgical risk and in selecting patients who may benefit from special preoperative treatment. Serial tests are of help in gauging the efficiency of such treatment and determining the best time for operation.

SUMMARY

Observations with Quick's hippuric-acid test, using Weichselbaum and Probstein's analytical method, indicated a tendency to moderately impaired liver function in a selected group of 67 male peptic-ulcer patients.

It is suggested that hepatic dysfunction, irrespective of its cause, and probably reflecting a disturbance in general metabolism, may lower the resistance of the gastroduodenal mucosa.

The importance of measuring liver function before operation is emphasised.

I wish to thank Dr. F. Avery Jones for his kind help in many ways; to Dr. G. Buchan, late medical officer of health for Willesden, for arranging for Civil Defence workers to serve as normal controls; and to the nursing staff of the dietary wards for their excellent coöperation.

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STAPHYLOCOCCAL OSTEOMYELITIS OF SPINE IN A BABY AGED THREE WEEKS

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It is usually thought that osteomyelitis is rare in infancy, but Green and Shannon[1] collected 95 examples. It usually occurs in the long bones (e.g., the femur) and is very rare in the spine, the part affected in the following case.

The baby was 11 days old when first admitted to the Wimbledon Hospital. He had a mild pyrexia (up to 101°) for which no cause could be found. Throat, ears, chest, and urine appeared normal, but the tip of his right middle finger was rather red.

After a three-day course of penicillin (8000 units three-hourly intramuscularly; total 68,000) his temperature subsided and he started to gain weight, but the finger was more red and swollen. It was incised, pus was evacuated, and he was sent out after five days' stay in hospital. The finger healed within three or four days. No attempt was made to culture the pus.

Three weeks later he was readmitted with a history of having been quite well (he had gained 1 lb. 6 oz.) until a week before readmission, when he had a cold; two days later it was noted that he could not move his arms and screamed when his neck was moved.

On admission his general condition was good, but he had a complete flaccid paralysis of both arms, including shoulders and hands. The legs were strong though possibly a little stiff; cranial nerves and fontanelle tension were normal. The neck was held rigid, and the muscles at the back of the

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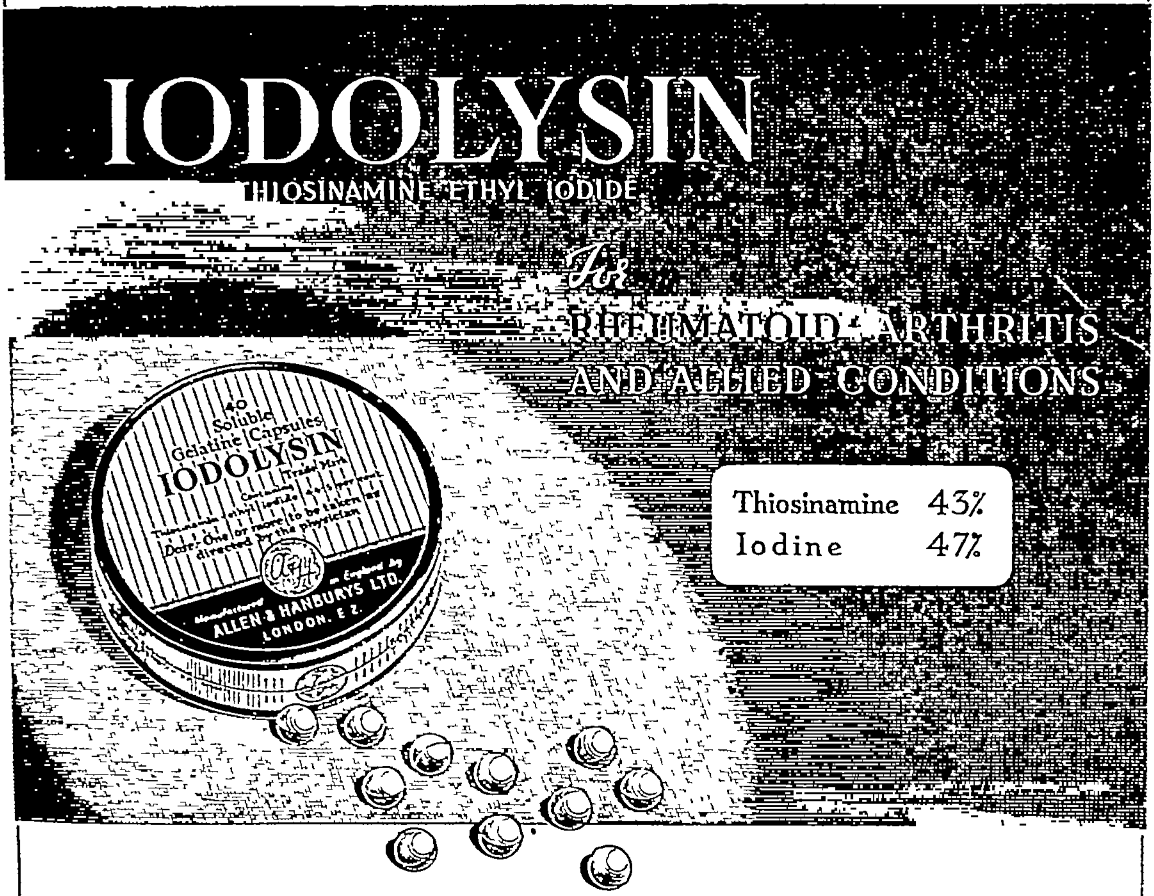
1. Green, W. T., Shannon, J. G. *Arch. Surg. Chicago*, 1936, **32**, [illegible]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Injuries and Diseases of the Œsophagus

G. GREY TURNER, M.S., F.R.C.S., Hon. F.A.C.S., professor of surgery in the University of London at the British Postgraduate Medical School. London: Cassell. 1946. Pp. 100. 15*s*.

THE œsophagus has held an increasing interest for surgeons in recent years, and Prof. Grey Turner deserves credit for helping to bring it into the field of surgical vision. This monograph of 100 pages, based on the George Haliburton Hume lectures delivered in Newcastle in 1943, does not attempt to treat exhaustively the abnormalities, injuries, and diseases of the œsophagus, but is a study of the approach and evolution of surgery in the subject. Case-reports, personal experience, reminiscence, and aphorism are blended with illustration to make the book read well. If carcinoma is not allotted much space, it is because this subject has been discussed fully by others. The treatment of congenital abnormalities is considered in detail, with recognition of the fact that only early and drastic measures will have any hope of success in cases of atresia. Many swallowed foreign bodies will pass through the narrow channel of the œsophagus, but occasionally a dangerously shaped object lodges there—an emergency which "knows no night, no day." No single remedy will serve either for fibrous stricture or achalasia; Prof. Grey Turner indicates the various forms of treatment which achieve success in different phases and degrees of the conditions. In cardiospasm, if more conservative measures fail, cardioplasty and œsophago-gastrostomy may be successful. Accounts are included of many rarer conditions, such as spontaneous rupture, peptic ulcer, pouches, and varices. Readers will find the author as stimulating as he himself found Haliburton Hume.

Surface and Radiological Anatomy

(2nd ed.) A. B. APPLETON, M.A., M.D., professor of anatomy, University of Liverpool; W. J. HAMILTON, M.D., D.SC., F.R.S.E., regius professor of anatomy, University of Glasgow; G. SIMON, M.D., D.M.R.E., assistant radiologist, X-ray diagnostic department, St. Bartholomew's Hospital, London. Cambridge: Heffer. 1946. Pp. 332. 31*s*. 6*d*.

THIS new edition can be read with pleasure, and the book is commended to all students and teachers of anatomy, as well as to general practitioners. It has been completely rewritten, though the purpose and general plan have not been altered. New illustrations have been included and many of the original ones modified; some of the half-tone diagrams are now coloured and this has made them much clearer. Mr. A. K. Maxwell, who is responsible for all the illustrations, contributes much to the value of this book, as he has done to many others. X-ray photographs have been replaced by a well-annotated new series of much better quality. Though the text is in the main pleasantly free of mistakes, the description of the action of the extrinsic eye muscles needs correction. Few other books on surface anatomy compare with this, mainly because, in it, surface features are constantly being related to deeper structures. It has, besides, what may be called the physiological approach: physical and radiological examination of the healthy living body gives information about normal structure and function which can never be gained by dissection of the cadaver. Physical examination of the disordered body and the interpretation of abnormal X-ray films are also considered in a useful way.

Studies on Impaired Fertility in Man

With Special Reference to the Male. RICHARD HAMMEN, translated by HANS ANDERSEN. Copenhagen: Munksgaard. London: Oxford University Press. 1944. Pp. 192. 10*s*.

THIS good monograph, presented in so readable a translation, merits careful study. During four years Dr. Hammen examined nearly 300 infertile couples and 1184 specimens of semen. He used accepted methods, but his painstaking and careful laboratory and clinical observations were all made personally, not deputed to others. He has explored the literature thoroughly up to 1940, and gives due weight to the findings of others; more recent work was inaccessible to him during the war. He regrets that in barren marriages the wife is still sometimes subjected to unnecessary examinations and even operations, while the husband is not even investigated. He believes that semen analysis offers the best means of assessing male fertility; and that, for proper assessment, estimations of volume, count, motility, viability, and morphology are more important than estimation of pH. He holds that measurement of the length of sperm heads, as advocated by Moench, does not yield information of enough value to justify the time it takes. Vital staining, and estimation of sperm metabolism, both of which he has tried, he thinks still too experimental to be of clinical value. His methods of estimating viability and of fixing and staining films for differential counts cannot entirely escape criticism, but his observations are certainly accurate and his deductions stimulating. He regards the commonly accepted norms as too high, being "ideal" rather than "average"; and he believes that the diagnosis of absolute sterility can be *made only* when spermatozoa are completely absent on repeated examinations. He disagrees with Moench that it is common to find one partner grossly at fault and the other adequately fertile: *far more commonly, he says, there are defects in both* and early adequate investigation of both partners is therefore essential. He says little about testicular biopsy, and the postcoital test is not mentioned. The section on examination of wives is short, and makes no reference to tuberculosis as a cause of tubal occlusion or of endometritis: is *Denmark* really so fortunate? Treatment, and response to treatment as revealed by semen analysis, are not discussed.

Gas and Air Analgesia (3rd ed. London: Baillière. 1947. Pp. 80. 5*s*.).—In his latest revision of this useful little handbook Dr. R. J. Minnitt has elaborated his advice on antenatal instruction. Though intended primarily for midwives, the book may be read with profit by practitioners and teachers.

Currents in Biochemical Research (New York: Interscience Publishers. 1946. Pp. 486. $5).—As the preface explains, this represents an attempt by some thirty research-workers, under the editorship of David E. Green, to describe simply important developments in such fields as the viruses, the nutrition and biochemistry of plants, vitamins, enzymes, hormones, isotopes, immunochemistry, and the like. It is a good reference book for chemists, biochemists, and doctors covering a wide field.

Our Inner Conflicts. *A Constructive Theory of Neurosis.* (London: Kegan Paul. 1947. Pp. 250. 10*s*. 6*d*.).—Psycho-analysis has not been lucky in its heresies and offshoots: Dr. Karen Horney's variant becomes, with each book she writes, more and more hard to distinguish from those easy little explanations of human nature which are designed to guide troubled people in their efforts at self-help and understanding. It is based, no doubt, on extensive clinical experience, and its avoidance of jargon is in its favour; but the reader confronted with so much philosophising and so little manifest concern with unconscious mental happenings, transference, and other familiar Freudian essentials, may wonder why Dr. Horney retains the name "psycho-analysis" for her methods and views; he may also wonder whether latter-day psychotherapy is developing on scholastic and literary rather than on scientific and medical lines.

Lehrbuch der Allgemeinen Kinderpsychiatrie (2nd ed. Basle: Schwabe. 1945. Pp. 517. Sw. fr. 32).—Dr. M. Tramer, of the University of Berne, gives an authoritative exposition of the general theory and practice of child psychiatry in Switzerland. Readers accustomed to the Anglo-American standpoint will find here frequent divergence from their habitual concepts and principles—startlingly exemplified in the chapter on treatment, which gets only 13 pages. The Swiss approach is less indebted to psycho-analysis, lays its emphasis on the thorough investigation and handling of environmental influences, and draws on a psychology of normal childhood which is substantially derived from W. Stern and Charlotte Bühler. The book is elaborate rather than comprehensive: *the less* concrete the matter under examination, the lengthier the exposition, whereas such clinical problems as schizophrenia in childhood receive relatively brief attention.

THE LANCET

LONDON: SATURDAY, JULY 26, 1947

Food and the Worker

SINCE the middle thirties the International Labour Office has paid much attention to the nutrition of workers and their families. In 1935 the director wrote: "If it is agreed that the only real solution of he problem of economic balance is not through caling down production but in levelling up consumpion then it follows that the best hope of finding the way out of the present troubles is to raise the standards of the millions who are now underfed, underclothed, and under-equipped." This was written at a time when the economists were mostly saying that production must be restricted in order to raise primary prices—when coffee beans were being burned in Brazil and when farmers in at least one country were being paid a bonus for "not raising hogs"

Now that many people maintain that our reconstructive effort is weakened by deficiencies in diet[1] t is useful to have three essays on Nutrition in Industry,[2] dealing with conditions in Canada, the United States, and Great Britain In his introduction Dr. FRANK G. BOUDREAU, of the Millbank Memorial Fund, recalls that before the war the League of Nations and the I.L.O. did much to stimulate interest and national action in nutrition Precise information about the relationship between nutrition, health, and working efficiency was lacking, though the evidence pointed to a direct connexion between nutrition and output. But when war broke out the governments of the three countries all took early action to see that the industrial workers were properly fed—the first to do so being our own Neither in Canada nor in the United States did the departments dealing with workers' nutrition have powers to compel factory-owners to feed their employees; but in Great Britain from November, 1940, it was obligatory to provide canteens serving hot meals in all factories, works, and building sites employing 250 persons or more and engaged on war work on behalf of the Crown—which covered the vast majority. Nevertheless, it is evident that the success of the canteen movement did not depend entirely on compulsion, for in March, 1945, there were 6772 canteens in factories and similar places where fewer than 250 people were employed. Altogether by this time there were 12,245 industrial canteens. Though the Armed Forces were given high rations the justice of differential rationing in favour of heavy industrial workers was not really recognised until the war was over, and it was the general policy of the Ministry of Food to allow the maximum rations to all consumers rather than to give more to some at the expense of the remainder.[3] Part of the function of the industrial canteens and British Restaurants was to compensate for this absence of differential rationing.

Dr. L. B. PETT, who writes the Canadian section, says that "proteins also supply energy to the body, although the process is rather wasteful and proteins are therefore less important (than fats or carbohydrates) as energy producers." There can be no doubt, however, that men undertaking heavy physical labour believe that they need large quantities of meat, and the institution of meat rationing in the U.S.A. in 1943 brought immediate complaints from logging and other forest workers throughout the country. Inquiries into the amounts of food normally eaten in logging camps showed that the daily number of calories ranged from 5311 to 6425 per man: the day's intake included well over 1 lb. of meat, fish, and poultry, about $^1/_3$ lb. of eggs, and anything between 0·428 and 2·242 lb. of milk and milk products. Cheese does not seem to have been popular, for only 0·029 to 0·064 lb. was eaten. The loggers were convinced *that large amounts of meat at each meal are* necessary to keep up the pace of the heavy work required, and they regard as "side dishes" such delicacies as macaroni cheese, baked beans, creamed codfish, and scrambled eggs As a result of these and other inquiries the food and nutrition board of the U.S. National Research Council recommended a scheme of differential rationing for industrial workers, who for this purpose were put into four groups. In category I the loggers were in splendid isolation, and it was recommended that they should have over 5500 calories per day. Category II, with 4500–5500 calories, consisted of coal and ore miners, workers in foundries (including blast furnaces, steel works, and rolling mills), longshoremen, stevedores, and men engaged in engineering construction. Category III contained less arduous occupations and was assessed at 3000–4500 calories, while the workers in category IV, which included industries such as printing, textiles, tobacco, and food-processing, were to be given 3000 or less each day These recommendations, however, were implemented only for loggers and miners, and in addition increased allotments of food were made to "floating craft" and deep-sea fishermen according to certain criteria regarding isolation of the jobs.

We must hope that some day orders and regulations will lapse and war-time agencies will disappear; but we must see that the gains made in nutrition are not thrown away. A group of employers in the U.S.A. has resolved to continue the practice of feeding employees, "not so much for its influence on the health of the workers as for the improvement it brings about in the relations between management and labour." The hope is expressed that when a new factory canteens order is made for peace-time in Great Britain it will not be limited to factories employing over 250 persons. Experience after the 1914–18 war showed that workers at that time preferred to take their meals at home when possible, and many war-time canteens closed for lack of patronage; but habits sometimes change. It is stated that the average American worker is more "food and nutrition conscious" than he was before the war, and that both he and his family are eating better. The average British worker is likewise more food-conscious; but whether he and his family are eating better is a subject on which there is more than one opinion.

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[1] See *Lancet*, 1947, i, 203.

[2] *Nutrition in Industry.* No. 4 of new series of Studies and Reports of the International Labour Office, Montreal. 1946. Pp. 177. 6s.

[3] *Lancet*, 1947, i, 260.

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Enough has been said to indicate the tremendous importance of these isotopes for medical science. Such evidence as we have suggests that the therapeutic field is likely to be limited, and perhaps not too easy to control. It is in the prosecution of research that the new tools will be so valuable. Indeed, before long the biochemical department not equipped for isotope work will be as out of date as a pathological department without a microtome or an orthopædic department without an X-ray apparatus. The isotopes which emit γ rays will have to be handled carefully by those using them constantly, and safety rules must be drawn up before they become common. Meanwhile the radioactive isotopes are not easy to make, nor has the uranium pile solved all the problems of manufacture. But over a year ago the Manhattan Project published a long list of available isotopes,[8] and several are now obtainable in the United States in sufficient quantities for research and therapy. In this country the Medical Research Council—who control the distribution of isotopes—can offer only the most exiguous supplies. This is difficult to understand since published work from some Continental laboratories shows that they can obtain supplies from the U.S.A. Unless the position improves we must inevitably fall behind in this important branch of research.

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In South Africa and the United States a good deal has been done on these lines in the past ten years, and from the former country we now have a report by the medical research committee of the National Advisory Council for Physical Education.[1] Written by Dr. JOKL, it describes work which stems from the 1933–39 experience of reabling European unemployed at Roberts Heights by physical education within the framework of a paramilitary organisation.[2] The South African investigators have measured the heights, weights, chest circumferences, upper-arm circumferences, and hip widths of large number of white and Bantu children between the ages of 7 and 16, and they present the usual growth curves for these subjects.[3] The Bantu begin their adolescent spurt in growth considerably later than do white children studied elsewhere: how far this is due to heredity and how far to environment is not discussed, but other evidence indicates that malnutrition delays the appearance of the growth spurt and the menarche.[4] These children and others (including coloured, Indian, and Chinese) were given three tests of physical efficiency—the time taken to run 100 yards, the time taken to run 600 yards, and the distance that a 12 lb. shot could be put. Growth curves for each group are given for these items, which are said to measure respectively skill, endurance, and strength. The shot-put curve exhibits the well-known phenomenon of an increase of strength at puberty, as shown, for example, in the work of the Galton laboratory.[5] JOKL and his associates believe that, so far as running ability is concerned, puberty has an adverse effect, and that increase in efficiency "comes to a standstill with the onset of puberty"; but this conclusion conflicts with those reached in the University of California Adolescent Study.[6] In California it was found that the adolescent spurt in growth is associated with improvement in the times of track events—and indeed all athletic performance—as would be expected from the increased growth of the muscles. By the end of puberty, at about 13½ in girls and several years later in boys, adult standards are for the most part established, apart from practice and training effects; indeed girls' performances over the 50-yard dash worsened between the ages of 13 and 16. The time of the adolescent spurt varies from one child to another, and these physiological changes vary with it. Early maturers, who reach their maximum velocity of growth early and who menstruate early, settle down early to their adult standards for running and for pulling on the dynamometer, and adjust early to their adult levels for blood-pressure, heart-rate, and oxygen-consumption.[7] The sex difference in performance is also largely due to the adolescent spurt: before this time, boys are but slightly better than girls, but the growth spurt is much greater for boys, and it brings muscular superiority. A second look at JOKL's data shows that they are in fact consistent with these findings; it is only the interpretations that differ. In view of the predominance of negroes in athletic sports it is interesting to note that in the running events the Bantu children, despite their worse

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5. Low-Beer, V. A., et al. *Radiology*, 1946, 47, 492.
6. Vannotti, A. *Bull. schweiz. Akad. med. Wiss.* 1946, 2, 90.

The fact that radiosodium (Na^{24}), when injected, is rapidly distributed in the extra- and intra-vascular fluids has been utilised to measure the arm-to-foot circulation-time, and thence, by observing the rate of accumulation of radiosodium at a given site, to estimate the efficiency of the circulation. Smith and Quinby[7] have applied this technique to the study of peripheral vascular disease of the lower limbs, and have found it helpful in deciding whether a lumbar sympathectomy is likely to benefit cases of hypertension. The strontium isotope, Sr^{89}, which has a half-life of 55 days and emits β^- rays, is taken up by osteoplastic tissue and can be applied to the study of bone metabolism. A newly prepared calcium isotope, Ca^{45}, with a half-life of 180 days, will also be useful for this purpose. Of great importance in organic chemistry and biochemistry is the discovery of the C^{14} isotope with a half-life of about 25,000 years, and H^3 with a half-life of 30 years; the previously known radiocarbon, C^{11}, was of little practical value because its half-life was only 20 minutes. The existence of a relatively stable labelled carbon atom opens up immense possibilities; as Seaborg puts it, "this field is so vast that it is certain that the best ideas are yet to come."

Enough has been said to indicate the tremendous importance of these isotopes for medical science. Such evidence as we have suggests that the therapeutic field is likely to be limited, and perhaps not too easy to control. It is in the prosecution of research that the new tools will be so valuable. Indeed, before long the biochemical department not equipped for isotope work will be as out of date as a pathological department without a microtome or an orthopædic department without an X-ray apparatus. The isotopes which emit γ rays will have to be handled carefully by those using them constantly, and safety rules must be drawn up before they become common. Meanwhile the radioactive isotopes are not easy to make, nor has the uranium pile solved all the problems of manufacture. But over a year ago the Manhattan Project published a long list of available isotopes,[8] and several are now obtainable in the United States in sufficient quantities for research and therapy. In this country the Medical Research Council—who control the distribution of isotopes—can offer only the most exiguous supplies. This is difficult to understand since published work from some Continental laboratories shows that they can obtain supplies from the U.S.A. Unless the position improves we must inevitably fall behind in this important branch of research.

Education of the Body

Among doctors and physiologists interest in physical education has mostly been desultory. Feats of strength, and athletic competitions, have always had their appeal—not least to those whose own endowments in such directions are meagre. But only comparatively recently has it occurred to research-workers that the physical performance of the spectators themselves can be vastly improved, with corresponding benefit to their health.

In South Africa and the United States a good deal has been done on these lines in the past ten years, and from the former country we now have a report by the medical research committee of the National Advisory Council for Physical Education[1] Written by Dr. Jokl, it describes work which stems from the 1933–39 experience of reabling European unemployed at Roberts Heights by physical education within the framework of a paramilitary organisation.[2] The South African investigators have measured the heights, weights, chest circumferences, upper-arm circumferences, and hip widths of large number of white and Bantu children between the ages of 7 and 16, and they present the usual growth curves for these subjects.[3] The Bantu begin their adolescent spurt in growth considerably later than do white children studied elsewhere: how far this is due to heredity and how far to environment is not discussed, but other evidence indicates that malnutrition delays the appearance of the growth spurt and the menarche.[4] These children and others (including coloured, Indian, and Chinese) were given three tests of physical efficiency—the time taken to run 100 yards, the time taken to run 600 yards, and the distance that a 12 lb. shot could be put. Growth curves for each group are given for these items, which are said to measure respectively skill, endurance, and strength. The shot-put curve exhibits the well-known phenomenon of an increase of strength at puberty, as shown, for example, in the work of the Galton laboratory.[5] Jokl and his associates believe that, so far as running ability is concerned, puberty has an adverse effect, and that increase in efficiency "comes to a standstill with the onset of puberty"; but this conclusion conflicts with those reached in the University of California Adolescent Study.[6] In California it was found that the adolescent spurt in growth is associated with improvement in the times of track events—and indeed all athletic performance—as would be expected from the increased growth of the muscles. By the end of puberty, at about 13½ in girls and several years later in boys, adult standards are for the most part established, apart from practice and training effects; indeed girls' performances over the 50-yard dash worsened between the ages of 13 and 16. The time of the adolescent spurt varies from one child to another, and these physiological changes vary with it. Early maturers, who reach their maximum velocity of growth early and who menstruate early, settle down early to their adult standards for running and for pulling on the dynamometer, and adjust early to their adult levels for blood-pressure, heart-rate, and oxygen-consumption.[7] The sex difference in performance is also largely due to the adolescent spurt: before this time, boys are but slightly better than girls, but the growth spurt is much greater for boys, and it brings muscular superiority. A second look at Jokl's data shows that they are in fact consistent with these findings; it is only the interpretations that differ. In view of the predominance of negroes in athletic sports it is interesting to note that in the running events the Bantu children, despite their worse

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[7] Smith, B. C., Quinby, E. H. *Ann. Surg.* 1947, 125, 360.
[8] *Science*, 1946, 103, 697.

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[1] *Manpower*, 1946, 4, 1.
[2] Jokl, E., et al. Training and Efficiency, South African Institute for Medical Research, 1941.
[3] *Manpower*, 1944, 3, 2.
[4] Ito, P. K. *Human Biol.* 1942, 14, 279.
[5] Ruger, H. A., Stressiger, B. *Ann. Eugen.* 1927, 2, 76.
[6] Espenschade, A. Motor Performance in Adolescence: *Monogr. Soc. Res. Child Dev.* 1940, 5, no. 1; Jones, H. E. *Human Biol.* 1947, 19, 12.
[7] Shock, N. W. *Amer. J. Physiol.* 1943, 139, 288.

economic and nutritional circumstances, were slightly superior to the whites.

An extensive clinical survey of Bantu children suggested that the chief cause of their medical defects, which were many, was malnutrition. Among Moslem Indian children it was found that running and weight-putting efficiency decreased during the fasting month of Ramadan, when the children had nothing to eat between an early breakfast and the time of their test. Another noteworthy observation was that "physically substandard" adolescent boys gained more weight during a nine months' physical-training course than normal boys of the same weight would have done, without training, in the same period. On the question whether physical training can harm the hearts of young people JOKL concludes that it cannot; in the reported sudden deaths of supposedly healthy men during or after athletic performances some other pathological change entirely unconnected with activity can always, he says, be demonstrated. A discussion on the philosophy of physical fitness includes a statement that the psychologist who took part in the investigation concluded that girls are superior in "morality" to boys. "There is a sudden marked drop in morality scores in boys when they become 13 years old. Girls do not show such a drop. They continue to progress steadily upward notwithstanding the fact that at the same time their physical performance scores remain behind those achieved by boys, or even decline."

More comprehensive work on physical-fitness tests has lately appeared from the University of Illinois school of physical education, in a monograph by CURETON et al.[8] who have analysed the repeatabilities and interrelationships of 28 tests of physical endurance, mostly of gymnastic type, but including several running events. The statistical technique used is factor analysis, and a combination of scores in 4 tests—chinning the bar, backward leg-raisings, side leg-raisings, and the mile run—has been found which can be used to evaluate a given person's overall endurance capacity. Further analysis shows that the tests fall together in groups: factors of running endurance, of lateral muscles, of shoulder-girdle and pelvic-girdle muscles (which go together, as one might expect), and of arm-extensor muscles emerge. CURETON also goes in detail into the endurance relationships of the Harvard step test (pulse-rate after stepping up on to a bench and down again 30 times a minute for five minutes) and the old Schneider index (a combination of lying pulse-rate, standing pulse-rate, pulse-rate change from lying to standing, pulse-rate increase after exercise, time for pulse to return to first value after exercise, and change in systolic blood-pressure from lying to standing). Analysis of the Schneider index shows that two of its items contribute no further information after the other four have been considered, and a modified index is presented which omits pulse-rate and blood-pressure change from lying to standing. This modified index predicts ability in running endurance (an average of 4 scores, for 1-mile run, 2-mile run, $3^1/_2$-mile steeplechase, and 1000-yard run) fairly well, but only for a group of men who are keen to do their best, and who are neither very fat nor very thin. Body build turns out to have a great deal to do with endurance in running; in the Sheldon terminology,[9] endomorphy decreases and ectomorphy increases it—i.e., fatness worsens performance and slimness improves it. Running endurance depends on motivation, skill, physique, and cardiovascular condition: the modified Schneider index measures, imperfectly, only the last of these. Thus the search for measures of physical fitness is being continued partly in the schools of physical education and in the field, where tests are devised, large numbers are tested, and training may be carried out, and partly in the physiological laboratories, where the effects of exercise itself are slowly being unravelled.

Annotations

EQUALITY IN SERVICE

IN a letter to *The Scotsman* of July 12, Prof. Mary Lucas Keene regrets, on behalf of the Medical Women's Federation, that the National Service Act, 1947, makes a distinction between men and women doctors by enforcing conscription on one and not on the other. Within the profession the principle of equality between the sexes is so well accepted that discrimination of this kind naturally appears somewhat arbitrary and irrational. Prof. Lucas Keene notes that some men have been provoked to contrast their position with the freedom of the women, while women seeking posts in competition with men who have given national service are placed at a disadvantage which they have done nothing to incur. The letter mentions a resolution, unanimously passed by the federation, asking that the National Service Act shall be so amended that its provisions apply to all members of the medical profession. While most medical men will sympathise with this protest, and the motives which gave rise to it, it is hard to see how the Government could select one group of women for national service while ignoring the rest. The principle of equality between the sexes should include equality of service as well as of privilege; but until this is generally accepted, as it should be, it seems likely that women doctors will appeal in vain against their unwanted freedom from conscription.

EPILEPSY AND EDUCATION

LESS than twenty years ago a Bill was proposed for the State legislature of Maryland whereby all epileptic children were to be excluded from the State schools. Fortunately medical opposition, emanating from the epilepsy clinic of the Johns Hopkins Hospital, was not wanting, and in the event all Baltimore children who suffered from fits were referred to that clinic, and were there graded as suitable for an ordinary education, or for home instruction, or as unfit for any education at all. No child was, however, retained in a State school if he had more than two major fits in the classroom during a five months' term. The story of the subsequent development of the clinic with its study of the individual child and its attempts to educate parents and teachers is told by Olive Whilden of the Baltimore education department, contributing to an American symposium on Epilepsy in Childhood.[10] Here we may learn how the problems of education and treatment are being met in the United States, where special schools for epileptic children are almost unknown. C. Bradley describes the care of epileptics in a residential hospital for children with neuropsychiatric disorders, and E. Davidoff sets out at length a programme for the medical and educational treatnt of epileptic children at the Craig Colony, a State titution for epileptics, which has, however, to cater all grades from the idiot upwards. For the most rt, indeed, as H. Yannet of the Southbury Training ool tells us, epileptic children who need institutional atment are found in State training schools for the ntally defective. The case for the English plan providing special residential schools for educable leptics is set out by Tylor Fox.

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[8] Cureton, T. K., et al. Endurance of Young Men. *Monogr. Soc. Res. Child Dev.* 10, no. 1.

[9] Sheldon, W. H. Varieties of Human Physique, New York, 194

[10] *Nervous Child* (Child Care Publications, Baltimore), 194 6, no. 1.

Abnormalities of temperament and conduct get their r share of notice in this symposium. Edward Bridge, ector of the Johns Hopkins clinic, discussing emotional turbances in epileptic children, asserts that while ver than 1 in 10 of the children show serious personality orders at their first attendance, these disorders tend increase later, and in fact prove a larger handicap in ter-school careers than do the fits themselves. While ey rarely precede, or are associated with, the onset of s; they often encourage their occurrence, thus adding aterially to the children's physical and social handicap. ith expert advice and team-work, much could be done keep temperament and conduct nearer the normal. ne paper discusses the attitude of the epileptic child to s own complaint; another finds that the Rorschach st discloses characteristic and distinct personalities r sufferers from grand mal and from petit mal. But ost of the 30 children on whom this last investigation as made were attending a behaviour clinic; and this ows once more the necessity, before venturing on neralisations about epilepsy, of specifying as exactly possible the type of epileptic concerned. On the urological side balance is to some extent maintained y a paper on the neuropathology of epilepsy in children, nd by one of W. G. Lennox's masterly communications n drug therapy.

Everyone interested in epileptic children will do well o obtain this journal for himself and read and re-read he various papers. They are of course unequal, and here may be a good deal to criticise; but we all have omething to learn in a field which is inadequately overed by medical textbooks. We shall at least be onvinced that American workers recognise the great nportance, and often the great difficulty, of getting the ight lay staff for schools for epileptics. This applies ot only to teaching staff, but more especially to those hom the Americans aptly and picturesquely call "cottage heads."

VITAMIN A IN LEUCOPLAKIA

GYNÆCOLOGISTS do not always agree on what constitutes leucoplakia vulvæ, and it is probably fairest to iagnose this condition after histological examination f a biopsy specimen. Before diagnosing leucoplakia yams and Bloom[1] insist that such a specimen should how thickening of the epidermis, hyperkeratosis, and vergrowth of all layers with acanthosis; the dermis hould present a chronic inflammatory picture with an nvasion of chronic inflammatory cells. They investigated 18 patients in an attempt to find some common actor in the ætiology. In 11 of their cases they found ypochlorhydria or achlorhydria, all other tests being egative. For a similar age-group the incidence of ypochlorhydria is 35%, but whether the increase of 5% is significant in 18 cases is doubtful. They suggest hat a low gastric acidity interferes with the proper bsorption and utilisation of vitamin A, and for this eason they treated their patients with a daily dose of 50,000–500,000 units of vitamin A by mouth, supplemented by 50,000 units by injection twice weekly. n addition they gave ♏15 of dilute hydrochloric acid n water three times daily with each meal. The response o this treatment was slow, but in 14 cases they obtained definite improvement, both clinically and histologically. The dry indurated glossy and wrinkled external genitals became more pliable and normal. They have had 6 of their patients under observation for two years without any further treatment and with no recurrence.

This small series is published to stimulate interest among other clinicians. In a chronic condition which is resistant to almost all treatment except wide excision, and which may often then recur in regions adjacent to the site of the operation, any new suggestion is welcome. Œstrogen treatment, which has been suggested in the past and has no scientific basis, has been abandoned by most gynæcologists, so vitamin A and hydrochloric acid will have a relatively clear field. It can do no harm and it may do good. But it is important before assessing the results to be histologically certain of the diagnosis.

PINS AND NEEDLES

THE symptom involving the extremities which patients commonly call "pins and needles" comprises many different sensations. Though the main cause of the symptom may become apparent from a careful history and examination of the patient, very little is known about the mechanism of its production.

In a fascinating study of the subjective effects of compressing the arm with a sphygmomanometer cuff, Weddell and Sinclair[1] have advanced our knowledge of this mechanism. In a number of trained observers the cuff was inflated to a pressure of 150 mm. Hg for varying periods, with the arm hanging by the side after inflation of the cuff, and the resulting sensations analysed. One to two minutes after compression started a sensation termed "compression tingling" appeared, and this lasted for three to four minutes, passing off gradually. It consisted in a light tingling sensation more picturesquely described as "a faint comfortable soda-water sensation": though there might be a few sharp pricks, the main effect was of touch rather than of pain, and the sensation was not modified by external stimuli such as touching or rubbing the fingers. About a quarter of an hour after compression started a "velvety numbness" was experienced; this was at first only elicited when the hand was stroked, but it soon became spontaneous and gave rise to a peculiarly unpleasant subjective sensation of a sickening character. The third type of sensation occurred after release of the compression and has been named "release pricking." It first appeared about 45 seconds after release, and it lasted for a variable time, depending on the length of compression: it was a very strong coarse pricking, having a component of many sharp bright pricks like a needle entering the skin, and was interpreted subjectively as pain rather than touch, though there was a continuous diffuse tingling in addition to the pricking. The sensation was increased by tapping or rubbing the affected fingers.

"Compression tingling" and "release pricking" were studied by simple modifications of the technique of compressing the arm in an effort to discover their cause. It was noted that in 3 out of 16 subjects compression tingling was felt only in the ulnar distribution, in 2 in the tip of the thumb as well, while in 3 others it started in the ulnar distribution and spread to involve the rest of the palm of the hand and fingers.

The final conclusion was that compression tingling is due to local stimulation of the main nerves under the compression cuff, and that the stimulation is brought about by asphyxia rather than by deformation. It was thought to be due to impulses arising in fibres normally conveying the sense of touch. Release pricking begins in the finger-tips and spreads to involve the palm and (after protracted compression) the lower part of the forearm, the upper border being roughly horizontal; it is never confined to the distribution of a single peripheral nerve. It is thought to arise by an entirely different mechanism from compression tingling—stimulation of some of the peripheral nerve-endings by removal from the tissue spaces around them of a chemical substance which accumulates during a period of circulatory depression, the greater proportion of the impulses aroused in this way being conveyed in the somatic afferent fibres normally subserving the sensation of pain. The occurrence of release pricking runs parallel to that of reactive hyperæmia, which was shown by Lewis [2] to be due to the accumulation of a normal product of tissue metabolism in the tissue spaces.

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[1] Hyams, M. N., Bloom, O. H. *Amer. J. Obstet. Gynec.* 1947, 53, 214.

[1] Weddell, G., Sinclair, D. C. *J. Neurol. Neurosurg. Psychiat.* 1947, 10, 26.

A DRUG FOR HYPERTENSION

In the United States interest in the possible clinical value of tetra ethyl ammonium bromide (T.E.A.B.), a quarternary ammonium compound, was aroused by the discovery that intravenous injection in animals caused a sharp fall in systolic and diastolic blood-pressure and an increase in peripheral blood-flow, and that these effects resulted from a blockade of both sympathetic and parasympathetic ganglia.[3] Lyons et al.[4] reported preliminary results in about 700 patients given T.E.A.B. on one or more occasions. There were no deaths and only a few severe toxic reactions. Measurement of skin temperature and clinical response in patients with vascular disease and in a control group of healthy people suggested that T.E.A.B. was usually as effective or more so than the accepted surgical methods (paravertebral sympathetic block, local nerve block, spinal anæsthesia, and sympathectomy) of producing sympathetic block. This report and subsequent ones [5 6] indicate that T.E.A.B. is valuable in the treatment of peripheral vascular disease of all kinds (particularly when a vasospastic condition is present) and hypertensive congestive cardiac failure, and as a diagnostic aid for gauging the extent of the functional element in various vascular diseases.

The drug has also been used as a therapeutic test for the selection of patients likely to benefit from sympathectomy, but Birchall et al.[7] say that though T.E.A.B. produced an appreciable fall of blood-pressure in 14 out of 16 hypertensive patients, only 2 out of 12 of these patients who were subsequently subjected to lumbo-dorsal sympathectomy had any significant change in blood-pressure two to four weeks after the operation. Lyons et al.[6] comment on the symptomatic relief obtained when T.E.A.B. is given to hypertensive patients. One patient with hypertensive congestive cardiac failure and severe orthopnœa obtained relief for as long as twelve hours after one intramuscular injection. In general the symptomatic relief in hypertensive cardiac failure has been confirmed by workers in this country. Unfortunately, however, the fall in blood-pressure usually lasts for only ten or fifteen minutes after intravenous injection, and for an hour or so after intramuscular injection. The discovery of a suitable depot-forming substance that would release T.E.A.B. slowly into the circulation after intramuscular injection would be of great value.

The dose of T.E.A.B. is 0·1–0·5 g. intravenously or up to 20 mg. per kg. body-weight intramuscularly; it is unsuitable for administration by mouth because it is poorly absorbed from the gastro-intestinal tract. The drug is soluble in water and can be sterilised by autoclaving. A 10% aqueous solution has been recommended [6] for injection. It is estimated in urine by precipit with ammonium reineckate, as in the estimation choline.[6 8] Tetra ethyl ammonium chloride has been instead of T.E.A.B., and Birchall et al.[7] find that sedative effect of the bromide ions can thus be avoi

Although care is required in the administration T.E.A.B., severe toxic reactions are rare. A rapid profound drop in blood-pressure has been noted in cases and may cause grave circulatory collapse. drug should be used with particular caution in case severe hypertension, especially where renal functio impaired. Protracted use has been reported to anterior horn cell irritation, but this has not observed in Britain. Some patients find it gives th metallic taste in the mouth. Other effects are incom dilatation of the pupil and a decrease in its light reac ptosis, cessation of sweating, dry mouth, and dysph Bladder tone may become diminished and the desir micturate be suppressed. In the gastro-intestinal T.E.A.B. causes a cessation of propulsive motility a reduction of the acidity and volume of gastric j Peptic-ulcer patients are completely relieved of th symptoms, but once the effect of the drug wears off p stalsis returns (and the pain) with renewed force a vigour. *All these actions are due to the blockade* sympathetic and parasympathetic ganglia. In some c T.E.A.B. has relieved the pain of coronary thromb and angina pectoris, but Lyons and colleagues do advise its use in these conditions until further work been done on its effect on the coronary arteries.

STREPTOMYCIN IN PLAGUE

Streptomycin is active in vitro against a wide var of gram-negative organisms, and in practice it has prov effective in the treatment of some penicillin-resist infections, including tularæmia, tuberculous meningit *Hæmophilus influenzæ* meningitis, and contaminat wounds. 'The drug may have a further valuable app cation in the treatment of bubonic plague, the dread Black Death of the Middle Ages, of which 11 cases we reported at Haifa at the beginning of this month.' In an outbreak that occurred last winter at Buenos Aire according to a British United Press report, the firs 2 cases were treated with streptomycin, and though th prognosis appeared to be hopeless the patients survived. Two swallows do not make a summer, but such results would not be unexpected. During the prelimin bacteriological screening tests made shortly after th discovery of streptomycin it was found to inhibit th growth of *Pasteurella pestis.* Last year Hornibrook[10] and Wayson and McMahon[11] reported that they had prolonged the life and increased the survival-rate of mice and guineapigs infected with plague by treating them with streptomycin. This work has been confirmed and extended by Herbert,[12] who showed that the drug must be administered early in the infection if the animals are to survive. When given in doses of 800 units daily at the same time as the inoculation with *Past. pestis*, streptomycin provided very good protection, 85% of the animals surviving. When treatment was delayed for one, two, and three days after infection the survival-rates fell to 60, 5, and 0%. Survival-times in the animals that died were significantly prolonged. At the end of the experiment the survivors were reinfected with the same dose of *Past. pestis* to test for immunity. No detectable immunity was observed in the animals given streptomycin at the same time as the infection with plague; in the animals treated one and two days after infection there was respectively moderate immunity (26% survived) and good immunity (86% survived) ɩnger the organism was allowed to develop in the before treatment began, therefore, the greater the ɩuent immunity in the animals surviving.

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[2] Lewis, T. Blood-vessels of the Human Skin and Their Responses, London, 1927.

[3] Acheson, G. H., Moe, G. K. *J. Pharmacol.* 1945, 84, 189; 1946, 87, 220.

[4] Lyons, R. H., Moe, G. K., Neligh, R. B., Hoobler, S. W., Campbell, K. N., Berry, R. L., Rennick, B. R. *Univ. Hosp. Bull. Ann Arbor.* 1946, 12, 33.

[5] Berry, R. L., Campbell, K. N., Lyons, R. H., Moe, G. K., Sutler, M. R. *Surgery, St Louis*, 1946, 20, 525.

[6] Lyons, R. H., Moe, G. K., Neligh, R. B., Hoobler, S. W., Campbell, K. N., Berry, R. L., Rennick, B. R. *Amer. J. med. Sci.* 1947, 213, 315.

[7] Birchall, R., Taylor, R. D., Lowenstein, B. E., Page, I. H. *Ibid*, p. 572.

[8] Beattie, F. J. R. *Biochem. J.* 1936, 30, 1554. Jacobi, H. P., Baumann, C. A., Meek, W. J. *J. biol. Chem.* 1941, 138, 571.

[9] *Times*, July 8, 1947.

[10] Hornibrook, J. W. *Publ. Hlth Rep., Wash.* 1946, 61, 535.

[11] Wayson, N. E., McMahon, M. C. *J. Lab. clin. Med.* 1946, 31, 3

[12] Herbert, D. *Lancet*, 1947, i, 626.

ction of guineapigs and mice by subcutaneous ation with *Past. pestis* produces an infection closely oling bubonic plague in man; intraperitoneal ation results in a more acute type of infection, ponding more closely to septicæmic plague. ling to Herbert, D. W. Henderson has produced nfections in animals closely resembling pneumonic in man by exposing them to aerosols containing *pestis*. In this type of infection streptomycin was ighly effective. One remarkable feature of streptotherapy in experimental plague is the good results ıed with short periods of treatment; even single produce some effect. Sulphathiazole was also by Herbert to be effective, but it had to be given long periods. If the results of these experiments pplicable to man it seems that if streptomycin is to be effective in human plague it must be given ı a day or so of the onset, or at any rate very

Owing to the relative scarcity and expense of the it is unlikely to be tried on a large scale for eatment of plague yet awhile. At the moment the successful readily obtainable remedy appears to be adiazine, which is superior to the other sulphones for this purpose. This was established by sive field trials carried out in India at Latur and a from 1940 to 1944 under the auspices of the n Research Fund Association.[13]

the basis of experimental work reported by Sokhey Dikshit[14] in these columns in 1940, over 1600 nts were treated with various sulphonamides. The treated with sulphadiazine had the lowest mor-, 21%, compared with 91% in the control cases. value of sulphadiazine in plague has also been onstrated by other workers in India.[15]

FATTY HERNIATION IN LOW BACK PAIN

1944 Copeman and Ackerman[16] reported a series ıses in which low back pain appeared to be due to iation of lobules of what they called "basic fat" ugh the superficial fascia in the region of the iliac s. Such herniations, occurring at weak points, symptomless until made turgid and œdematous g., by injury or confinement to bed—they considered e the cause of a proportion of low back disabilities, a number of patients were relieved by their surgical sion. Herz[17] now reports 37 cases treated in this with satisfactory results. He agrees that the overy of a tender nodule, injection of which with l anæsthetic relieves the pain, is diagnostic, and later severe and long-standing pain ceases after surgical removal of the protrusion.

here are difficulties in the way of accepting this work ıout reservation. In the first place, there is a lack natomical evidence as to the existence of Copeman Ackerman's basic fat pattern. Secondly, as was tioned in the discussion on Herz's paper,[18] subıneous fatty nodules are to be found in over 50% of ons not complaining of backache Thirdly, the mere ıinistration of a general anæsthetic for the removal of ler nodules will also, as Elliott[19] has shown, relieve the ıful reflex foci of muscular spasm found in cases of low k pain and sciatica due to prolapsed intervertebral s. Moreover, these views conflict with those of geons like Burns and Young,[20] who believe that the lapsed disk is the cause of most cases of persistent back pain. This conflict is certainly no reason for dismissing the evidence for fat herniation as a cause of symptoms, but it is essential to have detailed records of the physical and neurological findings in such cases. In one of the two cases Herz[17] mentions in detail, the referred pain in the leg, the hypoalgesia, wasting, and decreased reflexes might be attributed to disk prolapse, and the few months of relief recorded after general anæsthesia for the mass removal of a large quantity of fatty tissue is not conclusive.

TREATMENT OF DISSEMINATED SCLEROSIS

THE pitfalls awaiting those who seek an effective treatment for disseminated sclerosis are now clearly mapped; and in his Humphry Rolleston lectures at the Royal College of Physicians last week Prof. P. C. P. Cloake marked them anew. Despite his caution there seems to be real promise that the treatment which he has practised for the last 17 years is an advance on existing alternatives. Broadly, it is based on repeated courses of T.A.B. pyrotherapy along with alternating courses of intravenous organic arsenic and oral inorganic arsenic. These remedies, as Professor Cloake said, have been used before in disseminated sclerosis; the novelty lies in his insistence that their administration must be continued for at least five if not ten years.

Out of 422 cases observed, 312 have been followed up. Of 64 slight cases that received adequate treatment, 39 are today well, 20 are improved, and 5 are unchanged; none is worse. Among the moderately severe cases, *only 1 is materially worse. It is all too easy*, as Professor Cloake indicated, to draw over-optimistic conclusions from these results; for example, the patient who felt that he was not benefiting from treatment may not have stayed the course, and will thus have been lost to the follow-up. This does not alter the central fact that for all their deficiencies the figures seem better than those obtainable with other forms of treatment.

SCOTTISH REGIONAL BOARDS

CHAIRMEN of the five regional hospital boards for Scotland have now been appointed. They are: Northern region, Mr. Donald Macpherson, convenor of Inverness public-health committee; North-eastern region, Dr. May Baird, convenor of Aberdeen city public-health committee; Eastern region, Mr. William Hughes, treasurer of Dundee corporation; South-eastern region, Dr. J. R. Greenlees, chairman of the Royal Hospital for Sick Children, Edinburgh; and Western region, Prof. E. P. Cathcart, F.R.S., recently retired from the chair of physiology in the University of Glasgow, and formerly chairman of the Scottish Health Services Committee.

THE 17th International Physiological Congress, under the presidency of Sir Henry Dale, O.M., opened at Oxford last Monday. The meeting is being attended by nearly 1200 physiologists representing almost every country in the world except Germany and Japan. The congress has only twice before met in Britain—at Cambridge in 1898 and at Edinburgh in 1923.

THE chief medical officer of the National Coal Board is to be Dr. E. H. CAPEL, of Birmingham. Details of the appointment will be found in our news columns.

Sir ARTHUR RUCKER has been appointed deputy executive secretary of the preparatory commission of the International Refugee Organisation. As deputy secretary to the Ministry of Health since 1940, he has taken a constructive part in the preparations of successive Governments for a National Health Service, and in discussions with representatives of the medical profession. To his new work he brings experience of relief and refugee administration gained in 1941–43 when seconded for special service as secretary to the office of the Minister of State in Cairo. In the preparatory commission his senior will be Mr. William Hallam Tuck, of the United States.

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Special Articles

TUBERCULOSIS IN GERMANY

WITHIN the past year tuberculosis in Germany has been the subject of some alarming reports. A recent example is an article in the *Manchester Guardian* of June 4 in which a special correspondent gave disquieting figures for deaths, notifications, and hospital beds. For 1946 he estimated the number of tuberculosis deaths in Germany as 152,000, and the number of cases as 759,000, and he said that the number of beds is inadequate. In an accompanying editorial, the *Manchester Guardian* expressed grave concern. A second article, giving figures for Berlin and the United States zone, appeared on July 14.

The original report, however, based on information obtained from a German source by a non-medical person, must be treated with reserve, and many of its statements do not seem to be compatible with the data published by the British and United States elements of the Control Commission for Germany. These data are based on the official death returns made by German doctors; and, as there is no shortage of doctors in Germany, there is no reason to doubt that death notifications are properly made.

MORTALITY

The deaths from tuberculosis in the British zone during 1946 total 13,673,[1] which for a population of 22,795,000 gives a rate of 60 per 100,000. The tuberculosis deaths in the U.S. zone from March, 1946, to February, 1947, total 9442; this figure is arrived at from the death-rate of 56·6 per 100,000 given for the population of 16,682,000.[2] No figures are available for the French and Soviet zones, but if the rate were the same as that in the British zone, the total would be 12,803 deaths in the population of 21,339,000. Finally if one applies to the whole population of Berlin the rate of 257 found in the U.S. sector of Berlin, one arrives at a total of 8172 deaths from tuberculosis in that city. To summarise:

	Population	*Tuberculosis deaths*	*Tuberculosis death-rate per 100,000*
British zone	22,795,000	13,673	60
U.S. zone..	16,682,000	9442	56·6
French and Soviet zones	21,339,000	12,803	60
Berlin	3,180,000	8172	257
		44,090	

This total of about 44,000, based on official returns, is low compared with the *Manchester Guardian* correspondent's estimate of 152,000; and the following points deserve notice:

1. There is close concordance between the figures for the British and U.S. zones, though the two zones have operated quite separately in the past. This fact in itself makes any gross error unlikely.
2. The total of deaths for Berlin (8172), arrived at by applying to the whole Berlin population the rate found in the U.S. sector of the city, is almost the same as the only official mortality figure quoted by the correspondent (June 28 and July 14). There is no reason to believe that figures for the U.S. zone are any less valid than those for the U.S. sector of Berlin.
3. The great difference between the rate for Berlin and the rates for the British and U.S. zones shows the fallacy of estimating the total deaths in Germany by applying the Berlin rate to the whole country, as the correspondent does in answer to criticism (June 28).
4. Finally, British zone totals for the first quarter of 1947 (not shown above) show no increase over the totals for the first quarter of 1946. Even supposing the zone figures to be fundamentally false in some respect, an absence of increase would still be noteworthy and at variance with the assumption of a continuing 30% rise in deaths year. His estimates are in fact based on this assumption, and he goes so far—proceeding in ge progression—as to predict a total of 440,000 losis deaths in 1950.

CASE-NOTIFICATION

Rises in the number of cases notified in Germany often adduced as evidence of a great increase of culosis. It is now, however, recognised that cation figures are an unreliable index of tub trends. In a press release dated April 10, 1947, R *Martin*, public-health adviser to the Control Com expressed doubts about figures of notified cases: this connexion it should be remembered for what worth that cases diagnosed tuberculous get a mentary ration." He also explained that until autumn statistics referred only to the open case; then all new cases of "active" tuberculosis have notifiable. Mr. Aneurin Bevan, at a recent co pointed out that in England tuberculosis mo falling while notifications are rising, and justly a the latter trend to increasing diagnostic facilities.

MASS MINIATURE RADIOGRAPHY

A Control Commission press release dated June 1947, gives the result of a mass-radiography su 60,000 persons in Hamburg. The number of infectious tuberculosis discovered amounted to 2·9 1000—a figure remarkably similar to figures for populations. The prevalence of known infectious in Hamburg is 3·4 per 1000, and we get therefore a prevalence of infectious cases of 6·3 per 1000. This f for an urban population, belies many alarming rep

TUBERCULOSIS BEDS

The latest 1947 figures for the British zone show 24,295 beds are available and occupied by tubercu cases, while the U.S. zone has 21,045, of which are in tuberculosis hospitals and sanatoria. These represent, in the British and U.S. zones respectively, 177 beds and 223 beds per 100 deaths, compared fewer than 100 beds per 100 deaths in Great Britain only about 20 in Poland. In the light of these figures is a striking fact that, when the Polish staff and tuberculous patients of a Displaced Persons hospital in many were ready for return to Poland, permission for them to take the hospital equipment and bedding with them was refused by the military authorities.

Clearly, so far as tuberculosis is concerned, the interests of the German civilian population are being closely safeguarded by the Control Commission. In General Clay's report for the month of May, quoted by the *Manchester Guardian* correspondent on July 14, concern is expressed because in the U.S. zone only 21,045 beds are a for tuberculosis, leaving without hospital facilities 14, or 40% of all cases of infectious tuberculosis. In this country certainly considerably more than half of infectious cases are not in hospital. It seems likely that the relatively generous *hospital accommodation* in Germany, by isolating the *open case* and preventing spread in conditions manifestly favourable to disease, is partly responsible for the unexpectedly low tuberculosis figures revealed in this analysis. The figures for Berlin remain, and were to be and there must be similar figures for some other towns, but in the zone totals they are tempered by the lower rates in areas where "Berlin conditions" do apply.

CONCLUSION

Apart from a few urban areas, tuberculosis is being well in check in Germany; the death-rates, and morbidity as revealed by mass radiography, are *no* hig than in England.

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[1] Monthly Statistical Bulletin of the Control Commission for Germany, British Element. May, 1947.

[2] Cumulative Review of the Military Governor U.S. Zone, May, 1946–March, 1947: Public Health and Medical Affairs.

PURE AND APPLIED CHEMISTRY

CENTENARY AND CONGRESS

)URING the Chemical Society's centenary celebrations London this month Prof. C. N. HINSHELWOOD, F.R.S., ivered a presidential address, which will be printed in ;*Journal of the Chemical Society.* In the course of it said:

" One of the unmistakable trends of the past century s been the successive decline of different aspects of lividualism: the independent craftsman, the aristo-atic politician, the empire-building explorer all departed om the scene. In science a similar trend has been sible though at a lag of several decades. At the time our foundation the stage is dominated by the amateur, iether a Cavendish or a Faraday: later the individual more and more frequently dependent upon the uversity or technical college, small and independent it none the less a community. Then the great research sociations appear and the State subsidy becomes dispensable. Two great wars intensified and acceler-ed the collective process in the world of science until day we are faced with the problems presented by ist industrial research laboratories and by State enter-rises undertaking work which is inconceivable without ie coördinated efforts of hundreds of men of science. he great question is what is to be the fate of the dividual in the world which has emerged. In this atter something of an ideological battle has been igaged. . . . Complete individualism means chaos, hich is only given form by something analogous to an iergy factor—by State compulsion or by powerful notional forces. If any of these controls are applied too igorously the result is order indeed but the order of tter stagnation. . . . Nothing is less fruitful than octrinaire argument about freedom and planning. The ast achievements of military regimentation in war-ime have been cited as examples for peace, but in this is forgotten that the results in limited spheres have ad to be bought with an utter disregard of cost, whether f money, happiness, or life. . . . Those who call them-elves planners are often, I think, not conscious enough f the art and effort involved in large-scale action. t is still the individual who really counts. but his roblems are different. . . . The Faraday of tomorrow ill have by his own methods to break through the rammels of an over-organised society: and for this it nay well be that he will need something of the quality f a Nelson."

International Congress in London

Delegates from 28 countries attended the eleventh nternational congress of pure and applied chemistry, which was opened in London on July 17, immediately fter the Chemical Society's centenary celebrations. The congress, under the presidency of Viscount LEVER-IULME, continued until July 24, and some four hundred papers were read.

LACTATION

MOHAMED EL SHAHAT (Egypt) described a new fat-soluble, thermostable, lactation-promoting factor isolated from the unsaponifiable matter of fenugreek oil; it is not a tocopherol. This " H " factor promoted lactation in 345 out of 350 cases of human lactation deficiency in a dose equivalent to $^1/_6$ mg. by mouth. The volume of milk was increased in 158 cases by 100–900 %, the increase being greatest in the early stages of lactation. The content of fat, proteins, lactose, minerals, and vitamins was also increased.

S. J. FOLLEY and F. G. YOUNG declared that in the cow in declining lactation crude anterior-pituitary extracts have a greater galactopoietic effect than purified prolactin; there is little correlation between the pro-lactin content and the galactopoietic activity of different pituitary extracts. This activity is due to a number of anterior-lobe hormones, two members of which are probably prolactin and adrenocorticotrophin. Substantial and profitable, though temporary, increase can be obtained with cows in declining lactation by injection of crude extracts of ox anterior-pituitary tissue; there is, however, no effect at the peak of lactation. On the other hand, extracts of sheep and pig pituitaries cause a sustained depression in lactation, possibly because of antihormone formation.

IMMUNITY

In a paper on nutrition and disease in early life A. N. WORDEN said that studies on lambs and calves indicate the importance of colostrum in species with a syndesmochorial placenta. They provide also valuable experimental material for the investigation of the influence of nutritional status on antibody production. Owing to the variable resistance of different calves (possibly a breed difference) to colostrum deprivation, it is possible to rear calves that have an incomplete serum-globulin picture, but which are capable of producing antibodies to defined stimuli. Results with calves suggest that the rôle of breast milk (including colostrum) in the human infant's disease resistance might be reinvestigated.

INSECTICIDES

F. P. COYNE said that future competitors would have to achieve an extraordinarily high standard if they are to replace the new insecticides introduced since 1939. More likely developments in the immediate future are: (1) the production of formulations devised for specific purposes, (2) application techniques, and (3) concentration of effort on entomological problems for which the present new group is not particularly effective. Progress will depend on the combined efforts of specialists in universities, research institutions, industrial organisation, and Government departments.

FOOD AND NUTRITION

J. R. MARRACK said that, with continued deliberate selection of food, assessment of the community's well-being would be needed, in order to decide whether the food-supply is well selected, and to satisfy the public that their food is adequate. The tests that may be used are: (1) vital statistics, but people may be below par for a long time without dying, and death-rates are being constantly affected by new remedies such as penicillin; (2) surveys of morbidity, the objection here being that results depend on the subjects' memory; (3) clinical examinations, which are influenced by personal factors and are held to be worthless by those who do not approve of the results; (4) heights and weights of children, which are probably the best criteria; (5) functional tests, the results tending, however, to be influenced by the attitude of the examiner and the examinee; and (6) laboratory tests. These tests should be carried out at regular intervals on representative samples of the population, preferably together with surveys of food eaten.

ANCEL KEYS (U.S.A.) described the Minnesota starvation experiment in which 32 young men were observed during three months of normal nutrition; six months of semi-starvation, during which they lost 24 % of their body-weights; three months of restricted refeeding; and ten months on unlimited diets. Activity approximated the whole time to that in light industry. In rehabilitation the changes in body water and fat obscured the valuation of " active " tissue recovery from gross weight alone. Under the most favourable conditions full recovery required from six to twelve months. Calorie intake was more important, during recovery, than supplementary vitamins and proteins. Intakes of over 4000 calories a day promoted the most rapid weight recovery, but the added weight was mostly fat and there was relative obesity. With very high intakes (over 5000 calories) there was sometimes a tendency to congestive heart-failure.

ANTIBIOTICS

S. A. WAKSMAN (U.S.A.) said that as many as 20–40 % of all cultures of actinomycetes isolated from soils, composts, peats, and dust produce agents inhibiting the growth of bacteria, fungi, or bacteriophages. Of the four genera of actinomycetes—namely, streptomyces, nocardia, micromonospora, and actinomyces—the first is known to produce the greatest number of antibiotics; the nocardia group has so far yielded only two antibiotics—proactinomycin and nocardin. The third has yielded one, and the fourth none. Streptomycin is produced by strains of *S. griseus* and by certain other actinomycetes.

In a joint paper, H. R. V. Arnstein, A. H. Cook, T. H. Farmer, and M. S. Lacey referred to some of the antibiotic solutions obtainable from fusaria and effective in particular against *Mycobacterium phlei*, which is a convenient representative of the acid-fast bacteria.

R. K. Callow reported that *Bacillus licheniformis*, an organism of the *B. subtilis* group, produces material with antibiotic activity against *Mycobacterium phlei*, *M. tuberculosis*, and other bacteria.

INDUSTRIAL TOXICOLOGY

G. R. Cameron, F.R.S., in an address on the toxicity of D.D.T., said that poisoning is heralded by premonitory symptoms and an increase in the white blood-cell count. Its main action is on the central nervous system, and particularly the motor cortex; but it may also damage the liver, and to a lesser extent the kidneys, heart, and voluntary muscles. No genuine evidence of hypersensitisation has been recorded.

R. A. Peters, F.R.S., L. A. Stocken, and R. H. S. Thompson described how Bal, developed at Oxford during the war as an antidote for arsenical war gases, acts by forming ring compounds with trivalent arsenical compounds, so much less dissociable with tissue constituents than the arsenic compounds that the toxic effects of the arsenical can be reversed. Moreover, the injection of Bal in oily solution benefits at least half of the patients with exfoliative dermatitis due to arsenic therapy. Bal has also proved of value in acute mercurial poisoning. Bal-glucoside has been synthesised and shows promise of success in therapy.

DRUGS AND CHEMOTHERAPY

D. Bovet and P. Viaud (France) described the anti-histamine drugs discovered since 1937; although many different chemicals have some anti-histamine action, few possess it to any great extent; but N-*p*-methoxy-benzyl-N-dimethylamino-ethyl-aminopyridine is effective in very small doses.

W. Bradley, in a report on muscle-relaxing drugs of the glycerol series, said that some glycerol ethers inhibit the growth of both gram-positive and gram-negative organisms; many have narcotic properties; others are able to relax skeletal muscle in animals and in man. The most successful compound is α-o-tolyl ether, and a small group of related ethers are also effective, though in smaller degree.

Discussing the effect of ionisation on the activity of sulphonamides A. T. Fuller said that the activities of the sulphonamides, both actual and relative to each other and the antagonising power of *p*-aminobenzoic acid vary greatly with the pH. For example, while sulphabenzamide is only one-twentieth as active as sulphathiazole at pH 7, it is ten times as active as pH 3. Interpretation of results is not easy because the exact degree of ionisation of the compounds is difficult to determine and because the assumption that conditions within the cell are identical with those in the culture medium may not be justified.

P. Ofner, R. H. Thorp, and E. Walton, in a paper on amidone and its analogues, said that synthesis of analgesics based exclusively on the morphine model is unlikely to yield the most fruitful results. The latest synthetic analgesic, amidone, which is highly active, bears only a slight chemical resemblance to morphine. Ofner and his colleagues have recently made a series of ketone analogues of amidone, and are now preparing compounds as closely related as possible to amidone, with the object of discovering whether this drug exhibits peak activity, and of correlating the nature and positions of the groups in the amidone molecule with analgesic activity.

BRITISH MEDICAL ASSOCIATION

THE REPRESENTATIVE MEETING

The annual representative meeting of the
under the chairmanship of Dr. J. B. Miller, of
London last Tuesday. Sir Hugh Lett was
president of the association for the coming year,
Sir Lionel Whitby was elected president for
Dr. J. C. Matthews and Dr. H. W. Pooler were
vice-presidents in appreciation of their excep
services to the association.

NEGOTIATIONS WITH THE MINISTER

Dr. Guy Dain, chairman of council, gave an
of the Negotiating Committee's work since the
representative meeting. The Minister of Health
he said, accepted the committee's position and
agreed that amendment of the Act was a
The Negotiating Committee had set up a series of
committees, covering all aspects of the Act; and
subcommittee had had meetings with a senior
the Ministry. There had been no attempt by
Ministry to limit the scope of discussions.

> "We have spoken to our principles: we have not
> any point to the Government from the position you
> taken up. . . . You will be interested to know that we
> been strengthened in the proper character of our con
> there has been no retreat from any of our principles."

The Act had been thoroughly covered; but there
be a few further meetings to cover one or two
points. The Negotiating Committee was on the
of making a written statement on the discussions,
would be sent to the Minister at the same time that
officers reported to him; this would counter the
that the committee's views might become attenuated
the Ministry officials' report of the proceedings.
Minister would also be asked to meet personally the
sultants and specialists', the general-practitioner, and
public-health subcommittees. When the Minister's
was received, a representative meeting would be called
decide action. Dr. Dain asked for patience and trust
the committee.

Subsequent speakers pressed for an early report on the discussions. Dr. H. H. Goodman (Newcastle-on-Tyne) said that the public was thinking that silence meant consent. The profession was being jockeyed into a position from which there would be no retreat. "I feel that our leaders are only prepared to fight a rearguard action. . . . Are we sitting on the fence, or are we running away, or both?"

Dr. J. E. Purves (Bromley) was sure that the Negotiating Committee would do nothing of which they or the profession would be ashamed; so the whole advantage of secrecy was with the Ministry. Dr. R. W. Cockshut (Hendon) was, however, delighted with the course of events; the Negotiating Committee had, he said, gathered strength in the course of the discussions. It would not be wise, as had been suggested, for the profession to have a showdown with the Minister just when his answer was expected.

Mr. A. Dickson Wright (Marylebone) likened the profession at the present time to an expectant father trying to read into every rattle of a bowl what is going on upstairs.

Mr. A. L. Abel (Marylebone) emphasised that, except on the day that the negotiations began, there had been no discussions with the Minister himself; the discussions had all been with civil servants.

Dr. Dain said that the Negotiating Committee's report, which would be issued as soon as possible, would enable the profession to marshal its forces for the plebiscite that was to be held. He understood the difficulties of protracted secrecy; week-to-week reports by the committee would, however, not have helped since no answers to the committee's arguments had yet
received.

A motion by Newcastle-on-Tyne that the Negot
Committee should be asked to make an early report on
discussions with the Minister was lost.

fter considerable discussion a motion by Dr. R. G. DON (Bath) was amended to read :

> hat in the event of the Negotiating Committee's failing ecure the Minister's agreement to the declared principles, divisions of the association should be asked to meet, in r to instruct their representatives before a special meeting he representative body is held, to discuss the action to taken. Further, that the council should then give a ng lead to the profession in the light of the findings of special representative meeting when issuing the plebiscite ns.

this form the motion was carried.

(To be concluded)

THE MEDICAL PROTECTION SOCIETY

AT an extraordinary meeting of the London and unties Medical Protection Society held on July 16 was resolved that the society's name should be changed The Medical Protection Society Ltd.

Addressing the annual meeting which followed, Sir **NEST ROCK CARLING**, the president, said that the mber of new members rose from 1087 in 1945 to 1894 t year—a record figure. The number of applications advice and help had also risen, from 1040 to 1410. o or three of the cases defended had forcibly illustrated fact that even the most careful doctor may meet th misfortune and be liable to error, leading to the position of heavy damages. Moreover the costs of igation were rising. During the past year he had been uck by the comparative frequency with which the ndible was fractured during extraction of teeth: e fracture was often so slight as to be exceedingly ficult to detect, yet heavy damages might have to be id. It was impossible to emphasise too often the cessity for (*a*) keeping records, and (*b*) informing the tient or his friends if anything goes wrong. Sir nest spoke regretfully of the apparent tendency of dges, in assessing damages, to blame the doctor not erely for any unfortunate consequences of his actions or s failures but also for the entire disability occasioned by e patient's disease or injury.

Dr. **BENTLEY PURCHASE**, commenting on a sentence the annual report, pointed out that the coroner's esire to be promptly informed of cases in which an quest may be necessary is based on the convenience the relatives, not of the coroner himself.

Dr. **JOHN STARTIN**, in view of the comprehensive haracter of the society's new title, hoped that it would enceforth include doctors practising in the United tates of America.—He was informed that the high cost transatlantic litigation would necessitate a much rger subscription if the society became Anglo-American.

Sir Ernest Rock Carling was re-elected president and Mr. . M. Mollison treasurer ; Dr. Thomas Beaton and Mr. F. A. uler were elected vice-presidents ; and Dr. Annis Gillie and r. F. H. Stevenson were elected new members of the council. r. R. W. Durand was re-elected secretary, and tribute was aid to the principals—Dr. Durand, Mr. S. Rayner, and iss K. E. Remington—for a skill and efficiency which are eflected throughout the staff.

The society's office is at Victory House, Leicester quare, London, W.C.1.

COLONIAL STUDENTSHIPS.—The allowances payable to olonial medical research students (*Lancet*, 1947, i, 733) have been amended as follows : at the Universities of Oxford r Cambridge the maximum allowance will be £260 per nnum ; at the University of London, £250 per annum ; nd at other universities in the United Kingdom, £220 per nnum.

A NEW microfilm service has been started by the Pasteur Institute in Paris. On request the institute will issue microfilms of articles in the reviews and journals available. The ervice is offered free of charge to all who require literature on research methods and developments in bacteriology.

Reconstruction

ADMINISTRATIVE RESPONSIBILITIES OF THE MATRON

FROM A CORRESPONDENT

THE 1946 report of the Association of Hospital Matrons includes revised model Standing Orders for the Matron. This attempt by the association to establish the matron in her rightful place in the hospital and thus to remove misconceptions is well timed. The new standing orders represent in many respects a big advance on older versions, which often hark back to the days when the matron was housekeeper rather than professional head of the nursing staff. The new code is shorter and less dogmatic, and free from petty and irritating rules restricting her freedom ; and it is recognised that the question whether the matron should carry the responsibility for catering is one for each hospital to decide. The wording seems to relate primarily to the voluntary hospital organisation, and the comments which follow refer, therefore, mainly to the voluntary hospitals.

A MATTER OF INTERPRETATION

It is no secret that in too many hospitals there is tension between the matron and the house-governor or secretary and his administrative staff ; and many will look carefully at the new standing orders to see whether they offer any help on this vexed question. What they do say calls for some scrutiny. Apart from a passing reference to consultation over the suspension of staff from duty, the only statements are as follows :

(1) The matron shall be appointed by the board of management or equivalent body and be directly responsible to that board.

(3) The matron will present her own written and verbal reports direct to the executive committee at its meetings and be at liberty to bring forward matters pertaining to her departments.

(15) She will report to the chief executive officer any matters outside her province which may be injurious to the interests of the hospital.

(16) It is found to be of great advantage in the coördination of the work of the hospital, if the relevant minutes of the various meetings are sent to the matron.

So far as it goes there is little with which to quarrel ; but does it go far enough ? A whole world of difficulty and potential friction lies wrapped up in that innocent-seeming phrase " and be directly responsible to the board." Its ambiguity may not be at first sight apparent, but quite different interpretations can be placed upon it. It may be taken as an emblem of professional status entitling the matron to deal " direct " with the board and to go over the head of the house-governor to the chairman of the hospital or to the board whenever she chooses. Alternatively, it may be taken by the layman to mean not only that the matron is subordinate to the house-governor qua official representative of the board, but that this subordination extends to her professional duties. (He may, for example, regard the determination of the size of the nursing staff as a matter rather for himself than for the matron.) Both schools of thought have behind them a considerable body of opinion, and the pity of it is that the matrons of tomorrow are being trained in one school and the lay administrators in the other. This is laying up trouble for the future. The divergence is not confined to terminology ; it affects the whole conception of the place and future of the nursing staff in the hospital and the extent to which lay opinion is entitled to intervene or overrule. A professional issue of serious import to the future of the hospital service is involved.

It is a misfortune, therefore, that the new standing orders are not free from ambiguity. Clarity here is important, and an attempt at disentanglement may be opportune.

THE ISSUES

The difficulty arises partly from a failure to distinguish the professional responsibilities of the matron from other responsibilities which may be of a merely administrative character; and partly from a failure to appreciate the fact that direct responsibility to the board does not mean responsibility to the board only when it is in session.

The ultimate responsibility of the board for the conduct of the hospital is discharged in two ways: (*a*) by delegation of care of the patients to the medical, nursing, and other specialist professional staff; and (*b*) by delegation of the authority of the management committee in all administrative matters to the chief executive officer and his staff. This is simple enough; but complication arises because in many hospitals the matron is expected not only to accept professional responsibility for the nursing care of the patients but also to discharge certain other duties as an administrative officer of the hospital, in respect of which she has no special claim to professional privilege. The two spheres are in practice often inextricably tied together. It is not surprising that confusion results and that friction is often generated in the process.

To resolve this confusion three things are necessary. First, the professional status of the matron as chief nursing officer must be fully recognised and defined. In this capacity she is undoubtedly directly responsible to the board. It is a heavy responsibility, analogous to that which rests upon the medical staff. She has no committee to share that responsibility (for at present the nursing committee, where it exists, is almost always a lay body, a subcommittee of the board), and it is fatal to the proper interests of nursing if the matron is liable to be overruled on professional matters by lay opinion.

Secondly, her standing orders should be so framed as to make it clear that she carries also a lay administrative responsibility. There are parts of her work in respect of which no special professional privilege can properly be claimed, and in respect of which she is a member of the administrative staff of the hospital, of which the house-governor is the head.

Thirdly, means must be found of expressing in some formula, as simple as possible, the status of the house-governor and its implications for the matron. His authority flows from the fact that between meetings of the board he acts as its official representative as well as its secretary. His is, like the matron's, a continuing authority, and the position is hopeless if the matron does not recognise this fact. Further, the matron should recognise that even where professional matters are concerned, her proper approach to the board is through ordinary procedure. In good committee practice it is well understood to be essential that members desiring to bring up some matter for discussion should first notify their intention to the secretary; very often they will also seek the opportunity of discussing their project with him, without in any way relinquishing their ultimate right to place the matter on the agenda. So far from regarding it as derogatory to her professional status, the matron should not hesitate to follow a similar practice; and in the interpretation of minutes and other decisions of the Board she ought to accept his opinion pending any necessary clarification by the board itself.

SOME ALTERNATIVES SUGGESTED

How can these things be crystallised into model standing orders? It is not very easy to find wording to fit them into the new model of the Association of Hospital Matrons, since no modification would be adequate which fails to take account of the complicated administrative structure of the hospital. This need seems to dictate something on the following lines:

(*a*) The matron is professionally responsible to the board for the nursing care of the patients and for the supervision of the nursing staff. She will be afforded opportunity to report to the board and its subcommittees on all such professional aspects of her responsibility.

(*b*) The matron may also be required to accept administrative responsibility for other departments of the work of the hospital as may be determined by the board from time to time.

(*c*) The matron's responsibility to the board shall be held to imply collaboration with its chief executive officer, in his capacity as secretary to the board and as its official representative when not itself in session; and she recognise that it is his duty to interpret decisions and intentions of the board.

Since, in practice, professional and administrative matters are closely related, she will keep him fully informed in regard to professional, as well as administrative matters which may be of concern to the board.

If the Association of Hospital Matrons would agree to this, their recommendations would be more likely to prove acceptable. An acceptable formula would be valuable, since there are indications that hospital managements are today only too often led to adopt, *faute de mieux*, an over-simplified lay version of the situation which contains a real threat to the future of nursing.

Medicine and the Law

Yet Another Overdose of Carbachol

FOR the fourth year in succession we record a fatality due to an overdose of carbachol ('Moryl').[1] Once more there is evidence which suggests that the instructions issued by the manufacturers cause confusion.

A doctor, treating a patient for cancer, sought to find accommodation for him in a hospital. He was told that no beds were available, and the resident surgical officer advised him to give the patient an ampoule of carbachol. The doctor, who had never used the drug before, obtained three ampoules from a local chemist, and, having read the instructions, he dissolved the contents of one ampoule and made an injection in the patient's arm. The patient immediately collapsed; he died before any antidote could be given. Giving evidence at the inquest in Worcestershire, the doctor said that the ampoules were not such as he expected. Each was 0·1 gramme while the proper dose was 0·25 milligramme. There was nothing to indicate that they were not for injection. The coroner said that, if the doctor had spent a considerable time reading the instructions down to the last word, he would have discovered that he was administering a dose 400 times too strong. Returning a verdict of accidental death, the jury absolved the doctor and the chemist from blame, but said that greater care should be taken with the instructions inserted in packages of drugs of such a type.

This is not the place in which to assign legal responsibility for the Worcestershire fatality. A pathologist testified that the deceased could in any event hardly have survived six months, and, had he lived, would have been a cause of sorrow to himself and to those who nursed him. But one may emphasise the general seriousness of the position and the evident risk of confusion. The drug is issued in a weak and a strong form. The weak form is for injection in cases of intestinal or vesical atony. The other form, 400 times as strong, is intended for ionisation in rheumatic conditions, &c. If the leaflet instructions inserted in the packages of the strong form can be read as applying to the weak form, tragic results are likely to occur. A practitioner may use the strong form when he believes he is using the weak. So long as this risk remains, the manufacturers should make even more energetic attempts than they have already made to call in every package of the kind which has caused such disastrous confusion. Meanwhile practitioners, chemists, and hospitals must take all possible steps to avert further deaths of this kind.

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1. See *Lancet*, 1944, ii, 609, 669; 1945, i, 504; 1946, i, 713.

In England Now

Running Commentary by Peripatetic Correspondents

MALL but elegant, the first post-war exhibition of the lical Art Society, now on view at the Royal Society Iedicine, deserves a better attendance than it was ing on the first afternoon. Leo Spira's smooth and ning ducks, carved in wood, set the note for a group rtists chiefly moved by country sights, whether at ie or abroad. Most memorable perhaps are the pale Indian scenes in water-colour of D. M. Kellett ding, with such unexpected depth and distance veyed in such light tones. In his "Teesta River" still whites and greens build up to a towering landpe like that of an Italian primitive; but the shadowy rway of "Pandrathan, Kashmir" is perhaps even ter. Several painters valued the English climate—A. Pannett in his "March Winds," and Emanuel ler in "Cloudy Weather." The quality of light in the ond had something in common with that of "Avenue Helmieh, Cairo," by G. K. Gillan, whose sun-tired ina had *drained the colour out of yellow and darkened* ens almost to black—an effect achieved in the English ne not by fatigue but by a trick of the stormy skies. Two drawings were particularly telling—the ghostly Vashing Day" of Sir Henry Bashford, where the dim n is barely seen against the tall tenement, and "The spital Ship, Vasna" by E. Puddy, showing a surgical ration at sea. The folds and creases of linen, the nes of table and figures, and the dark heads grouped out the work, must have been a strong invitation to good a draughtsman.

Among several pictures by Henry Wilson, "The oded Thames," in greys and greens, was perhaps standing, and of several bold works by Sir Harold lies, "Cliffs on Blackwater, Ireland" was the most esting. John Parkinson's agreeable "Port in Britny," and T. Holmes Sellors's happy water-colour of ouped trees, after a drawing by Cox, both repay ention. K. Shirley Smith's "Caporetto and Monte ra" showed San Antonio floating on the wave of the en valley, a tiny ark below the transparent mountains. ie or two pictures were *not* well hung, notably one lled the "Evolution of Hearing" by F. Aylmer Hort, ich was beyond the close examination of anyone low middle height.

Portraits were scarce; apart from two uncatalogued tle girls, there was only the fine head of the coloured House Surgeon" by Elliott Blake. A picture of usual charm and humour was "China Horses" by C. Dalzell. Anyone who owns a set of such horses ows well their splendid roundness, their romping itudes, the melting-candle quality of their legs, and limpid yellow-green of their glaze. But Dalzell has ught them to life by blackening their eyes and manes, d setting off their subtle colour against a dim lilac sert and a bluish sky. They are at once alarming and ractive, strange Galateas of a Chinese Pygmalion.

* * *

It is strange that little attention has been paid to cupational hazards confronting the laboratory worker. ue, some mention has been made of such trivial accints as dioxan poisoning, and injuries from acids and her substances, but no-one appears to have described ar more serious condition. This syndrome—provisionly designated microtome sickness (syn. knife apoplexy) is peculiar to laboratory technicians and others sponsible for the welfare of microtome knives. The set is rapid and in severe cases an attack may terminate tally within a few minutes. Non-fatal cases return wly to normal after showing signs of impaired mental lance for days.

Before describing a recent case it is as well to stress r the benefit of the uninitiated that a *good microtome* ife—of the sharp non-section-scoring variety—is lued beyond riches by its owner. It has been truly id that the chastity of his womenfolk is of far less portance to the laboratory worker than the edge of s knife. Good knives are rarely left unguarded for moment, and special precautions—man-traps, barbedre entanglements, chains, and padlocks by the score—have been used in many laboratories to repel the casual borrower.

There is one *really good knife* in our department under the care of a gnarled and aged technician. Recently this worthy retainer chanced upon a lab boy sharpening a pencil with the knife; not *a* knife but *the* knife—bolts and shackles, thunder and lightning—THE knife. Within a moment a severe attack of microtome sickness (syn. knife apoplexy) was upon him. His eyes bulged almost on to his cheeks, his breathing became heavy, involuntary shudders shook his entire frame, the skin became livid, and with a loud agonised shriek he fell to the ground, his hands and fingers making feeble clutching movements in the air. There was a little froth on his lips, and a low moaning sound could be heard. Within an hour he regained more or less full control of his faculties, return to normal being marked by the utterance of bad language and murderous threats. Arrangements have been made to provide safe passage of the lab boy to some far distant shore.

* * *

A certain labour exchange has a scheme for the employment of epileptics, and our lady almoner has referred several patients there at my request. On arrival they seem to have been told in an offhand manner that no employer will take them on. In spite of a certificate indicating what was suitable and what unsuitable employment, one who was eventually given a job found it so unsuitable that he had to leave after two days. Strings have now been pulled and all is well again, but the trouble need never have arisen.

This illustrates well the difference between a plan in *principle* and in *practice*. The scheme was sound in principle, but the administration was appalling. Let us be sure before introducing too many schemes that we have the administrators to carry them out efficiently; and by administrators I do not mean only the heads of departments but the whole chain from top to bottom, for a chain is as strong as its weakest link, whether it be the *first*, *middle*, or *last*.

* * *

In Somerset a cure for warts is to have them bought from you. A young farmer told me how he had sold fifty or more which had grown on the backs of his hands. One evening in the Black Lion a strange man approached him and said he would buy the warts, if my friend was willing to part with them. He protested that he would be only too glad to give them away, but that, it seems, cannot be done with warts, and he had to name a price. So he sold them to the strange man for twopence, and within a week they had vanished.

If this treatment is to be more widely used Mr. Bevan must get moving with the Verrucæ (Treatment of) Bill, 1948, so that (1) the procedure for registration of transactions may be drawn up, with penalties for selling any wart more than once; (2) registered medical practitioners may claim expenses legitimately incurred in buying warts; and (3) a controlled price for warts may be fixed (in consultation with the Board of Trade), and circularised weekly to the medical profession.

Otherwise I can see this valuable remedy falling into disrepute.

* * *

When we had our annual bazaar at St. Malaprop's there were crowds of honoraries roaring in corners; half the residents had crept from their posts to buy sweets off the ration, and everywhere sisters and nurses *billowed starchily* under foot. It was very crowded and airless, and presently a woman fainted at the senior casualty officer's feet. He rushed away in horror; Theatre Sister ducked behind the home produce stall, and Sir Frank Pus became absorbed in a tea-cosy. Just then a man thrust forward importantly: "Stand back," he shouted, "I am a first-aid worker."

* * *

Somebody asked my four-year-old niece if she was going to be a doctor like her mummy and daddy. "My goodness, no," she cried scornfully, "I'm going to be a patient."

* * *

. . . And then there was the fellow who thought a rhesus factor was a man who sold monkeys.

maintained the standard usual for the 2nd M.B.
iinations on structural anatomy, and included
tions on the general lay-out of the central nervous
m, and also questions on embryology. There was also
ree-hour practical examination in histology, which
ded written questions.

mparison of the examination results with those of
last few years in Birmingham shows that we were
ng with an average body of students whose know-
of topographic anatomy, as revealed by examina-
was equivalent to the standard of former 2nd M.B.
ents who had dissected for five terms, and whose
dard in histology was at least equal to that shown
xaminations of the preceding five years. It was,
ever, observed that most students were weak in
r knowledge of embryology, and that the majority
w distinctly more about the central connexions of
nervous system than had been anticipated. In
ral, our view is that the standard of knowledge
topographic anatomy was up to the average of
M.B. students in other medical schools.

e hope to submit a further statement about the
ving of these students in part II of the 2nd M.B.
mination, which will be held at the end of the spring
n.

J. D. BOYD
External Examiner.

Department of Anatomy,
ndon Hospital Medical School.

C. F. V. SMOUT
S. ZUCKERMAN
Internal Examiners.

partment of Anatomy, Medical School,
Hospitals Centre, Birmingham, 15.

R,—My fellow-examiners have joined me in a
ement about the results of the recent 2nd M.B.
mination in Birmingham. May I comment briefly
few points raised in your correspondence columns
eply to my article on the changes introduced in the
ningham anatomical curriculum?

he first of our three 10-week terms assigned to
graphic anatomy was devoted, during this past
, to the dissection of the limbs and thorax; the
nd to the abdomen, pelvis, and perineum, and part
he head and neck; and the third to the remainder of
head and neck, and the brain. Professor Green has
gested (April 12) that the load in the *first* term may
e been unduly heavy. This was also our fear, but it
spired that most students held the view that the
od when they dealt with the head and neck consti-
d the heaviest burden. Since the end of the course
have had discussions with the students, and
le we propose adhering to the same time-table in
coming academic year, we shall attempt to simplify
undergraduate's task with "prosections" and
ected specimens. Professor Green also suggests that
course which we have planned would be better
d for a period of six rather than five terms. Both I
my colleagues are in complete agreement with this
which has also received the approval, in principle,
ur medical faculty. Unfortunately, other circum-
es make it impossible at the moment to devote a
term to the study of anatomy and physiology.

Howard-Jones (April 19) points out that questions
orm of the medical curriculum were ventilated well
the publication in 1925 of Abraham Flexner's
of the subject. I was aware of this, and perhaps you,
ill permit me to point out that the original MS.
you received stated that Flexner's book could
convenience" be taken as representing the start
ent discussions. I am grateful to Dr. Howard-Jones
ferring to the many inquiries carried out in this
y beginning in the earlier part of the 19th century.
d it difficult to comment on Professor Le Gros
remarks (May 10), for it would seem that he has
e understood the character of the "reintegration"
e are effecting between anatomy and physiology.
appreciate that the anatomical aspects of a given
may take longer to display, either in practical
or in lectures, than the physiological, and vice
We accepted this fact from the start, and have
gly weighted "anatomy" and "physiology"
separate course of lectures, according to the
nce of the issues discussed. We are not, however,
ed with the question as to whether some particular
s "anatomical" or "physiological." Our main
present to the medical student the anatomical and physiological knowledge of a subject in a single pattern. Professor Le Gros Clark also suggests that it would have been wiser if, in our reintegration, the teaching of physiology had preceded anatomy. This is a speculation on which I prefer not to comment, especially as our aim is to develop the two subjects in their interrelation.

Department of Anatomy, Medical School,
Hospitals Centre, Birmingham, 15.

S. ZUCKERMAN.

RECONSTRUCTION

SIR,—As one who ventured to criticise your article under the heading of "Reconstruction" on March 15 as coming dangerously near to party politics and as dealing, in your pages, too exclusively with economics, may I congratulate you on the two latest in this series, and especially the article (June 28) over Sir Ronald Davison's signature?

His review of local area and boundary problems is most informative and helpful. But in both his paper and in the latest, that on food-supplies and production (July 12), one of the most important factors in connexion with reconstruction has been omitted—viz., the influence of the height and destination of ground rents. No engineer could start without first ascertaining data on which he must construct his work. One might as well ask someone for the cubic capacity of a cistern and give him only two dimensions as ask anyone to embark upon social reconstruction without taking ground rents into consideration. They affect and are affected materially by subsidies, price controls, taxation, &c., which are frequently referred to; but ground rents are not mentioned by your contributors.

Mundesley, Norfolk.

S. VERE PEARSON.

BRONCHOMEDIASTINAL TUBERCULOSIS

SIR,—The interesting article in your issue of July 5 by Dr. Stevens calls to my mind the following case which I saw in consultation a short time ago.

The patient was a male mongol, aged about 6 years, who had a left axillary swelling, due to enlarged glands, which was of some months' duration and had recently become fluctuant. No other glands were enlarged and the spleen was not palpable. More recently there had appeared a red papular rash confined to the trunk; this was lichenoid tuberculide. There was clinical evidence of meningitis, of which the patient died.

Lichenoid tuberculosis is seen usually in children with glandular tuberculosis, and is due to lodgment of the bacilli in the skin capillaries. It is a recoverable condition. In this case it should have directed attention to an active tuberculosis focus somewhere in the body—most probably in the mediastinal glands as pointed out by Dr. Stevens. With treatment on the lines suggested by him—recumbency in a plaster bed, &c.—acute vascular dissemination and meningitis should have been prevented. Unfortunately radiography of the chest was not practicable, owing to the advanced state of the patient's illness.

Shanakiel, Cork.

J. P. SHEEHAN.

VAGAL RESECTION FOR PEPTIC ULCER

SIR,—In your leader of July 19, after drawing attention to some obvious dangers of the operation, you suggest that vagal resection may prove more than a passing fashion, especially as it is founded on "elegant theoretical considerations." Since many attempts are being made to provide a physiological justification for this operation perhaps you will allow me to indicate briefly some of the reasons which, in my opinion, invalidate the relevant argument and expose the fallacy of its rationale, in the hope that it may damp the enthusiasm of enterprising but undiscerning surgeons.

Dragstedt and Schafer, writing in 1945, justified the introduction of this operation as follows:

> "Acting on the conception that the hypersecretion of gastric juice in gastro duodenal ulcer is very largely neurogenic in origin, a series of patients with this disease have been treated by operation designed to remove permanently and as completely as possible the vagus innervation of the stomach.... The desirability of such a complete operation was indicated by the studies of Hartzell. This investigator found that

the earlier napkin and crawling stage ?—Mr. STRACHEY: is a concession which I would very much like to make.

Working Party on Nursing

Mr. P. PIRATIN asked the Minister of Health when the rking Party Report on Nursing was to be published; d whether the publication would contain the full minority ort.—Mr. A. BEVAN replied: I have not yet received this ort, but I expect to do so in a few days' time.

Public Health

ACUTE POLIOMYELITIS

MORANDUM BY MEDICAL OFFICERS OF THE MINISTRY OF HEALTH

THE notifications of poliomyelitis and polioencephalitis the week ended July 12 numbered 110 and 16. The ghest weekly figure previously recorded since polio-yelitis became notifiable in 1912 was 82 in the week ded August 13, 1938. Bearing in mind the usual asonal trend and the fact that a significant increase in tifications rarely appears until the end of July, the rly start this year and the present high figures are asons for anticipating an unprecedented prevalence.

So far this year the notifications of polioencephalitis ve been higher than ever before. Bulbar and respira-y paralysis and meningeal reactions preceding paralysis pear to be more common than is usual in poliomyelitis.

CLINICAL FEATURES

Typically there are three phases in the illness recognis-le as poliomyelitis. In many cases there is also an tial or prodromal illness followed by a distinct interval 5–7 days before more serious signs of disease appear. e chronology is as follows:

	Usual interval in days from date of infection	*Manifestations*
age A—		
Prodromal illness ...	1–4	.. Fever, weakness, perhaps sore throat or diarrhœa, and occasionally pain in chest or limbs.
age B—		
Phase 1 (onset) ..	7–18 (up to 21)	.. Fever, flushed face, furred tongue, headache, sometimes vomiting, drowsiness, irritability, vague subjective phenomena, increasingly stiff neck, sometimes exaggerated tendon reflexes.
Phase 2 (pre-paralytic or meningitic) ..	10–15	.. Sometimes well-marked intoxication and coma, pain on flexion of neck and spine, tenderness and hyperæsthesia, sometimes nystagmus.
Phase 3 (paralytic) ..	13–18 (up to 35)	.. Hyperæsthesia and weakness of muscle groups going on to flaccid paralysis due to anterior-horn cell lesions; diminution in tendon reflexes. Often the paralysis improves after reaching its height.

e prominent symptoms in all phases of stage B are erable to the central nervous system; they suggest ertain order of progression which may indicate the gress of inflammation within the central nervous tem. There may be intermissions in this progression, 1 one or both of the later phases may not develop.

INFECTIVITY

he disease has been notified from many different tres throughout the country, and from some of these re has been evidence of radial or concentric spread. It is known that nonparalytic cases of the disease are able to transmit it to others who may or may not develop paralysis.[1] This has been confirmed by laboratory investigations, which have also revealed the presence of poliomyelitis virus in healthy contacts. Infectivity is, however, probably greatest during the phases preceding paralysis: in fact the clinical paralytic disease is essentially an infrequent incident occurring among a far larger number of cases aborting in stage A or phase 1 of stage B; but these are none the less infectious.

ACTION BY PRACTITIONER

At this time poliomyelitis should be considered whenever a practitioner is called to see a febrile child (or even an adult) with indeterminate symptoms, particularly if others in the same environment are complaining of the same symptoms, or if there has been within the previous two weeks any other febrile illness (e.g., "influenza" or sore throat of unknown origin) in the patient or his contacts. The patient should be put to bed in a room by himself and examined at every visit until a diagnosis has been made. Careful search should be made for early indications of invasion of the nervous system; in particular the patient should be examined for neck rigidity, which may be elicited by asking him to kiss his knees while sitting up in bed. If the symptoms continue for 24–36 hours without the appearance of signs indicating one or other of the common infections of childhood, the medical officer of health should be informed. There should be no hesitation in reporting a case to the medical officer of health if, with the slightest suggestion of neck rigidity, there have also been psychological disturbances such as fear, bad dreams, disturbance of sleep, drowsiness by day, restlessness by night, and peevishness; these disturbances not uncommonly precede the signs of meningeal invasion. Home isolation at onset and on suspicion is a most useful measure in preventing spread of the disease. Nose and throat discharges and excreta should be disinfected.

A patient who is suspected of poliomyelitis should be kept continuously in bed in a room by himself for not less than one week, having regard to the well-known tendency for the symptoms and fever to subside in two or three days' time and then to recur. Isolation of confirmed cases from other children should continue for three weeks. Contacts should be excluded from school for three weeks after isolation of the patient. Restrictions need not be placed on adults living in an affected household provided they remain well.

It is notoriously difficult to appraise the value of any treatment in poliomyelitis: there is no evidence that convalescent serum given in or after the preparalytic stage has any curative effect. Experience of prophylaxis with gargles and nasal sprays has been disappointing. There is, however, overwhelming evidence that a recent tonsillectomy increases the risk of a child contracting poliomyelitis, particularly of the bulbar type; where poliomyelitis is prevalent operations on the nose and throat should, if possible, be postponed.

ACTION BY MEDICAL OFFICER OF HEALTH

On receiving a notification or learning of suspected cases of poliomyelitis the medical officer of health should proceed on the following lines:

(1) advise all practitioners in the area;
(2) assist in securing suitable accommodation, including isolation, for the patient;
(3) make investigation of the associated circumstances, including a search for missed and abortive cases;
(4) ensure that precautions are taken, on the assumption that the disease is capable of transmission by mild abortive cases;

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[1] An illness probably due to the same virus, in which the lower motor neurones escape and the signs and symptoms are predominantly those of meningeal and cerebral involvement, is notifiable as polioencephalitis.

Uganda, Tanganyika, and Bukoba. We have also our big contracts with the Argentine, our colonial projects in tropical Africa, and intimate trade relations with Holland, Denmark, and other European countries. Eastern Europe can give us grain and animal feeding-stuffs. And our own exports are up well above the pre-war level. We have in fact the possibility of a plan for regeneration in Europe and Asia in our own hands without help from the American continent. But with the American continent—if the arrangements are made as an equitable bargain, allowing reasonable latitude in trade agreements—we can progress more quickly still.

Nevertheless Lord Addison gave a plain warning of the difficulties: he said that "the world shortage of such important foods as meat, grain, butter, cheese, condensed and dried milk, eggs, oils and fats, sugar, and cocoa is likely to continue for considerably more than two years." That statement sets out the limits within which we have to work.

MEDICUS, M.P.

FROM THE PRESS GALLERY

Permitted Exports of Food

In the House of Commons on July 14 Mr. J. STRACHEY, Minister of Food, said that apart from the difficulty of finding food to buy we now faced the difficulty of finding foreign currency with which to buy it. The Government had therefore decided to allow the export of certain manufactured foods—such as beer, biscuits, and chocolates—which were of high money value in relation to the quantities of foodstuffs they contained. We should aim at selling £10,000,000 worth of these specialties a year. To do this we should have to use about 0·5% of our sugar, about 0·4% of our fats, and a still smaller percentage of our cereals. With the foreign currency which we hoped to receive from these exports we should be able to buy, for example, nearly 500,000 tons of feeding-stuffs, when available.

Postvaccinal Encephalitis

On July 15 Mr. T. DRIBERG raised the case of an infant girl in Essex who was vaccinated at the age of four months and—because the vaccine did not take—a second and third time within seven weeks. The father alleged that on the third occasion she received a double injection. She had previously been healthy, but on the fifth day after this third vaccination she suddenly became ill, was taken to hospital, and was found to be suffering from inflammation of the brain. Some weeks later, when she was returned to her home, she was blind, and now at the age of thirteen months she was still blind, was not developing in any way, and suffered from fits. Recovery was considered impossible.

Mr. Driberg did not presume to attack or defend any medical practice or treatment; but, assuming that vaccination was desirable, was the Minister of Health certain that everything was done in this case in an orderly and hygienic way? Secondly, what were the statistics for postvaccinal encephalitis? The father quoted in one of his letters a statement by an anti-vaccination organisation (which Mr. Driberg found it hard to accept) to the effect that postvaccinal encephalitis killed more infants than did smallpox. The Minister ought to assure the public about this, or if necessary have a more rigorous, and perhaps an unorthodox, inquiry into the whole matter.

Mr. A. BEVAN replied that very thorough investigation had revealed no fault whatever attaching to the doctors concerned, and no departure from normal practice. Further, he must rebut the suggestion that there were two insertions at the same time. There were three insertions over seven weeks, of which the first two were unsuccessful, and the third (from the point of view of inoculation) was successful. That, he understood, was not unusual. He was informed that postvaccinal encephalitis was extremely rare, particularly in infants under one year of age—so rare that it amounted to one in 49,000 inoculations. So parents need not be deterred from having their children vaccinated. He pointed out that when the National Health Service Act came into operation compulsory vaccination would disappear. If this country were entirely immune from infection from abroad, vaccination could probabl done away with entirely; but there had been serious cases of smallpox brought in from abroad, precautions were therefore necessary. It would disastrous if people jumped to the conclusion vaccination does not affect the incidence of small It was very difficult for a layman to intervene in field. They had to rely upon the laws of probab and say that there appeared to be some between the comparative immunity from sm enjoyed by the mass of our population and the immunisation. Certainly that conclusion had a statistical foundation than any deductions reached particular cases.

Colonel M. STODDART-SCOTT, M.D., said the Minist his excellent reply had omitted to say anything the lymph with which this child was vaccinated. Ministry of Health was responsible for its product Had that batch been tested, and was there anyth abnormal about it?—Mr. BEVAN: I understand it has been tested, and that there is no evidence of any abnormality.

QUESTION TIME

Venereal Disease in the Army

Mr. WILSON HARRIS asked the Secretary of State for what was the incidence of venereal disease in the Army in Britain in 1938; what it was in the British in Britain today; and in the British Army of Occup in Germany today.—Mr. F. BELLENGER replied: The rate per 1000 troops in the British Army in Britain during 1938 was 11·7. In 1946 the annual rate per troops in Britain was 32·8 and in the B.A.O.R. 158·6. quarterly rate for the first quarter of 1947 was 5·3 per in Britain, and 30 per 1000 in B.A.O.R. This is lower than for the corresponding quarter of 1946 in but approximately the same in B.A.O.R.

Mr. WILSON HARRIS: Does the right hon. gentl think it right that boys of 18 and 19 should be sent to Germ in the conditions shown to be prevailing there? steps is he taking to avoid this happening?—Mr. BELLE In answer to the first part of the question, I have no opti as long as we have to maintain military occupation Germany. As regards the second part, I am taking all poss steps, and so is the General Officer Commanding out to improve the morale of the troops; but I am bound say that conclusions—and sometimes false conclusions drawn from these figures. In 1938 there was probably recording of cases than there was in 1946, and modern med practice, which treats the case much more quickly th did in 1938, probably accounts in part for the appar higher incidence of cases.

Mr. WILSON HARRIS: Would not the right hon. gentl agree that the figures for 1947 speak for themselves irrespective of 1938?—Mr. BELLENGER: I certainly these figures, and I am taking all steps possible to imp them; but I ask the House not to draw too wide concl from the figures. We are never asked these questions the civilian population.

Bovine Tuberculosis

Mr. A. R. HURD asked the Minister of Agriculture if he now reached agreement with the veterinary profession the National Farmers Union on a national plan for the eradication of bovine tuberculosis; and when he exp that a start would be made.—Mr. T. WILLIAMS repl No. Discussions with farming interests on a plan for lishing attested areas have not yet been concluded. difficult questions are involved and at the moment I say when it will be possible to introduce such a plan. worthy progress in the eradication of bovine tubercu nevertheless already being made under the voluntary culosis (Attested Herds) Scheme which now include over a million cattle.

Extra Soap for Children

Mr. F. W. SKINNARD asked the Minister of Food wh would consider extending the extra soap ration for to children up to the age of two years.—Mr. Str replied: I am afraid that with the present shortage I am unable to adopt this proposal.—Mr. SKINNARD: the Minister aware that mothers find it at least as diff keep their children clean in the early walking stage typhoid, 12; measles (excluding rubella), 9133; umonia (primary or influenzal), 332; cerebrospinal er, 67; poliomyelitis, 110; polioencephalitis, 16; ephalitis lethargica, 2; dysentery, 50; puerperal pyrexia, ; ophthalmia neonatorum, 82. No case of cholera, gue, or typhus was notified during the week.

f the 3 cases of smallpox, 2 were notified at Barnsley, and 1 at enhall, Staffs.

eaths.—In 126 great towns there were no deaths from eric fever or scarlet fever, 2 (0) from diphtheria, 5 (0) m measles, 7 (0) from whooping-cough, 82 (6) from rrhœa and enteritis under two years, and 3 (0) from uenza. The figures in parentheses are those for ndon itself.

he number of stillbirths notified during the week 219 (corresponding to a rate of 23 per thousand al births), including 31 in London.

Obituary

ALEXANDER GAVIN MORISON

M.A., M.D. ABERD., D.P.H.

r. Morison, medical officer of health for Wembley, o died on July 16, was born at Banff in 1893. He nt to school at the Banff and Forfar Academies, and nce to Aberdeen University where he graduated in in 1914. After war service in the R.N.V.R. as a geon sub-lieutenant he returned to Aberdeen to tinue his medical training, and was a member of university hockey team. Qualifying with distinction 1919, he held house-appointments both in Aberdeen London. The last of these was at the National spital, Queen Square; and when he entered general ctice in Shepherd's Bush it was with a special interest neurology. He took the D.P.H. in 1927, and gained rience in the London fever-hospital service before ng the appointment of assistant M.O.H. at Bootle. r he was deputy M.O.H. and port medical officer at stol, where he got great satisfaction from housing k in slum areas.

colleague writes: "Dr. Morison came to the rapidly wing borough of Wembley ten years ago when the idea of public health as a necessary nuisance was ng, and the time was ripe for a leader with exactly gifts to develop the new ideal. This he did with standing success, in spite of the severe handicap of a ke which occurred almost immediately after he took office. It is a great tribute to his courage and tenacity to the wise care and companionship of his wife t he worked unremittingly for ten years without r letting his health interfere with his duties. These e no easy years in a big, expanding borough subjected more than half that time to the stresses of war. other man with less reason might have excused him- but Morison never failed to turn out, day or night, every bombing incident.

The memorial he built was a highly efficient public-lth department with every general practitioner his and friend. Local doctors knew what he was ng and what he wanted them to do. Their problems e made easy and their difficulties swiftly overcome his skilful organisation and by his personal help. ients never found themselves mere cases. They ised at once that, whatever had to be done to safe-rd the public, they remained people whose lives interests Dr. Morison had immediately made his sonal concern.

Morison was a gentle man with great tact and ience. Sympathy was inherent in him: he did not d to turn it on for occasions. No matter how foolish uestion might be, he never showed anything but the rest interest, gave the problem most careful thought, the applicant a wise and courteous answer. The tle hesitancy with which he put forward his views uised a profound and extensive knowledge of his He always managed to give a caller the impression t he had nothing better to do than listen to him, that the caller had done him a kindness by coming. s may not sound like a forceful leader: but the answer o be seen in the results of his work."

Notes and News

ELECTRO-ENCEPHALOGRAPHY

SPONSORED by the Electroencephalographic Society, a three-day international meeting of electro-encephalographers was held at the National Hospital, Queen Square, London, on July 14–16, attended by over 50 representatives from Europe and America. An address by Prof. E. D. Adrian, O.M. (president of the society), was followed by a discussion on E.E.G. technique including electrode material and electrode placements. Dr. H. H. Jasper (president of the American Society of Electroencephalography) said that the recommendations for the performance of apparatus and the placing of electrodes in American practice conformed very closely with those adopted in this country. A committee was formed to examine the possibilities of starting an international journal of electro-encephalography.

Physiological aspects were considered on the second day, with contributions from M. A. B. Brazier (Massachusetts Hospital), H. Gastaut (Marseilles), G. D. Dawson (National Hospital), Prof. J. ten Cate (Holland), and others. Clinical aspects were then discussed, and the meetings concluded with a review, Twenty Years of Clinical Electro-encephalography, opened by Dr. E. A. Carmichael (National Hospital). During the proceedings Dr. Jasper expressed the view that, from what he had seen, Great Britain was in advance of the rest of the world in electro-encephalographic technique.

LABOUR-SAVING IN HOSPITAL

THE Hospital Domestic Aids Exhibition, organised on behalf of the Ministry of Health by the British Electrical Development Association with the coöperation of the British Gas Council, will remain open at the Empire Tea Centre, 22, Regent Street, London, S.W.1, until August 2. Morning sessions are reserved for hospital representatives, but the public are admitted from 1.0 to 5.30 P.M.

In opening the exhibition on July 14, Mr. Aneurin Bevan, Minister of Health, said that hospitals must attract domestic staff of good calibre: systematic training and a proper ladder of promotion to higher domestic posts are desirable. Good welfare arrangements and good tools are also necessary: the "tools" displayed at the exhibition are being produced now, though some waiting may be unavoidable before orders can be fulfilled. "There are signs," Mr. Bevan added, "that the supply of domestic workers is beginning to improve. Over 2500 women from displaced-persons camps in Germany were brought in during the winter and are proving a great help in many hospitals, including sanatoria." Because of the need to free the nurses from domestic work hospitals are being urged to review their arrangements and put their extra demands for domestic workers to the Ministry of Labour.

University of Oxford

The degree of D.SC., honoris causa, is to be conferred on Dr. C. H. Best, F.R.S., professor of physiology and director of the Banting-Best department of medical research, University of Toronto.

Dr. George Gordon has been appointed dean of the medical school for one year from Oct. 1.

University of Edinburgh

Prof. J. R. Learmonth delivered the promotor's address at the graduation held on July 16. The following degrees and diplomas were conferred:

M.D.—Louise F. W. Eickhoff, *R. O. Gillhespy, *L. S. Glass, *Matthew Hunter, †M. S. Jones, *J. M. Kerr, §H. M. King, Samuel Lipetz, *R. M. S. McConaghey, §D. B. Peterkin, §J. A. Ross, J. N. Swanson, G. B. Tait, *E. R. C. Walker, ‡A. W. Wright.

Ph.D. (in the faculty of medicine).—Oscar Olbrich.

M.B., Ch.B.—Margaret Y. Abbey, R. MacG. Aitken, W. S. Allan, Beatrice M. Allen, Marjorie R. Allison, D. W. Anderson, Ernest Armitage, H. S. Bannerman, T. L. Barclay, M. A. Barnor, Mary S. S. Barr, Doris M. Beaton, K. W. Blaikie, Iris M. L. Bowman, R. A. Bremner, Margaret S. Brooks, Elizabeth L. Brown, I. F. Bruce, J. G. S. Buchanan, Anne M. Calder, D. M. Cameron, James Campbell, Mary G. S. Campbell, Sheila H. Cattanach, Roma C. Cessford, Margaret M. Chalmers, J. A. L. Clark, Marianna I. H. Clark, B. H. Colman, Janette G. Cowie, H. P. Croasdale, J. P. Crowdy, Jean M. Dance, Margaret S. Dawe, D. W. Dawson, J. G. Dickson, T. C. Dow, H. A. F. Dudley, Stella P. Eadie, P. N. Edmunds, Emmanuel Evans-Anfom, Peggy Everett, Doreen I. Faley, R. S. C. Fergusson, John Findlater, T. S. Forsyth, Marion G. Foster, Thomas Galla, J. M. Hagen, ‖Eileen V. Haldane, Frank Halliday, D. MacA. Hancock, Emma P. Harrison, Dinah C. Henderson, Elizabeth H. L. Henderson, Irene M. Henry, Patricia M. Hollis, Anthony Hordern, E. O. L. Hoskins, Margaret J. I. Howat, Mary Howson, James Hughes, D. G. Hutchings, Maurice Hyman, C. W. G. Irvine, J. A.

(5) follow up all notified cases throughout the whole period of their illness, to ensure that their treatment is suitable and continuous.

When multiple cases have occurred in a district all crowded assemblies should be discouraged, and as far as possible all gatherings of young children and unnecessary travel should be avoided. Young children should not be allowed to enter any house where there is a case of undiagnosed illness. Contacts should avoid physical strain. School closure is undesirable, except under special circumstances[2]: this advice does not apply to day-nurseries or nursery-schools. As far as possible the normal groupings of the child population should be maintained and sick children removed promptly.

The medical officer of health should also advise his council first as to what can be done to promote early diagnosis during the acute stage, and secondly what arrangements can be made under the local orthopædic scheme to send all children affected, whether slightly or seriously, to an institution equipped to give such special treatment as may be required to prevent avoidable muscular weakness or permanent deformity. In view of the common occurrence of poliomyelitis below the age of 5 years, and bearing in mind the good results of effective treatment and the serious consequences of neglect, it is important that doctors should know of the facilities for orthopædic treatment available through the maternity and child-welfare and school health services. In the course of their routine visits health visitors may hear of suspicious early cases or of children with mild paralyses due to an undetected attack. If the local prevalence assumes epidemic proportions information should be circulated to the public regarding the care to be observed in the event of attack, and the facilities for treatment available in the district.

In view of the fact that the virus is excreted in the fæces and has been found in flies, the possibility of water-borne or other alimentary infection should be kept in mind; but reliable evidence of spread by these means is lacking.

LABORATORY INVESTIGATIONS

In addition to any routine chemical and cytological examinations of cerebrospinal fluid which may be carried out locally for diagnostic purposes, certain examinations are being done at the Central Public Health Laboratory which, although not of direct help in the diagnosis of individual cases, may throw some further light on the epidemiology of the disease. The specimens required for these investigations are: (i) about 5 c.cm. of serum from definite or suspected cases (where possible two specimens should be taken—one in the acute stage and one in the convalescent stage); (ii) cerebrospinal fluid or fresh post-mortem material from cases of doubtful diagnosis—i.e., those cases in which meningeal or encephalitic signs and symptoms predominate. Post-mortem specimens (brain or spinal cord) should be placed in equal parts of glycerin and normal saline. Both the specimens and cerebrospinal fluid must be kept in a refrigerator, and arrangements will be made for collection if the Public Health Laboratory Service is notified.

Specimens should be sent to Dr. F. O. MacCallum, Virus Reference Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W.9 (Tel.: Colindale 6041).

Food Poisoning

Among the recent outbreaks of food poisoning have been one at Twyford, near Winchester, and another at Lincoln.

Twyford, Hants.—Sixteen people attended a luncheon party on July 12; within twenty-four hours 15 had developed symptoms suggestive of bacterial food poisoning. Investigation showed that a blancmange had been contaminated with *Salmonella typhi-murium*, which was isolated from the stools of 3 of the patients. D eggs, from home-grown ducks, were used in the pr tion of the blancmange; but bacteriological of excreta and eggs from these ducks has been n Two people who did not eat blancmange have su from similar symptoms. Examination of spe fæces from the residents and domestic staff showed there were several symptomless carriers of *S. murium*, suggesting that the infection was fairly in the household. It is unlikely that one common of infection will be found.

Lincoln.—Of 77 people who dined at a local on July 5, 34 are said to have suffered from poisoning; there was one death. Most of those a became very ill, with vomiting, severe diarrhœa, temperature, intoxication, and sometimes syncope collapse. All became ill within twenty-four hours eating the infected food, and most within a few ho In 17 out of 18 cases whose fæces were sent for examination, *Salmonella typhi-murium* was isolated; and the salami sausage used in the hors-d'œuvre was also found to contain this organism. Six further cases have come to the notice of the medical officer of health; in each there is a connexion with the food at the hotel dur the danger period. It was discovered that one me of the kitchen staff had recently been ill, and a of her fæces proved positive for *S. typhi-murium*; woman was, however, absent from duty be June 30 and July 7. Another member of the who actually handled the sausage, gave a history diarrhœa on July 4 and 5; and his fæces have found to contain *S. typhi-murium*.

Smallpox

No further cases have been reported in England Wales during the week ended July 22.

Willenhall.—The patient removed on July 9 confined to bed from the onset. Contacts are limited members of the household, all of whom are surveillance.

Bilston.—The period of surveillance of contacts now expired without further cases being detected.

Barnsley.—The last patients, both removed on July 11, are suffering from discrete rashes modified by tion seven and nine days before onset. Contacts still under surveillance but the position is not unsatisfactory.

Poliomyelitis

The 110 cases of acute poliomyelitis and 16 of polioencephalitis notified in England and Wales the week ended July 12 were widely scattered in 82 extra-metropolitan sanitary districts and 11 metropolitan boroughs. Outside the administrative county of L multiple cases of poliomyelitis and/or polioence were recorded in Wareham and Purbeck (8), Hought le-Spring (2), Spennymoor (3), Watford (4), Stock (2), Brighton (2), Sutton Coldfield (3), Hull (2), B ford (4), Dewsbury (2), Sheffield (2), Shipley (2), and Spenborough (2).

The main feature in the epidemiology is the multiplicity of foci, with occasional evidence of conc spread, which is particularly obvious in the south-east and south of London. Since July 1, 27 cases have been removed from Lewisham to L.C.C. hospitals, and t total admissions of suspected poliomyelitis and polio-encephalitis to L.C.C. hospitals has been 65; there now 50 cases under treatment in these hospitals.

The number of cases exhibiting predominantly cereb signs and symptoms is still larger than in any previ experience of the disease in this country. The number of cases notified as polioencephalitis (16) is higher th any weekly total previously recorded. The questi whether these cases are due to the same virus as po myelitis or to some other cause is not yet settled, b poliomyelitis is the most probable diagnosis in pati showing a meningeal reaction.

Infectious Disease in England and Wales

WEEK ENDED JULY 12

Notifications.—Smallpox, 3; scarlet fever, 91 whooping-cough, 2000; diphtheria, 181; paratyph

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[2] See *Lancet*, 1946, i, 972.

ENICILLIN IN THE PREVENTION OF NFECTION DURING OPERATIONS ON THE BRAIN AND SPINAL CORD *

. B. PENNYBACKER M.D. Edin., F.R.C.S.
MARGARET TAYLOR B.M. Oxfd
Sir HUGH CAIRNS
K.B.E., M.B. Adelaide, F.R.C.S.
n the Department of Surgery, Radcliffe Infirmary, Oxford

HE prevention of infection of operation wounds, ays an important problem in surgery, is one of the ef anxieties of the neurosurgeon. Brain tissue seems overcome bacterial contamination fairly well, but the tricles and large subarachnoid spaces have very *little* stance. After " clean " operations highly pathogenic anisms, such as hæmolytic streptococci and *Staphy-*ccus *aureus* can produce fatal meningitis ; and, as wan (1938) has shown, organisms hitherto regarded saprophytic may set up subacute or chronic meningitis ich may be fatal or may be followed by meningeal lesions and chronic hydrocephalus—the very condition ich operation was usually designed to prevent.

The factors contributing to infection during operation re been described in a previous report from this partment (Cairns 1939). Since that time, wound ections have become less frequent, but have remained serious handicap. We have therefore used local plications of penicillin powder in the wound, and we ort here the results of two years' trial.

METHOD

The Powder.—Calcium penicillin is mixed with non-crocrystalline sulphamezathine to provide 5000 units penicillin per gramme of the mixture. Sulphameza-ine makes a good vehicle. When applied to the ain it does not produce fits as does sulphathiazole. does not cake when autoclaved at 160°C for 1 hour d it mixes well with calcium penicillin, forming a wder of even consistence which flows easily through e insufflator and shows no tendency to deliquesce. erile penicillin-sulphamezathine powder can now be tained from Imperial Chemicals (Pharmaceuticals) d., who state that it may be expected to retain its nicillin in full strength for a year when stored at a mperature not exceeding 15°C. On the rabbit's cortex stological studies showed that it was not as innocuous sulphamezathine alone, but the effects were " rela-rely trivial " (Russell and Beck 1945).

Its Application.—The powder is placed in a sterile ainless-steel insufflator whose inlet tube contains a ter consisting of a glass tube packed with cotton-wool. hen the operation wound is ready to be closed and all eeding has been stopped, the various layers of the wound e frosted with powder—the brain lightly, and the dura, ricranium, and under-surface of the scalp flap more avily. In wounds of the posterior fossa the powder applied to the exposed surface of the cerebellum, to e dura, to the cut surfaces of the suboccipital muscles, id to the subgaleal space. In laminectomy wounds ie external surface of the dura, the muscles, and the bcutaneous fat are liberally dusted.

In 40 operations the amount of powder used was 7–3·0 g. per wound, with an average of 1·4 g. (7000 aits of penicillin) per wound ; but doubtless a small ortion of this remained in the atmosphere and some may ave escaped from the wound before the scalp was ally closed, particularly when there was much bleeding uring this stage. In posterior fossa and laminectomy wounds the amount insufflated was less than in osteoplastic flaps, averaging 0·7–0·8 g.

PENICILLIN CONTENT OF WOUND

In a series of 24 cases of skull defects repaired with tantalum at a military hospital for head injuries the wound was insufflated with 1–2 g. of powder before closure, and fluid was aspirated from the wound 10–48 hours later and assayed by Dr. E. S. Duthie, whose findings are shown in table I. In all cases a partially or completely adequate bacteriostatic concentration was found in the mixed blood and cerebrospinal fluid (C.S.F.) of the wound up to 20 hours after insufflation. At 21–24 hours there were some marked variations, remarkably high values being obtained in some cases. After 24 hours penicillin had disappeared from the wound fluids in most cases. In 2 cases examination of the lumbar C.S.F. within 18 hours of insufflation showed no penicillin.

In a second series, mostly cases of intracranial tumour, examination of the fluid from under the skin of osteoplastic flaps 10–22 hours after insufflation showed a penicillin content ranging from none to 0·48 unit per ml. (table I). The values were smaller and more constant than in the tantalum-plate series. This is probably explained by the fact that in the operations for tumours the powder was everywhere in contact with tissues having a good blood-supply, whereas in the other series the powder was usually in contact with the tantalum plate on one side and avascular scar tissue on the other. In each series, particularly in the tantalum-plate series, excessive accumulation of C.S.F. under the skin flap, or leakage of C.S.F. from the wound or stab drain, at times led to a low value of penicillin in the aspirated fluid.

TABLE I—PENICILLIN CONTENT OF WOUND FLUIDS AFTER INSUFFLATION, AT OPERATION, WITH PENICILLIN-SULPHAMEZATHINE POWDER

Hours after operation	Penicillin content (units/ml.)	
	First series (repair of skull defects)	Second series (intracranial tumours, &c.)
10–15	1·6	0·48
>15–18	1·25	Nil
>18–20	0·02, 0·25, 0·45, 1·2, 1·3	0·02, 0·03, 0·05, 0·06
>20–24	Nil, nil, nil, 0·03, 0·2, 0·2, 0·6, 2·0, 2·0, 3·0	Nil, nil, 0·02, 0·48
>24–30	Nil, nil, nil, 0·04, 0·1	
>30–48	Nil, nil, nil	Nil

Thus, after local insufflation of 1–3 g. of powder, penicillin is usually present in the wound in adequate bacteriostatic concentration for 18 hours. It is probable that the first 24 hours after operation is the most important period in preventing the establishment of infection due to the operation.

REACTION TO THE POWDER

No fits have followed the application of this powder to the brain ; but, as Russell and Beck (1945) did find some reaction in the rabbit's cortex, we have never used more than a light frosting of powder on the brain itself or in tumour cavities. In the head wounds and most of the laminectomy wounds no reaction has been observed, but in lumbar spinal wounds for removal of prolapsed intervertebral disk, where a large surface of muscle is exposed, we have observed a slight excess of exudate and have therefore drained these wounds for 24 hours through a small stab wound to one side of the lower end of the incision. The amount of discharge from the

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Based on a paper read before the Society of British Neurological Surgeons at Oxford, July, 1946.

James, Isobel A. D. Jarvis, R. D. Johnstone, Donald Keith, G. S. Kilpatrick, A. H. Kitchin, Dorothy I. Klein, Margaret J. Kyle, Grace J. Lang, P. M. Littlejohn, J. D. O. Loudon, R. G. Loudon, C. C. Lutton, J. M. McGillivray, W. T. Mackie, D. S. McLaren, R. S. Maclean, H. M. MacLeod, R. F. Mahler, Mary H. Marquis, A. H. B. Masson, G. M. Maxwell, I. B. D. Middlemass, J. A. McC. Millar, R. A. Millar, Margaret E. Mowat, ‖A. R. Muir, Marion F. Muir, C. W. A. Murray, J. E. Murray, J. I. Murray Lawson, P. R. Myerscough, Joseph Newall, Dorinda E. M. Nixon, M. F. Oliver, D. W. Paterson, J. R. S. Paterson, S. L. Paton, Mary Patten, Annie M. Peach, E. C. Pink, T. B. Rankine, Muriel Richmond, H. D. Ritchie, J. M. Roberts, A. H. M. Ross, R. W. T. Ross, *L. F. W. Rowe, A. A. Sharp, Donald Shearer, Leslie Simon, Sylvia R. Smith, N. T. Speirs, ‖Margaret Stirling, W. B. D. Storie, N. R. W. Taylor, W. J. Taylor, I. H. Thomson, J. N. Thorpe, Anne C. W. Walker, P. J. Walker, G. F. Watt, Cameron Weymes, C. B. Whittaker, J. D. Wilkie, J. G. A. S. Williamson, Janet P. Williamson, A. O. Wilson, S. G. F. Wilson, E. W. Wright, Alfred Yarrow.

D.P.H.—James Borrowman, John Dewar, R. G. Drummond, W. A. Glen, N. J. Graham, H. W. Horne, J. K. Hunter, D. P. Lambert, A. A. C. MacArthur, Lucy McFarlan, J. B. Menzies, Robert Mitchell, Hugh Pattinson, J. A. Petrie, P. W. R. Petrie, G. H. Scoular, J. H. Taylor, Robert Taylor, W. C. Wightman.

D.T.M. & H.—B. G. H. Balfe, I. G. Cameron, J. W. Czekalowski, W. J. E. Darling, J. G. Davies, F. N. Macnamara, O. D. Macnamara, J. W. Martin, N. D. Paton, S. B. Roy, S. M. Shameem, H. B. Taylor, W. J. Toop.

D.M.R.—G. C. Griffiths, Barney Hirschson.

D.I.H.—N. G. Douglas, J. D. Frame, E. I. B. Harvey, G. H. McCracken, Dennis Malcolm, John Millar, James Scott.

M.B., Ch.B. of the Polish School of Medicine.—Tadeusz Bobrowski, E. S. Brieger, Roman Burda, Jerzy Cyrankiewicz, *Edward Czepulkowski, Lucyna Dylowna, Michal Dziemidko, Boleslaw Essen, Maria Grey, Szlama Grunstein, Tadeusz Heil, *Borys Herszenhorn, *Lejb Hertz, Edward Jozef, Jerzy Kucharski, Józef Labedz-Kuderewicz, Mordchel Margolis, *Ludwik Mirabel, Marian Nieswiatowski, Eugeniusz Orchel, Tadeusz Prorok, Aleksander Skowronek, Zdzislaw Szulec, Stanislaw Szutowicz, *Erwin Turnheim, Aleksander Wojciechowski.

* In absentia; † medallist; ‡ highly commended; § commended; ‖ with honours.

The Cameron prize in practical therapeutics was awarded to Prof. N. Hamilton Fairley, F.R.S., for his work on the prophylaxis and treatment of malaria.

University of Wales

Sir Ewen Maclean, F.R.C.O.G., and Mr. D. L. Williams, F.R.C.S.E., received the honorary degree of LL.D. at a congregation in Swansea on July 15.

Scottish Conjoint Board

Having passed the final examination the following candidates have been admitted licentiates of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow:

D. K. M. Allison, W. B. Balderston, Mary E. Barton, Robert Black, J. F. Chacko, J. T. N. Cole, John Crow, T. L. C. Dale, William Davidson, Maureen M. Devine, D. C. Drummond, C. G. Duncan, Sheila M. Forsyth, Samson Goldin, S. H. Goodman, D. S. Griffith, G. F. W. Hossack, Matilda Y. D. Hutchison, William Jack, Leonard Kramer, A. J. Laidlaw, D. M. Lyon, K. I. MacLean, Hector McNeill, Blair Mactaggart, Mary A. Mahoney, Alistair Millar, D. L. Moody, Janet Q. Morton, Mary C. Penny, W. R. Plows, Doreen S. Ryan, Doreen R. C. Scorgie, A. W. R. Thom, Norman Weiselberg, Margaret L. Westwater.

St. Thomas's Hospital

The old students' dinner will take place at Church House Restaurant, Great Smith Street, London, S.W.1, on Friday, Oct. 3, at 6.45 for 7.30 P.M., with Mr. C. A. R. Nitch in the chair. The number of places is limited to 250.

Central Mediterranean Force Surgeons

This dining club is to hold its annual dinner at Claridge's Hotel, Brook Street, London, W.1, on Thursday, Sept. 11, at 7.45 P.M. Surgeons and anæsthetists who served with the Central Mediterranean Force are invited to apply for tickets from the secretary, 10, Park Square West, N.W.1.

National Coal Board Appointment

Dr. E. H. Capel has been appointed chief medical officer to the board. In addition, seven divisional medical officers are to be appointed, one to each of the principal coalfields. It is intended that every major colliery shall ultimately have a surgery, staffed by a doctor and a nurse, and that all plans for new pithead baths shall include a medical treatment centre. Some twenty such centres already exist, with a State-registered nurse at each, under a colliery medical-service scheme started by the Ministry of Fuel and Power in 1945. These centres are being taken over by the board.

Dr. Capel, who is 40, trained at the Middlesex Hospital, qualifying in 1929. He became a M.R.C.P. in 1932 and graduated M.D., with distinction, in 1933. For the past ten years he has been industrial medical officer to a Midlands light-engineering concern. He was until recently secretary of the Birmingham group of the Association of Industrial Medical Officers, and is a member of the advisory medical committee of the Industrial Welfare Society.

Diary of the Week

JULY 27 TO AUGUST 2

Monday, 28th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.
3.45 P.M. Dr. M. Kremer: Motor Functions of the C Cortex.
5 P.M. Dr. T. Symington: Phæochromocytoma.

Tuesday, 29th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Prof. F. Wood Jones, F.R.S.: Human My (First lecture.)
5 P.M. Dr. Keith Simpson: Pathology of Sudden Death.
ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
8.30 P.M. *Orthopædics.* Dr. H. H. Kessler: Cineplastic tions. (Members of the sections of *Physical Medi* *Surgery* are invited to attend.)

Wednesday, 30th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Professor Wood Jones: Human Mycology. lecture.)
5 P.M. Dr. G. Popják: Nature of Parenchymatous and Degeneration.
INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn W.C.1
4.30 P.M. Mr. V. E. Negus: Larynx.

Thursday, 31st

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Prof. W. J. Hamilton: Early Stages of the Ov
5 P.M. Prof. R. Willis: Embryological Principles in Path (First lecture.)
6.15 P.M. Mr. H. W. Rodgers: Late Result of Gunshot W of the Abdomen. (Hunterian lecture.)

Appointments

BOWEN, R. A., M.B. Lond.: asst. administrator of anæsth St. Bartholomew's Hospital, London.
CAPEL, E. H., M.D. Lond., M.R.C.P.: chief M.O., National Coal
GRETTON-WATSON, B. G., M.B. Camb., D.P.H.: deputy M.O.H. deputy school M.O., Dudley.
LENNANE, G. A. Q., M.B. Camb.: Government M.O., Rotor New Zealand.
LOW, W. A., M.C., M.B. Lond., D.A.: director of departmen anæsthetics (part-time), St. Thomas's Hospital, London.
PALMER, W. L., M.B. Durh.: M.O. in Colonial Service, Somaliland.
PATTERSON, A. S., M.B. Belf.: medical superintendent of colony for mental defectives in Worcestershire under Midlands Joint Board for the Mentally Defective.
WATSON, R. H., M.B. N.U.I., D.P.H.: asst. county M.O. and M.O., Somerset.

Births, Marriages, and Deaths

BIRTHS

ABRAHAM.—On July 14, in London, the wife of Dr. A. John Abraham—a daughter.
CAUSEY.—On July 14, at Carlyon Bay, Cornwall, the wife of Gilbert Causey, F.R.C.S.—a daughter.
HAMILTON-TURNER.—On July 16, in London, the wife of Dr. C Hamilton-Turner—a son.
HARRIS.—On July 11, in London, the wife of Dr. D. V. Har a son.
LLOYD.—On July 10, at Enfield, Middlesex, the wife of Dr. Ken Newton Lloyd—a son.
McCULLAGH.—On July 5, at Cambridge, the wife of Dr. C McCullagh—a son.
MORLEY.—On July 15, in London, the wife of Wing-Comm George Morley, O.B.E., F.R.C.S.—a daughter.
PEMBLETON.—On July 11, at Chelmsford, the wife of Dr. J. Pembleton—a daughter.
PERCEVAL.—On July 14, in London, the wife of Dr. P. E. Perc a daughter.

MARRIAGES

MURRAY—GALWEY.—On July 14, at Hythe, J. G. P. Murray, to Helena Patricia Galwey.
OSMOND—JAMES.—On July 12, in London, Arthur Harold Os to Betty Gwendolen James.
REED—MACKOVER.—On July 14, at Zaria, Nigeria, R. I. L. Reed Freda Susanne Mackover, M.B.

DEATHS

COMERFORD.—On July 15, Beaumont Harry Comerford, M.B. D.P.H.
DRURY.—On July 11, in Grahamstown, South Africa, Ed Guy Dru Drury, M.D. Lond., D.P.H., aged 75.
WILSON.—On July 16, in London, Maurice Ulick Wilson, M.C., M.R aged 57.
WOODRUFF.—On July 14, at Surbiton, David Winthrop Wood L.R.C.P.E., aged 62.

A tablet given by his widow in memory of the Sir Hubert Bond, F.R.C.P., has been erected in the chape Long Grove Hospital, Epsom. The tablet will be unv by Sir Allen Daley during evensong on July 27. The se begins at 5.30 P.M.

ion of gloves despite the fact that this shortened eir life. On two occasions gram-negative organisms re found in the solutions used for irrigation of the erative field and supplied by manufacturers as sterile. 1940, at the time of casualties from Dunkirk, many them with open purulent wounds, we had an epidemic wound infection and meningitis due to *Staph. aureus*, d investigation showed that there had been a tem- rary breakdown in the arrangements for sterilisation linen. The disastrous effect of this breakdown is en in table IV, which shows the incidence of infections years. During the latter part of this first period lphanilamide powder was applied locally to the wound. part from an unusually bad year in 1940, due to the itbreak described above, and an unusually good year 1941, there was in each year a steady incidence of infection in every 20–30 cases, despite the fact that ery effort was made to improve the surgical technique.

TABLE IV—INFECTIONS AT OPERATION (BY YEARS)

Year	No. of operations	No. of infections	Recovered	Died
No penicillin:				
1938 (May–Dec.) ..	81	3	3	0
1939	167	8	5	3
1940	175	15	9	6
1941	167	2	1	1
1942	178	7	6	1
1943	211	9	8	1
1944 (Jan.–Nov.) ..	190	7	6	1
Total	1169	51	38	13
Local penicillin-sulphamezathine:				
Nov., 1944–Dec., 1945	350	1	1	0
1946	254	5	5	0
Jan.–March, 1947 ..	66	0	0	0
Total	670	6	6	0

DISCUSSION

Other methods of chemotherapeutic prophylaxis gainst wound infection at operation are available, cluding the systemic use of sulphonamides or penicillin, id intrathecal penicillin, either before or during opera- on. We believe that, in the absence of pre-existent fection in any part of the patient's body, these methods volve unnecessary trouble to all concerned—patient, irses, and doctors. If calcium penicillin is not available, dium penicillin in solution could be applied locally; ut in most cases a considerable part of it would probably scape from the wound before it was closed. Le Beau ersonal communication) mixes sodium-penicillin solu- on into a paste with sulphonamides at the operating- ble for local application.

Penicillin-sulphamezathine powder applied to the rain as a light frosting has proved harmless in our hands. However, the possibility of contamination of the powder with unsusceptible organisms should always be borne in mind. The insufflator should be charged with no more than a day's supply of powder, and should be resterilised daily; and the air passing into it should be filtered as described.

The antibacterial action of the powder is evidently not sustained for more than 12–18 hours, but it operates at a time when any contaminating organisms are in small numbers. From the delayed onset of suppuration in two of our cases, in one after a second operation and in the other after X-ray treatment, it seems likely that in some cases infection did develop in spite of application

TABLE III—ANALYSIS OF 51 CASES OF WOUND INFECTION AFTER NEUROSURGICAL OPERATIONS

Type of operation	May, 1938–November, 1944						December, 1944–March, 1947					
	Total cases	Infection			Outcome		Total cases	Infection			Outcome	
		No. of cases	Type	Organism	Recovered	Died		No. of cases	Type	Organism	Recovered	Died
Posterior fossa	284	24	Pleocytosis 14	None found	14	0	120	3	Meningitis	Achromobacte 1	3	0
			Meningitis 10	*Staph. aureus* 7	2	5				*Staph. aureus* 2		
				Staph. albus 2	1	1						
				Diphtheroids 1	1	0						
Cerebral operations (osteoplastic flap)	605	20	Pleocytosis 2	None found	2	0	381	3	Stitch abscess 1	*Staph. aureus* (films only)	3	0
			Meningitis 6	Friedländer 1	0	1						
				Staph. aureus 3	1	2						
				B. aerogenes 1	1	0						
				Hæmolytic strep. 1	0	1			Cellulitis of scalp 1	*Staph. aureus*		
			Scalp infection 5	Hæmolytic strep 1	1	0						
				Staph aureus 1	1	0						
				None found 3	3	0			Pleocytosis and septicæmia 1	None		
			Osteitis 5	*Staph. aureus* 4	4	0						
				Staph. albus 1	1	0						
			Infection of fascial graft 1	*Staph. aureus* 1	1	0						
			Brain abscess 1	*Staph. aureus* 1	1	0						
Spinal operations	280	7	Meningitis 4	*Staph. aureus* 1	0	1	169	0	0	0	0	0
				Strep 1	1	0						
				Ps pyocyanea 1	0	1						
				None found 1	0	1						
			Cellulitis 3	*Staph aureus* 2	2	0						
				None found 1	1	0						
Total ..	1169	51			38	13	670	6			6	0

drainage hole has been small, and there is no escape of C.S.F., since these operations are entirely extradural.

CLINICAL TRIAL

We began using the penicillin-sulphamezathine powder in November, 1944. With several operators and many different types of neurosurgical operation it was impracticable to establish controls. It was therefore decided to use the powder in every major operation and to compare the results over a long period with those of the previous 6½ years. The results are summarised in table II.

TABLE II—INCIDENCE OF POSTOPERATIVE INFECTION IN "CLEAN" MAJOR CEREBRAL AND SPINAL OPERATIONS

Treatment	Total operations	Infected	Fatal infections
A. No local penicillin (May, 1938–Nov., 1944)	1169	51	13
B. Local penicillin-sulphamezathine (Dec., 1944–March, 1947)	670	6	None

The infections included obvious suppuration in any layer of the wound, obvious meningitis, and cases of pleocytosis of more than 500 white cells per c.mm. in the C.S.F. after operation (table III). With the pleocytosis there was usually headache, fever, and bulging of the region of operation.

Some explanation is required for including these cases of pleocytosis among the infective complications, since Finlayson and Penfield (1941) have concluded that the condition is due to chemical irritation of the meninges by blood products and term it "acute postoperative aseptic leptomeningitis." In 7 of their 19 cases examined bacteriologically bacteria were found in the C.S.F. or in the wound, but they discount these because the organisms were "of a type ordinarily considered non-pathogenic"—e.g., diphtheroids—and careful bacteriological examination (no details are given) showed no "known pathogens." Cowan (1938) had previously shown that certain organisms hitherto regarded as harmless to man, including an organism of the diphtheroid type, *Diplococcus mucosus*, &c., could produce serious postoperative meningitis.

In our cases there was no essential clinical difference between those in which organisms were found (and included in the meningitis group) and those in which cultures were sterile. Bacteriological search was usually not sufficiently thorough to exclude with certainty "non-pathogens." Further, after the introduction of penicillin-sulphamezathine powder the incidence of pleocytosis fell, as did that of proved bacterial infection. The question obviously requires more detailed bacteriological examination on the lines of Cowan's work. Meanwhile on the evidence available we consider that most cases of pleocytosis should be regarded as infective in origin. Some, however, may be due to other causes.

During the pre-penicillin period we had one case of fatal ependymitis of the lateral and third ventricles, after transventricular removal of a fibroblastoma of the septum lucidum; it was due to strands of cotton-wool embedded in the ventricular wall. These had been shed from the strips of 'Lintine' used to pack off the ventricle during removal of the tumour. A similar case has been described in the United States.

A few of the infections may have been due to introduction of bacteria after operation, but most were undoubtedly due to contamination at operation.

In the pre-penicillin period there were 51 postoperative infections in 1169 cases (4·4%). No organisms were isolated in 21 of the 51 infections (16 cases of pleocytosis of C.S.F., 3 cases of scalp infection, 1 fatal case of meningitis after a spinal operation, and 1 case of cellulitis after operation for spinal meningocele in an infant). In the remaining 30 infections *Staph. aureus* was isolated in 20 cases, *Staph. albus* in 3, β-hæmolytic streptococcus in 2, and there was 1 infection with each of the following organisms—streptococcus (unclassified), Friedlander's bacillus, diphtheroids, *B. aerogenes*, and *Ps. pyocyanea* (table III). The incidence of infections in fossa operations was 1 in 12, in operations cerebral hemispheres 1 in 30, and in spinal 1 in 40.

In 1944–47, when penicillin-sulphamezathine was used routinely, the incidence of operative was 6 in 670 (*0·9%*), in contrast with an 4·4% in the pre-penicillin period (table II).

Of the 6 cases of operative infection in the (table III) one was an achromobacter meningitis after of an acoustic tumour; this patient recovered after illness in which he was given vigorous chemotherapy, intraventricular streptomycin (Cairns et al. 1946,

Another was a case of *Staph. aureus* meningitis removal of cerebellar hæmangioblastoma; the developed a stitch abscess on the 11th post followed by a cerebrospinal fistula through the area, and then by meningitis; he recovered intrathecal penicillin.

In a third patient *Staph. aureus* meningitis after a *decompression was probably due to residual infection* occipital muscles, from an operation three months at which an extracranial aneurysmal varix had been.

A fourth patient developed a small *Staph. au* abscess, without serious symptoms, after biopsy of a frontoparietal glioma; this man was prone to *Staph. aureus* infection, for at a previous *his neck wounds for cerebral angiography had* and at the time of his craniotomy he had numerous on the skin of his trunk, and his blood-transfusion suppurated.

The fifth patient developed mild cellulitis of the following X-ray treatment, seven weeks after removal of a temporal glioma; this may not have *to infection at operation, but we think the case sh* included because the third case suggests that, when powder is used, infection with *Staph. aureus* may take at operation without producing overt signs unless the is later disturbed, as by a second operation or X-ray t

The sixth case developed *Strep. viridans* septicæmia removal of a right temporal cholesteatoma. The wound healed normally, but there was a mild p which persisted three or four weeks before it and the cæmia cleared. No organisms were seen in or from the C.S.F., but in view of the septicæmia it is to assume that the meningeal reaction was due to infe We have some evidence that these cholesteatomas of brain may contain organisms, which may explain the ably high frequency *of infection following operation* in cases.

The absence of deaths from infections in the penic period cannot be attributed to the prophylactic u penicillin-sulphamezathine powder, for 2 of the 6 would probably have died without penicillin *of their postoperative infection, and a third* might died without streptomycin treatment. However, tables II and III show, the incidence of infection operation has been significantly reduced since introduction of penicillin-sulphamezathine powder.

CONDITIONS OF OPERATION

Throughout the two periods—i.e., from 1938 to 1947 all the operations were done in the same o theatre, which was supplied with warmed wa filtered air by a 'Plenum' system. 'Cellophane' (Blatt and Dale 1933) and clean theatre footwear worn by all except the patient, and traffic within theatre was always minimal. However, conditions sterility were far from constant. At one time plenum system was unsatisfactory and the air in operating-theatre showed a heavy bacterial count potential pathogens. On several occasions patho organisms appeared in the noses and throats of of the operating staff. As the war went on the and quality of rubber gloves diminished. Because the occasional presence of staphylococcal carriers, on evidence gathered from our gloves and hands Prof. G. S. Wilson, we changed from wet to dry st nisms of the gas-gangrene group are symbiotic and aless in the living muscle of dogs and cats, but when tissue dies they proliferate and liberate their exo- ns (Aub 1944a and b, Haxton 1944, Prinzmetal et al.). Consequently the later stages of many of the riments in which muscle masses were severely matised or isolated from their blood-supply were ies of an overwhelming gas infection and not of ock. Where such experiments were repeated in the sence of sufficient sulphonamide to prevent infection, ny of the characteristic signs of shock did not develop, cept when relatively enormous quantities, amounting nost to a fifth of the total muscle bulk, were isolated m their blood-supply and placed in the peritoneal vity (Fowler 1944). Since comparable injuries are tremely rare in man, it is very doubtful whether the dings of these experiments have any bearing on hock" in the patient admitted to hospital after a road ident.

E II—CHANGES IN HÆMOGLOBIN CONTENT OF BLOOD IN EARLY POSTOPERATIVE PERIOD

Operation	Hb at end of operation (% of normal)	Interval (hours)	Hb after interval (% of normal)	Alteration
Pyelolithotomy	104	2	93	−11
Cholecystectomy and choledochostomy	96	1½	91	−5
Cholecystogastrostomy	89	4	90	+1
*Laparotomy (inoperable cancer of cæcum)	102	2	100	−2
Gastro-enterostomy	116	4	110	−6
Smith-Petersen pin	73	4	73	0
Gastro-enterostomy	81	1½	78	−3
Appendicectomy	98	2½	94	−4
†Removal of pituitary tumour	93	6½	73	−20
‡Cholecystectomy	93	2	106	+13
Total hæmoglobin change ..				−37
Mean hæmoglobin change ..				−3 7

led 11 hours after operation; pulse-rate increased steadily and blood-pressure fell until death.

ied of hypothalamic disturbance 12½ hours after operation.

led 36 hours after operation with symptoms of left-sided cardiac failure, ashen grey colour, rapid pulse, pulmonary œdema.

the time of taking the second specimens all the patients were pale; the venous blood when removed was unduly dark, indicating a slowed peripheral circulation.

Though our ideas about experimental shock are once re in the melting-pot, the investigations already ntioned (Stewart and Warner 1945, Beecher and rnett 1944, Evans et al. 1944, Cournand et al. 1943) ve gone far to give us some real insight into the signi- ance of traumatic shock in man. Also the circulatory turbances associated with burns have been greatly rified by the Medical Research Council (1944). Post- erative shock, though the commonest variety, has not eived the attention which is its due, and it is with s type that the present paper is concerned.

METHODS

Venous blood was withdrawn after minimal stasis m patients before, during, and after operation. The moglobin content was estimated after Van Slyke et al. 45) from the blood and plasma specific gravities, ich were determined either by Van Slyke's copper- lphate method or the falling-drop method (Barbour d Hamilton 1926), the latter being exclusively used en capillary blood was being studied. It was assumed at the plasma-protein contents of venous and capillary od were identical. Final blood volumes were estimated m the alteration in hæmoglobin produced by the pid injection of a pint of plasma (Bushby et al. 1940). e preoperative blood volume was assumed to be ml. per lb. of body-weight. A 3 : 2 mixture of potassium d ammonium oxalates was used as an anticoagulant, and the necessary correction in the blood and plasma specific gravities was made.

RESULTS

There was no significant alteration in the hæmoglobin content during major operations (table I), nor was hæmoconcentration in evidence in a series of 26 cases where the amount of hæmoglobin was determined only postoperatively—cf. the results of Underhill et al. (1923), Scudder (1940), and Gordon (1945) in burn shock in man. Some patients were followed for some hours after operation, and none of them showed any tendency to hæmoconcentration in this period (table II). Gross rise in the capillary red-cell count was a feature of shock in the war of 1914–18 (Cannon et al. 1919); in the present study the capillary and venous blood hæmoglobin content was therefore determined in 11 patients manifesting greater or less degrees of shock after major thoracic operations; as in the study of air-raid casualties (Kekwick et al. 1941) the mean difference was negligible. The blood volume at the end of some operations was sharply reduced (table III), but the unaltered hæmoglobin levels indicated that the patients were suffering from loss of whole blood in quantity sufficient to explain their shock. It therefore seems that in these patients, who constitute a fair cross-section of the population of a surgical hospital, shock was not due to extravascular plasma loss from either local or general increase in capillary permeability.

DISCUSSION

It may be argued that in the above cases hæmodilution resulting from hæmorrhage cancelled any tendency to hæmoconcentration from shock (cf. Moon 1942). Even if this were true, the conclusion stated in the last paragraph still holds, for the steady hæmoglobin concentration indicates that the patients studied were adding enough fluid to their circulating volume to make good any loss through abnormally permeable capillaries. Extravascular plasma loss will not, therefore, account for the fatal progressive circulatory failure which appeared in two patients, nor for the syndrome of pallor, contracted veins, and dark venous blood manifested by most patients.

TABLE III—VOLUME OF CIRCULATING BLOOD AT THE END OF SOME MAJOR SURGICAL OPERATIONS

Case no.	Operation	Hb. (% of normal)		Blood-pressure (mm. Hg)		Blood volume (litres)		Deficit (litres)	% deficit
		Initial	Final	Initial	Final	Initial	Final		
12	Removal of chondroma of cervical vertebræ	101	110	120	70	3·36	2·59	0·77	23
15	Repair of dural tear	85	75	155	88	6·16	3·75	2·41	39
27	Removal of cerebral tumour	108	105	135	90	5·88	3·54	2·24	40
40	Removal of prolapsed intervertebral disk	—	94	140	90	4·76	3·12	1·64	35
*56	Splenectomy for spleen ruptured 30 hours earlier	—	95	120	75	7·28	3·46	3·82	53
32	Removal of acoustic neuroma	—	109	125	80	5·04	3·96	1·08	22
101	Resection of osteomyelitic skull	—	96	140	70	4·48	2·70	1·78	40
160	Pneumonectomy	—	108	120	100	5·56	3·51	2·25	40

* This patient received a pint of blood and a pint of plasma, a grossly inadequate replacement, and died, about 4 hours after operation, of further hæmorrhage from the splenic pedicle.

Initial blood volumes were calculated on the basis of a normal of 40 ml. per lb. of body-weight. In case 56 the initial blood volume is that before the accident.

of the powder, but was of such low intensity that it would have been overcome without any signs, had there been no further interference with the field of operation. In a previous investigation on infections at operation it was found that bacteria could be isolated from the fluid accumulating in the wound after operation without any obvious signs of suppuration (Cairns 1939).

The powder probably gives no more than slight assistance to the body in overcoming wound infection. It will not do away with all infection at operation, and it is clear that penicillin in full doses by all routes will not prevent intense infections after operations at which severe contamination with virulent *Staph. aureus* has taken place (Cairns 1947). All the usual aseptic precautions against infection at operation should therefore be scrupulously maintained, and indeed improved. In our own operative technique we recognise the need for more regular tests of the efficiency of the numerous measures used to eliminate bacterial infection. The use of penicillin-sulphamezathine powder is an additional measure which appears to be valuable in brain and spinal operations and may prove valuable in other fields of surgery.

SUMMARY

Penicillin-sulphamezathine powder 5000 units per g. was applied locally to cerebral and spinal operation wounds in amounts of 0·7–3 g. as a prophylactic against infection. No ill effects were observed.

Fluids in the wound usually contained more than 0·02 unit of penicillin per ml. up to 18 hours after the powder had been applied. The penicillin was in greater concentration and persisted longer in wounds containing much scar tissue (from old missile wounds of the head) than in fresh wounds with normally vascularised surfaces.

In 1169 consecutive major cerebral and spinal operations before the use of local penicillin there were 51 cases of postoperative infection (*4·4%*). In 670 consecutive major cerebral and spinal operations with local application of penicillin there were 6 cases of postoperative infection (*0·9%*).

The local application of penicillin-sulphamezathine powder is a useful additional method of preventing bacterial infection at operations, but does not do away with the need for continuous supervision and improvement of aseptic surgical technique.

The bacteriological work in connexion with these investigations was undertaken by Prof. G. S. Wilson, Dr. E. S. Duthie, and Mr. R. L. Vollum, D.PHIL., to whom we wish to express our thanks.

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"... The birth of a baby in many poorer families—even when they have been fully assessed for the medical costs of the confinement—must mean that the family budget can only be balanced by borrowing or drawing on savings. It has been said that children are 'the chief cause of poverty,' and . . . the drain of family expenditure begins sharply at the birth of the first child. The various forms of assistance to mothers, such as maternity grants and prenatal allowances for servicemen's wives, go only a little way towards reimbursing this expenditure. The major outlay, especially in the poorer groups is made in buying essential clothes and equipment rather than in paying medical and institutional fees. The possibility of bringing about substantial reductions in the costs of childbirth, therefore, depends more on producing cheaper baby clothes, prams and other equipment than on lowering further the cost of medical care."—From a report by a joint committee of the ROYAL COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGISTS and the POPULATION INVESTIGATION COMMITTEE. *Population Studies*, 1947, 1, 1.

THE CAUSE OF POSTOPERATIVE SH

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FEW surgical problems have had so much atte as the ætiology of traumatic shock; but, because of great variations in the human response to injury, and lack of any satisfactory method of measuring the se of shock, the experimental approach has been used al exclusively. Unfortunately confirmation of labo findings by observations on humans has not been so as assiduously as it might have been, and many s misconceptions have arisen.

At the beginning of the war of 1939–45 one school of thought held that shock was the result of extrava loss of plasma through the walls of abnormally perme capillaries, though it was not clear whether the pl left the circulation only in the injured area (Bla 1930, 1931) *or throughout the vascular system* (M 1942). When, however, studies were made on sol wounded in battle (Beecher and Burnett 1944, St and Warner 1945), on civilian victims of road an industrial accidents (Cournand et al. 1943, Evans et 1944) and of air-raid injuries (Kekwick et al. 1941, Gr and Reeve 1941), it was found that they were suffer primarily from loss of whole blood. There was no eviden whatever of plasma loss through the walls of abnormally permeable capillaries, except where it was clear th gross inflammatory exudation was occurring somewhe in the body. Such a process explains the hæmoconcen tration found in burns (Medical Research Council 194 in peritonitis following perforation of a viscus (Scudd 1940), and in the early stages of gas-gangrene (Stew and Warner 1945).

Recently there has come to light a serious source of error in studies on experimental shock. It appears th

TABLE I—CHANGES IN HÆMOGLOBIN CONTENT OF BLOO DURING MAJOR SURGICAL OPERATIONS

Case no.	Operation	Hb (% of normal)		Differen
		Before operation	After operation	
1	Removal of spinal tumour	103	103	0
2	Removal of meningioma; insertion of plate	93	96	+3
7	Right temporal lobectomy	105	104	−1
8	Removal of acoustic neuroma	89	89	0
12	Removal of tumour of cervical vertebra	101	110	+9
14	Extensive laminectomy	93	91	−2
15	Repair of dural tear in anterior fossa of skull	86	89	+3
16	Removal of cerebellopontine angle cholesteatoma	106	104	−2
18	Removal of spinal tumour	91	83	−8
20	Removal of septic bone flap	89	98	+9
21	Abdominoperineal excision of rectum	76	78	+2
24	Cæsarean section	83	83	0
25	Perineal excision of rectum	111	105	−6
26	Laparotomy and colostomy for intestinal obstruction	102	104	+2
27	Removal of pituitary tumour	108	106	−2
28	Pyelolithotomy	99	104	+5
33	Gastrojejunocolic fistula undone	98	105	+7
44	Laparotomy (inoperable carcinoma)	112	105	−7
49	Removal of spinal tumour	103	103	0
53	Jejunostomy	40	42	[illegible]
57	Gastro-enterostomy	80	81	+1
59	Removal of acoustic neuroma	100	103	+3
69	Removal of pituitary tumour	80	93	+13

Mean Hb change $= +\frac{22}{23} =$ *ca.* $+1$ %.

cause of the appearance of neck stiffness, his cerebro- al fluid (c.s.f.) was examined, and meningitis due to *influenzæ*, Pittman type B, was diagnosed. Penicillin given intrathecally, and the c.s.f. became sterile, the perature normal, and the baby was apparently cured; there was a relapse. Further intrathecal penicillin was ted; but the c.s.f. still contained *H. influenzæ* after six tions of 30,000 units, so it was discontinued. The further s of intrathecal and intramuscular penicillin and oral hadiazine in the doses given did not control the infection, the infant died on June 9.

ermission for necropsy was not obtained. Sensitivity s using 10 units of penicillin per c.cm. showed the organisms e insensitive.

otal dosage : intrathecal penicillin 550,000 units; intra- cular penicillin 4,740,000 units; sulphadiazine 125 g. . 1).

n the light of later knowledge, the relapses in case 1 e due to reinfection of the meninges from bacteræmia, ich was not controlled owing to inadequate intra- scular penicillin. It is possible that intensive ramuscular as well as intrathecal penicillin and l sulphadiazine, as in case 2, would have led to overy.

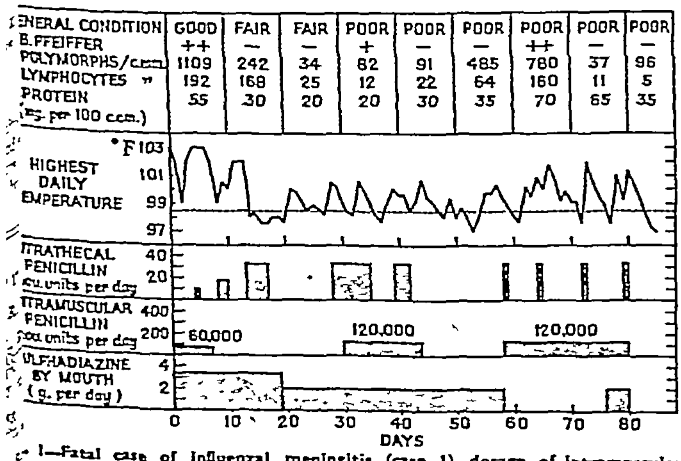
ase 2.—A girl, aged 19 months, was admitted on August 5, 6, after ten days' weakness, vomiting, and slight neck fness. Meningitis due to *H. influenzæ*, Pittman type B, diagnosed. The organism was reported insensitive to icillin and sulphadiazine.

ather empirically, she was given two intrathecal injections penicillin and oral sulphadiazine, but she continued to go nhill. Then, since her condition was so critical, it was ught justifiable to try massive doses of penicillin. She given ten intrathecal injections, each of 50,000 units of e crystalline penicillin, and 960,000 units of penicillin ramuscularly daily (120,000 units three-hourly). After r days there was a striking improvement, and after two eks she was afebrile, the c.s.f. was sterile, and she was ying with her toys. The dramatic change was maintained h complete recovery, and the patient was discharged on t. 26.

Total dosage : intrathecal penicillin 535,000 units; intra- scular penicillin 47,670,000 units; sulphadiazine 65 g. . 2).

In view of the bacteriological reports that the organisms re insensitive to 10 units of penicillin per c.cm., and mg. of sulphadiazine per 100 c.cm., intrathecal nicillin was discontinued, with the gradual deteriora- n of her condition. After receiving massive doses intrathecal and intramuscular penicillin the child overed.

ase 3.—A girl, aged 10 months, was admitted on Oct. 2, 6, after a day's illness, with a convulsion and vomiting. e neck was slightly rigid, and the left drum was red and gested. The c.s.f. grew *H. influenzæ*, Pittman type B.



1—Fatal case of influenzal meningitis (case 1), dosage of intramuscular penicillin being inadequate.

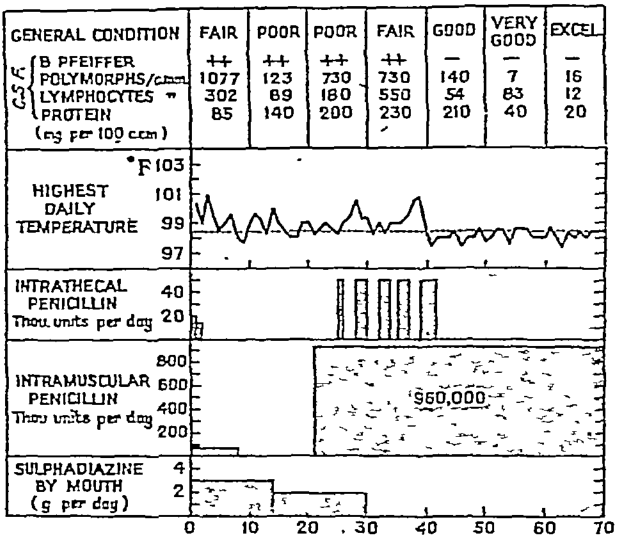


Fig. 2—Chart of case 2, showing effect of massive doses of penicillin in influenzal meningitis.

Owing to our previous experience, intensive parenteral penicillin therapy, with sulphadiazine by mouth as a possible synergist, and intrathecal injections of pure crystalline penicillin were started immediately. Three hours after the ninth intrathecal injection the baby had convulsions and cerebral irritability, and remained pale, shocked, and unconscious for six hours. No more intrathecal penicillin was given. Thereafter, she continued to recover, was perfectly well two weeks after the onset of the illness, and was discharged on Oct. 26.

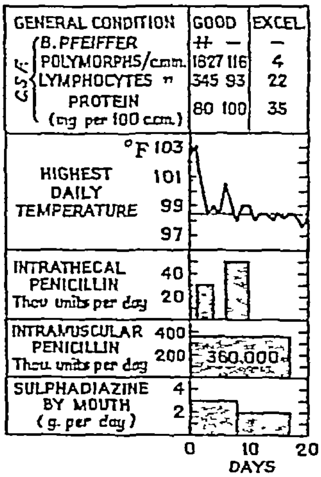


Fig. 3—Chart of case 3.

Total dosage : intrathecal penicillin 350,000 units; intramuscular penicillin 5,760,000 units; sulphadiazine 39 g. (fig. 3).

Despite the bacteriological reports that these organisms were insensitive to 10 units of penicillin per c.cm. and 10 mg. of sulphadiazine and sulphathiazole per 100 c.cm., intensive therapy was instituted with intramuscular and intrathecal penicillin and oral sulphadiazine. Later, the treatment was fully justified when it was reported that the organisms were sensitive to 100 units of penicillin per c.cm.

Case 4.—A girl, aged 23 months, was admitted on Jan. 8, 1947, with three days' history of fever and nausea and a day's history of cough. She had signs of bronchopneumonia involving both lungs, and meningitis with strabismus. The c.s.f. contained *H. influenzæ*, Pittman type B.

Treated with intrathecal and intramuscular penicillin and with sulphamezathine by mouth, she rapidly improved. On Jan. 17 the c.s.f. appeared clear and contained 61 polymorphs per c.mm. The intrathecal injections were then stopped. On the 19th she relapsed, and eight more intrathecal injections of pure crystalline penicillin were given. On the 27th the c.s.f. was clear and contained only 2 cells per c.mm.; so the intrathecal injections were again discontinued. She relapsed, however, again on the 30th, and seven more daily intrathecal injections of pure crystalline penicillin were given; she made an uninterrupted recovery this time and was discharged on Feb. 27.

H. INFLUENZÆ MENINGITIS WITH RECOVERY

REPORT OF A CASE

JOHN GERRARD
B.M. Oxfd

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EVERAL cases of meningitis due to *H. influenzæ* ted with penicillin have already been reported in tain (Forgacs et al. 1945, McIntosh and Drysdale 1945, sdale et al. 1946), and Zinnemann (1946) has lately iewed the British and American reports, adding 13 her cases.

n addition to sulphadiazine and systemic penicillin, present case received a solution of pure crystalline icillin intrathecally, with striking freedom from e-effects.

n Oct. 26, 1946, a girl, aged 15 months, was admitted to King Edward VII Memorial Children's Hospital under care of Dr. A. V. Neale. She was the youngest of five dren, all of whom had catarrhal infections at the time. wo days before admission she vomited twice and became table. The day before admission she had a rigor, her neck a little stiff, and she failed to recognise her mother. nig's sign at this time was negative. She was given 0·5 g. a sulphonamide by mouth, repeated after four hours and owed by 0·25 g. four-hourly.

n admission she was flushed and irritable but well rished, with a purulent nasal discharge. Temperature 8°F, pulse-rate 132, respirations 25 per min. Fontanelle but not bulging; throat injected; ears, heart, lungs, abdomen clinically normal; neck not notably stiff; nig's sign negative, but Brudzinski's sign positive; knee ankle jerks present and equal on the two sides; abdominal lexes present; plantar responses flexor.

Lumbar puncture produced a turbid fluid under increased essure, containing 2600 polymorphs per c.mm.; no sugar; otein 50 mg. and chlorides 670 mg. per 100 c.cm. Penicillin, ,000 units, was introduced into the subarachnoid space by e lumbar route.

Microscopy of the cerebrospinal fluid (c.s.f.) revealed many am negative bacilli, which culture proved to be *H. influenzæ*, sitive to both penicillin and sulphadiazine. The organism s not typed according to Pittman's classification (Pittman 31, 1933).

White-cell count (blood): 9500 per c.mm. (neutrophil poly-rphs 20%, monocytes 3%, eosinophils 2%, lymphocytes %).

Treatment consisted of sulphadiazine by mouth, and nicillin intramuscularly, intrathecally, and intracisternally. itially, all the penicillin used was "impure," containing only 50 units per mg. The dosage of intramuscular penicillin s 10,000 units three-hourly, increased after forty-eight urs to 30,000 units three-hourly; and of sulphadiazine 5 g., followed by 1 g. six-hourly for twenty-four hours and ereafter 0·75 g. six-hourly, subject to increase or decrease necessary to maintain an average blood-sulphadiazine rel of 15 mg. per 100 c.cm.

ogress

The initial improvement was dramatic. Two days after mission, the fifth day of the illness, the child was alert, took interest in her surroundings, and recognised her parents r the first time since admission. Her temperature fell to °F, and the c.s.f. contained only 4 cells per c.mm., with organisms, and was sterile on culture.

Next day, the sixth day of the illness, the c.s.f. cell-count se to 97 per c.mm., and penicillin 20,000 units was therefore troduced into the subarachnoid space by the lumbar route. his process was repeated daily for four days, by which time dry tap was obtained.

It was hoped that the meningeal infection had been over-me, but the temperature did not settle. On the twelfth day the illness there was again clinical evidence of meningeal itation, and two days later a solitary gram-negative bacillus as seen on microscopy of the c.s.f.

At this juncture an unsuccessful attempt to obtain strepto-ycin was made. However, crystalline sodium penicillin (prepared by Glaxo Laboratories) became available, and with this "pure" penicillin it was hoped that the "gumming up" of the lumbar subarachnoid space might be avoided. This preparation contained 1650 units per mg.

On the sixteenth day of the illness Prof. F. A. R. Stammers performed a cisternal puncture under general anæsthesia, withdrawing about 10 c.cm. of turbid freely flowing fluid and introducing 40,000 units of the pure penicillin. After this a burr hole was made in order to introduce penicillin into the right lateral ventricle, but the ventricle could not be located.

Two days later daily cisternal punctures under local anæsthesia were initiated, and on each occasion 40,000 units of pure penicillin was introduced after the withdrawal of 5–10 c.cm. of c.s.f., which always flowed freely. Except on two occasions, when the child vomited immediately after the cisternal puncture, no untoward effects appeared: even on these two occasions, having vomited, the child sat up and played cheerfully.

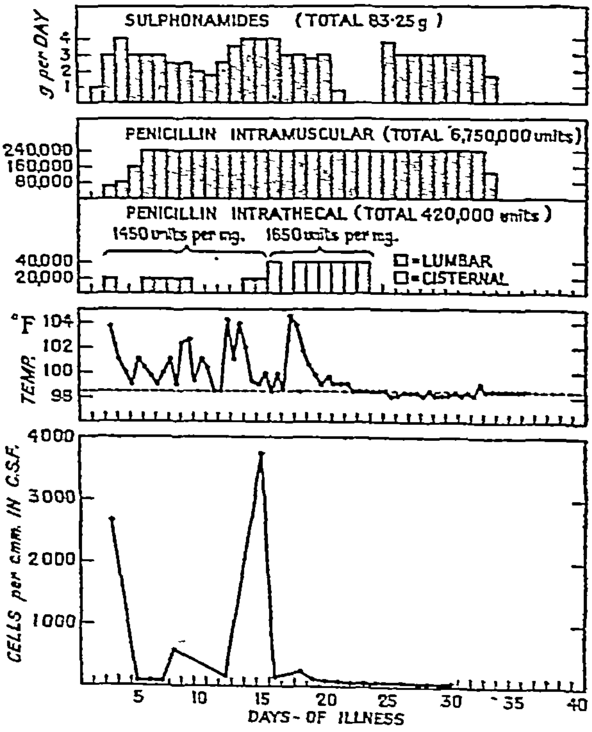
After seven days the introduction of penicillin into the subarachnoid space was discontinued. Further progress was uneventful. The child was discharged on Dec. 3, thirty-four days after admission, bright and cheerful, with no evidence of cerebral impairment.

Her subsequent progress at home has been satisfactory. When last seen, on Jan 21, 1947, there was no evidence of any residual lesion. (For additional details of treatment and progress see figure.)

DISCUSSION

The intrathecal use of penicillin has not yet been standardised. Complications with large dosage, such as "gumming up" of the lumbar subarachnoid space (Smith et al. 1946) and convulsions following the introduction of penicillin directly into the lateral ventricles (Johnson and Walker 1945), have hitherto necessitated the use of penicillin both in comparatively small dosage and by two or more routes in the course of treatment—e.g., directly into the lateral ventricles and/or into the cisterna magna besides the lumbar route—in those types of meningitis which do not respond readily, if at all, to systemic penicillin and/or sulphonamides.

In the present case the patient tolerated the daily introduction of 40,000 units of pure penicillin into the cisterna magna with no complications other than a small



Treatment, temperature, and C.S.F. cytology.

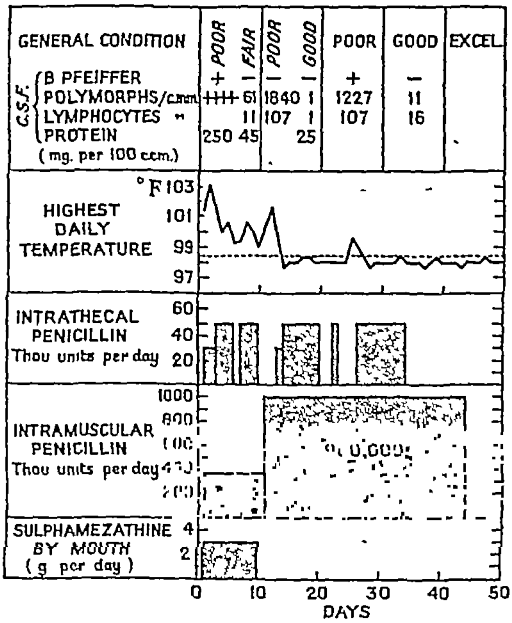


Fig. 4—Chart of case 4.

Total dosage : intrathecal penicillin 1,040,000 units ; intramuscular penicillin 33,430,000 units ; sulphamezathine 24 g. (fig. 4).

This case confirms the necessity for enormous doses of penicillin, and emphasises the importance of continuing the daily intrathecal injections for at least seven days after the C.S.F. has become sterile. It also shows the necessity for the same large doses of penicillin when a relapse occurs. Finally, it demonstrates the relative safety of these large intrathecal doses of pure crystalline penicillin, when administered carefully under strictly aseptic precautions, in a strength of 10,000 units of pure penicillin per c.cm., each dose being made up separately in a sealed glass ampoule.

NOTE ON BACTERIOLOGY (E. N. ALLOTT)

The organisms isolated in all four cases were typical *H. influenzæ* and were all identified by Dr. E. A. Straker as belonging to Pittman type B.

The routine testing of penicillin sensitivity in this laboratory is carried out by the punched-plate method, one drop of penicillin solution, 10 units per ml., being dropped into the punch-hole. By this technique the strains from cases 1 and 2 were found to be penicillin-insensitive. They were also resistant to 10 mg./100 ml. of sulphathiazole and sulphadiazine.

In view of the satisfactory response of cases 1 and 2 to penicillin therapy, the organisms from cases 3 and 4 were tested against higher concentrations of penicillin. With the same technique, but with three concentrations of 10, 100, and 1000 units/ml., the strain from case 3 gave no inhibition, 6 mm., and 15 mm. zones respectively with the three concentrations, whereas that from case 4 gave respectively 5 mm., 9 mm., and 14 mm. We have consistently found that with a concentration of 10 units/ml. the Oxford staphylococcus shows a zone of 12 mm.

It is impossible from these observations to give an exact figure for the concentration of penicillin required for inhibition of *H. influenzæ*, but it is probably more than 10 and less than 100 times as much as that which inhibits the staphylococcus. It is obvious that the strains from cases 3 and 4 differed in sensitivity considerably, that from case 4 being very much more sensitive than that from case 3.

From this work it is clearly unjustifiable to say that an organism is insensitive to penicillin merely from the results obtained on a punched plate with 10 penicillin per ml. Much higher concentrations penicillin must also be tested.

DISCUSSION

The clinical features of *H. influenzæ* meningitis those of the other types of pyogenic meningitis, diagnosis can only be made by bacteriological tion. Most of the cases reported were of the type B, which shows a variable sensitivity to amides and penicillin. Ideally, sulphonamides, and *anti-influenzal serum should* be simultaneously, and Paterson (1946) reported the cure of 2 such cases. We could not obtain the serum, but we found the following régime ment to be successful in the 3 infants so further case treated on these lines in the Brook under the supervision of Dr. J. V. A medical superintendent, also recovered.

Régime of Treatment in Infants

(1) As soon as pyogenic meningitis was diagnosed, units of pure crystalline penicillin was given daily, and 60,000 units of penicillin was given in three-hourly to combat the bacteræmia which is so in influenzal meningitis (Neter, in 1942, noted in 11 out of 17 cases examined).

(2) Sulphadiazine 1 g. as an initial dose, 0·5 g. four-hourly, under the age of two years. given because of a possible synergic effect (Bigger

(3) When the diagnosis of influenzal meningitis was firmed, and the organisms were found to be penicillin in vitro, the treatment recommended by et al. (1946) for pneumococcal meningitis was given.

(4) If the organisms were relatively insensitive, units of pure crystalline penicillin was given daily thecally for at least seven days after the C.S.F. became and 120,000 units three-hourly intramuscularly at the time.

(5) Intramuscular penicillin and sulphadiazine by were continued for two weeks after the C.S.F. became A reduced dose of sulphadiazine was given in the second

(6) The same intrathecal doses of penicillin were for a relapse.

Reactions to the large intrathecal doses of are rare. McIntosh and Drysdale (1945) reported attack with convulsive movements lasting six following treatment with 50,000 units of penicillin thecally on one occasion. We noted a similar lasting six hours after treatment with 50,000 unit pure crystalline penicillin on one occasion only. C.S.F. during the attack showed no obvious If such a reaction occurs, a reduced dose of peni preferably from a different batch, should be given

SUMMARY

Four cases of meningitis in infants, due to *H. influenzæ* relatively insensitive by in-vitro test penicillin, are reported ; three of these cases to massive doses of penicillin.

A régime of treatment found to be effective in is described.

It is suggested that before an organism is reporte insensitive to penicillin in vitro much higher conc tions than 10 units/ml. must be tried.

Our thanks are due to Dr. B. A. Young, medical tendent of St. Alfege's Hospital, for his coöperation encouragement.

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n admission : no abnormal physical signs.

igmoidoscopy showed redundant mucosa with blood and cus exudate; granular friable mucosa, extending 10 cm. the rectum; perfectly normal appearance above this area.

crapings: pus cells, macrophage cells, and red cells; *E. histolytica* or ova seen.

lood-count: no leucocytosis and otherwise normal.

ost-dysenteric granular proctitis was diagnosed and ated as in case 1.

roctoscopy a week later showed a rapidly healing mucosa l granular and easily injured.

atient was then discharged but had to be readmitted two eks later owing to a return of symptoms.

Proctoscopy on readmission revealed a friable mucosa with mall triangular area of ulceration $1^1/_2$ in. from the external incter.

Scrapings: polymorphs, red cells, and *E. histolytica* getative forms.

A course of E.B.I. capsules and chiniofon retention enemas s started immediately.

After ten days proctoscopy showed granular mucosa with n-point hæmorrhages and pus, and stools contained red cells d polymorphs as before.

The condition was therefore still regarded as one of granular st-dysenteric proctitis.

Treatment with succinyl-sulphathiazole suppositories was stituted as in case 1, and, a week later, proctoscopy disclosed healed mucosa with no purulent or hæmorrhagic areas. rapings showed red cells only.

Patient was discharged with a supply of suppositories, and wrote on June 22 that his symptoms had completely abated ter the diligent use of the suppositories for a month.

Case 3.—A man, aged 41, had undergone hæmorrhoid- tomy in 1945 after an acute attack of diarrhœa with blood d mucus in the stools.

On discharge from hospital in Persia his symptoms had been ry much worse than when he had been admitted. He had en told that he had "inflamed skin tags" and that he ould improve with perseverance and a little ointment.

Each day, after a bowel action, he had noted blood, slime, ad pus on his stool. There had been a good deal of pain and nesmus, and constitutional signs had been more marked than n cases 1 and 2.

On returning to England he had had "excessive granula- tions scraped and cauterised." Nevertheless the discharge ad continued, and he had had much pain and tenesmus.

Another operation had been performed for the removal of sinus, and he had been relieved of much of his pain, but not f his discharge.

On admission, on June 17, 1946, his general condition was atisfactory, with no abnormal physical signs. Blood-count nd barium enema revealed no abnormality.

Sigmoidoscopy showed a reddened granular mucosa with onspicuous superficial pitting. Pin-points of pus and blood ere situated in this area about 5 cm. from the external phincter. Above this the mucosa appeared normal. The area escribed was very friable and bled on sigmoidoscopy.

Scrapings: red cells, pus cells, and gram-negative rganisms; no *E. histolytica*. Cultures grew *Bact. coli*.

There was also an eczematous condition (œdema with xudate of lymph) of the anal canal and circumanal skin. t some time sulphathiazole powder had been insufflated to lleviate his condition. Since this had been followed by an mmediate exacerbation of symptoms, with marked increase n pain and onset of irritation, the eczema was thought to be n allergic reaction to sulphathiazole, probably aggravated y the continuous discharge from the area of granular proctitis.

A palliative drying paste ('Siccolam') was applied to the eeping area of circumanal skin and in the anal canal, and course of parenteral penicillin 100,000 units three-hourly as started in an effort to clear the rectal infection. In all, $3^1/_2$ mega units of penicillin was given.

Six days later a report on the fæces indicated that pus and blood-cells were still present, and proctoscopy disclosed little or no improvement.

It was decided to use succinyl-sulphathiazole suppositories as in the previous cases while continuing to counteract the circumanal eczema with the bland paste. No allergic manifes- tations followed the use of succinyl sulphathiazole.

Proctoscopy a week later revealed a rapidly healing mucosa with vascular striæ now visible, and no pus or mucus. Mucosa still friable, and bled easily if injured. No pus or mucus on fæces, and only a few red cells present.

On discharge from hospital patient was in relative comfort compared with his original state, and he was instructed to use the suppositories as indicated above. Œdema and weeping of circumanal skin much less after use of siccolam paste.

DISCUSSION

Though the ætiology differed in all three cases, the final result was granular proctitis. Diagnosis was established purely on the sigmoidoscopic findings, excluding lesions proximal to the rectum. Appearances conform to those described by Milligan (1933), who has stated that "In the granular form of proctocolitis the appearance of the rectum or colon when viewed through the proctoscope or sigmoidoscope is granular, vivid pink, and moist. It bleeds easily with trauma and the normal branched blood-vessels are no longer visible. Shallow pitting may be present but deep ulceration of the mucous membrane is absent. Discharge on the surface varies from a trace of blood to large quantities of pus, muco-pus, and blood." Milligan takes great pains to distinguish between the granular and ulcerative forms, constitutional signs being much more severe in the ulcerative form. This is confirmed by our cases where there were very mild constitutional signs in spite of the large quantities of pus voided.

Hardy (1945) stated that "when blood, mucus, and pus are associated with the passage of constipated stools, the disease is usually limited to the rectosigmoid area." Our cases illustrate this point quite well, except that in no instance did the sigmoid appear to be involved.

Hitherto granular proctitis has been most resistant to treatment; the multiplicity of therapeutic agents prescribed is a certain indication of the inadequacy of each.

Manson-Bahr (1943) has had some success with 'Protargol' suppositories coupled with eusol lavage and protein-shock therapy in a case of granular proctitis of gonococcal origin. He has also recommended sulphaguanidine enemas 7–10 g. in 7 fluid oz. of water suspended in mucilage or gum acacia. Nicotinic acid 150 mg. daily is regarded as being of value in the relief of toxic symptoms.

He further states that other workers have claimed good results from bismuth subgallate, suspended in olive oil, as a retention enema.

Autohæmotherapy, protein-shock treatment, and silver-nitrate, silver-albuminate, and tannic-acid gr. 3 suppositories have had their advocates.

Lockhart-Mummery (1934) is of the opinion that electric cataphoresis in selected cases is of value; he describes several cures.

I have not been able to find any references to sulphonamide suppositories in British medical literature, but Howard (1945) in America has recorded the use of "intrarectal powdered sulphonamides in aspecific recto-colitis."

Sufficient time has not yet elapsed in the present cases for an accurate estimate to be made of the value of succinyl-sulphathiazole suppositories; but the symptoms and signs have greatly diminished, and preliminary results appear to indicate that this is by far the best and most economic method of applying sulphonamides to the diseased rectal mucosa. The suppository must necessarily come into intimate contact with it and can remain so for twenty-four hours. Sulphonamide retention enemas can at best exert but a temporary effect. Further, the patient need not be kept in hospital after the diagnosis has been established, if the suppositories become the accepted form of treatment.

PREPARATION OF SUCCINYL-SULPHATHIAZOLE SUPPOSITORIES

(R. H. BARCLAY, M.P.S.)

The recipe for each suppository at the Albert Dock Hospital was:

Succinyl sulphathiazole 3 g.
Cocoa butter 7 g.

vomit on two occasions. There were no convulsions, nor was there ever any evidence, with this preparation, of a block developing in the subarachnoid space. In four subsequent cases of non-meningococcal meningitis treated at this hospital, 40,000–80,000 units of pure penicillin has been introduced into the subarachnoid space daily by the lumbar route without causing cerebral irritation or hindering the flow of C.S.F. This is a happy improvement on the results obtained with less pure preparations of penicillin. It is therefore felt that the use of crystalline penicillin will facilitate the treatment of meningeal infections. Dr. A. L. P. Peeney (personal communication) has found that penicillin introduced into the lumbar subarachnoid space will reach the ventricles within 30 min. when no intervening block is present; a longer time is required to obtain the maximal concentration of penicillin in the ventricles.

It is hoped that the lack of local reaction to the introduction of pure penicillin into the lumbar subarachnoid space will enable a greater proportion of patients to be treated without recourse to cisternal and/or ventricular punctures, for the introduction of penicillin into the cisterna magna, when the patient is uncoöperative and has neck rigidity with head retraction, is more dangerous than its introduction by the lumbar route. Experience, however, may prove it advantageous to introduce penicillin initially more centrally. Gaisford (1946) believes that the intrathecal introduction of penicillin in non-traumatic meningitis is a retrograde step, and that sufficient concentrations of penicillin can be obtained by its systemic use alone. In the present case the patient received 240,000 units of penicillin intramuscularly daily and yet relapsed. It is therefore considered necessary to give penicillin locally as well as systemically where the causal organism is not the meningococcus but is sensitive to penicillin in therapeutic concentrations.

Streptomycin may possibly take the place of penicillin in the treatment of meningitis due to *H. influenzæ* (Birmingham et al. 1946, Nussbaum et al. 1946), but Alexander (1946) reports that *H. influenzæ* may rapidly develop a high degree of resistance to streptomycin. In such cases penicillin will still be utilised. Moreover, severe reactions with the preparations of streptomycin now obtainable are, according to Cairns et al. (1946), not uncommon, though the purer preparations are reported (Madigan et al. 1947) to be less toxic.

I wish to thank Dr. A. V. Neale for permission to publish this case; Prof. F. A. R. Stammers, Drs. E. C. Allibone, A. L. P. Peeney, W. Cant, and H. Baar for their help and advice; and Sir Leonard Parsons for his criticisms.

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"... Before individual output can rise significantly we have to repair the loss of that neighbourliness and loyalty which flourished so magnificently in the war and withered so quickly in the peace. This loss touches the human spirit and is not to be made good by clever planning; nor by inducements at the expense of the man next door; nor by threats of direction of labour. ... We are all to blame for this decay of friendliness."—Mr. DAVID ECCLES, M.P., in a letter to the *Times*, July 29.

GRANULAR PROCTITIS
TREATED WITH SUCCINYL-SULPHATHIAZ
SUPPOSITORIES

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LONDON

GRANULAR proctitis occurs as a late complic
or concurrently with, dysentery affecting the
bowel. It has to be distinguished from chronic
dysentery, chronic intestinal amœbiasis, mucous
and low-grade chronic idiopathic ulcerative colitis
following cases illustrate the symptoms and
course of the condition.

Case 1.—A man, aged 44, while in Palestine fifteen
earlier, had an attack of acute dysentery, with severe
tutional illness. This had cleared after treatment
sulphaguanidine tablets, but looseness of stools p
with passage of blood and slime at end of defæcation.

Amœbiasis had been diagnosed and treated with
injections, emetine bismuth iodide (E.B.I.) capsules
chiniofon pills. Diarrhœa and discharge had ceased.

Four months before admission to hospital he had re
to England and had a relapse of blood and muco-pus in
no diarrhœa, but stools semi-solid.

On admission to hospital on Jan. 21, 1946: no a
physical signs on general examination; but sigmoid
showed reddened friable granular mucosa, extending
into rectum. Mucus and pus on surface only. No ulcer
Mucosa above this area perfectly normal.

Scrapings examined microscopically showed pus
macrophage cells, and red cells. No *Entamœba hi*
seen. Cultures on MacConkey media produced *Bact. col*

Blood-count revealed no leucocytosis and was within
limits.

Post-dysenteric granular proctitis was diagnosed,
course of succinyl-sulphathiazole tablets 6 g. daily was s
together with a retention enema of succinyl sulphat
6 g. to 3 fluid oz. of mucilage daily.

Ten days later proctoscopy revealed a granular bl
area 2 in. from the external sphincter. Appearance of n
suggested little improvement otherwise. Patient's sym
persisted.

It was suggested that succinyl sulphathiazole mig
incorporated in a suppository so that the active sulphon
could be brought into intimate contact with the gr
and purulent areas without the waste involved in ret
enemas. The formula and method of preparation as d
by Mr. Barclay, the hospital pharmacist, are given below.

One suppository was inserted each night well insi
anal canal and retained at least twelve hours. The oral ad
tration of succinyl sulphathiazole was continued as
Ten days later, proctoscopy showed a slightly granul
rather plicated mucosa, which bled easily if injured,
mucus or pus was seen.

Report on stools: well-formed stool; a few red cell

Patient remained well throughout treatment and
discharged with a supply of suppositories, being inst
to insert one on alternate nights for a month. He a
regularly each month to report progress.

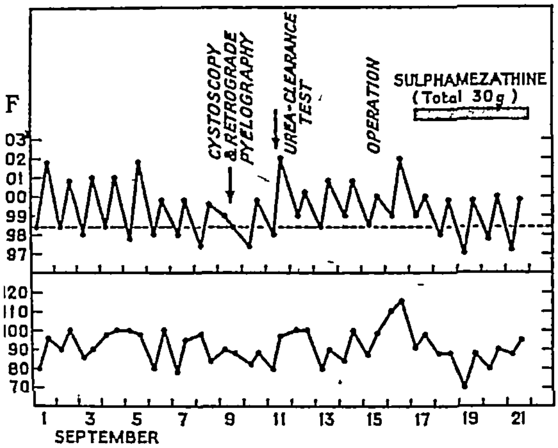
He has remained without symptoms five months
repeated stool investigations give no further evidence of
mucus, or pus.

Case 2.—A man, aged 32, had noted blood and sli
the stool after defæcation when in Persia two years
Fæces had been solid and of normal colour and consis
He had been investigated but not treated.

Fifteen months before admission to hospital he had
in Normandy, two attacks of diarrhœa at an interval of
days, each attack lasting two days, with blood and
in stools, and moderate illness. Treated with sulphagua
tablets the condition had cleared.

Sigmoidoscopy after treatment had led to diagno
amœbic dysentery, *E. histolytica* cysts having been
He had been treated with emetine injections, E.B.I. cap
and chiniofon enemas.

For the last three months until admission to hospit
had had persistent blood and muco-pus on a well-formed
after defæcation. There was no loss of weight and no il



emperature chart of case 1, showing persistent pyrexia before operation.

ited veins, and on cross-section it appeared to be fairly
l encapsulated. The central portion was necrotic. Micro-
py showed the typical appearances of a hypernephroma.
ecovery was delayed by a mild basal collapse of right
g; but, when this cleared, patient's temperature fell and
nained stationary (see figure). His mentality, which had
ome increasingly deranged until the operation, was
tored to normal immediately afterwards, and he remained
ite sane during his convalescence. On discharge from
spital on Oct. 31, 1944, there had been no more pyrexia,
d he had been up all day for three weeks.

SECOND CASE

A female sales clerk, aged 20, who came from a healthy
nily and had had no serious past illnesses, began in May,
44, to have pain on bumping her iliac crests, and shortly
erwards developed a dull central lumbar backache. After
ree weeks she was admitted to hospital, and for the next
ne weeks continued to have pyrexia (103°F each evening).
vestigations did not reveal the cause of her condition, and
August 30 she was admitted to the General Hospital,
irmingham.

ondition on Admission

A nervous uncoöperative girl, very pale and wasted. Iliac
ests and upper ends of both femora and lumbar spine
ry tender on pressure. Abdomen showed generalised
nderness but no palpable tumours. Respiratory, cardio-
scular, and central nervous systems normal.

vestigations and Progress

Blood.—On August 31 a count showed: red cells 2,000,000
r c.mm., Hb 34%, white cells 9400 per c.mm. (myelocytes
5%, unsegmented polymorphs 30%, polymorphs 30%,
sinophils 1%, lymphocytes 25%, monocytes 1·5%). *Blood-*
lture (Sept. 9): sterile.

Radiography of pelvis (Sept. 3): "There is an osteoporosis,
it it is symmetrical, and there is no localised bone
struction."

Urine (August 30): faint trace of albumin; deposit con-
ined a few pus cells; (Sept. 3) no albumin. *Fæces* (Oct. 10
d 19): no pus or blood seen; no non-lactose-fermenting
cilli grown on culture; no tubercle bacilli seen micro-
opically.

The pyrexia continued, not responding to a course of peni-
llin 1,000,000 units. The anæmia was treated by repeated
ood-transfusions. From the time of her admission to the
eneral Hospital until her death on Nov. 10 she was mentally
stable and resented examination. The diagnosis was
ally made by further radiography, which showed a wide-
read osteoporosis of the spine, pelvis, skull, and right femur,
ggesting a generalised neoplastic invasion of bone. There
as no evidence of secondary deposits in the lung. On Nov. 9
biopsy specimen taken from the right iliac bone was found
be infiltrated with secondary deposits of hypernephroma.
ecropsy was refused.

DISCUSSION

In case 1, throughout the patient's stay in hospital,
ere was no evidence of secondary deposits; and, as
is temperature fell to normal after removal of the kidney tumour, it is suggested that the cause of the pyrexia was the necrosis in the centre of the tumour. The significant features of the investigations undertaken were the absence of abnormal urinary findings, the progressive anæmia and loss of weight, and the mental changes. The initial albuminuria was attributed to the fever, as it disappeared after the patient had been confined to bed for two days. The mental changes became prominent and were not controlled by the administration of nicotinic acid in full dosage; they were presumably toxic in origin and again related to the necrosis in the tumour.

The final clue to the diagnosis was the right lumbar pain, followed a week later by a palpable tumour in the loin; but these symptoms did not appear until the patient had been ill for four months.

The early stages of case 2 were not observed, but it is probable that, in spite of the negative radiological findings, her pyrexia was mainly due to secondary neoplastic deposits, as bone tenderness was her first symptom.

SUMMARY

Two cases of pyrexia of uncertain origin, eventually shown to be due to hypernephroma, are described. The pyrexia was attributed to a central necrosis in the tumour in one of them, and to secondary deposits in the other.

In pyrexia of uncertain origin hypernephroma should be considered a possible cause.

We are indebted to Dr. A. P. Thomson for his helpful advice, and to Sir Walter Haward, D.G.M.S., Ministry of Pensions, for permission to publish case 1.

MICRO-ESTIMATION OF NON-PROTEIN NITROGEN IN SERUM, PLASMA, OR BLOOD

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WE describe here a method of estimating the non-protein nitrogen in blood, serum, or plasma in 5–10 minutes. The results are equal in exactness to those obtained by the original Kjeldahl method, though no digestion and no distillation are needed.

By our method not only urea and ammonia but also physiological amino-compounds can be determined. Only indole compounds, containing nitrogen in their ring, remain unaffected; but this does not matter, because normal blood contains only traces of these compounds, which even in uræmia do not exceed 0·4–0·5 mg. of nitrogen per 100 c.cm.

The principle of the method is as follows: to blood, serum, or plasma filtrate an alkaline hypobromite-borate solution is added, and the excess of bromine is iodometrically titrated, whereby 1 atom of nitrogen requires 3 atoms of bromine.

REAGENTS

(1) Deproteinisation Fluid[1]:

In a 1000 c.cm. measuring flask 44·8 c.cm. of a 10% sodium-tungstate solution, 2 g. of sodium citrate, and 6·4 g. of sodium sulphate are dissolved in about 800 c.cm. of distilled water, 44·8 c.cm. of *N* sulphuric acid and 2 g. of cadmium sulphate are added, and the flask is filled with distilled water.

(2) Hypobromite Solution:

(*a*) 84·5 g. boric acid and 15 6 g. sodium hydroxide are dissolved in about 500 c.cm. of distilled water, boiled for 30 minutes, and after cooling made up to 1000 c.cm.

(*b*) A saturated solution of sodium fluoride (about 5 %).

(*c*) 27 % sodium hydroxide solution.

250 c.cm. of solution (*a*), 150 c.cm. of solution (*b*), and 50 c.cm. of solution (*c*) are mixed together—i.e., 5 parts of (*a*), 3 parts of (*b*), and 1 part of (*c*). This mixture keeps well.

---

[1] Modified Abrahamson's reagent; see Welcher, F. Chemical Solutions, London, 1942.

The powdered succinyl sulphathiazole was placed in a warm dish, and half the quantity of melted cocoa butter was added. The two ingredients were stirred to form a smooth paste before the rest of the cocoa butter was added. When poured into the moulds and set, the finished product was a little over 2 in. long and $^{5}/_{8}$ in. in diameter.

Since there is no standard metal mould for a suppository of this size, glass tubes were made by removing the ends of test-tubes $^{5}/_{8}$ in. in diameter and flaming the rough edges. The tubes were slightly lubricated inside with almond oil and corked at one end. The mixture was poured into the tubes and, when set, the contents were easily ejected with a glass rod. The suppositories are stored wrapped in 'Cellophane' and keep perfectly well at room temperature.

I wish to thank Sir Philip Manson-Bahr, senior physician to the hospital, for his help in the interpretation of the proctoscopic appearances, in the preparation of this paper, and for permission to publish reports on two of his cases; Dr. H. M. Hanschell, hon. medical superintendent, for permission to report one of his cases, and for his help and encouragement; Mr. Barclay for the preparation of a suitable suppository; and Mr. A. H. Walters, F.I.M.L.T., for his pathological investigations. Siccolam was supplied by The British Drug Houses Ltd.

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PYREXIA WITH HYPERNEPHROMA

REPORT OF TWO CASES

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THE association of pyrexia with hypernephroma is well known, but we have found only one recent reference to long-continued fever as the initial sign. The following two cases presented with pyrexia of uncertain origin.

FIRST CASE

A master baker, aged 36, with 18 months' Army service as a driver in the R.A.S.C.; medical category A1. He came from healthy parents and had had no previous illnesses.

On June 19, 1944, he was transferred to Ronkswood Hospital from a rehabilitation centre after being off duty for seven months with recurrent synovitis of the left knee. He complained of loss of appetite and weight for two months and of vomiting after meals, tiredness, and a dull central lumbar backache for a month. The pain was aggravated by exertion, relieved by rest, and bore no relation to food. The total weight lost had been 2 stone in two months. In answer to direct questioning he admitted to a slight cough with scanty mucoid sputum for many years and denied hæmoptysis, melæna, and hæmatemesis. The bowels were regular, and micturition was normal, except for a slight nocturnal frequency (day 4, night 2), without dysuria or hæmaturia.

Condition on Admission

Pyrexial. Obvious recent loss of weight. Teeth apparently healthy. *Respiratory system:* equal expansion; percussion normal; breath-sounds vesicular, with slightly diminished air-entry at the right base; no adventitious sounds. *Abdomen:* no tenderness or palpable tumour; no enlargement of liver, spleen, or kidneys detected. Rectal examination normal. *Skeletal system:* no residual signs of synovitis of the left knee. Full painless movement in all joints, including spine. No tenderness over lumbar muscles, spine, or pelvis. *Cardiovascular* and *central nervous systems:* no ab detected.

He was running a daily temperature, ranging 99–101°F, and had a corresponding tachycardia.

Investigations and Progress

Urine (June 20): sp. gr. 1020; albumin, a haze; no centrifugalised deposit contained a few red cells and cytes; culture sterile. Further specimens on June 2 24 and July 5 and 14 contained no albumin: d before; culture sterile.

Blood.—On June 20 the count was: red cells 5,1 per c.mm., Hb 100%, colour-index 0·98, white cell per c.mm. (neutrophils 77%, eosinophils 1%, basophils lymphocytes 18%, monocytes 3%). Blood agglu (T.A.B. inoculation given twelve months previously) on were: positive to *Bact. typhosum* "H" 1/25, *Bact. typhosum B* "H" 1/250, *Bact. paratyphosum A* "H" *B. dysenteriæ* Flexner 1/50; negative to *Bact. t* "O,". *Bact. paratyphosum B* "O," *Bact. paratypho B. dysenteriæ* Shiga, *B. dysenteriæ* Sonne, *Br. abortus, melitensis.* On July 12 positive to *Bact. paratyph* "H" 1/250 and *Bact. paratyphosum A* "H" 1/625. *culture* on July 5 and 9 was sterile after forty-eight

Wassermann reaction negative, June 28.

Sputum repeatedly negative for tubercle bacilli. (June 30 and July 5): no pathogenic organisms isol direct culture or with selective media. *Radiography* of showed nothing abnormal.

During the first three weeks in hospital the pyrexia maintained. The patient still complained of a slight and occasional vomiting, and had developed a dull the region of the right scapula and round the right margin. He continued to lose weight and Hb fell to his total and differential white-cell counts re unchanged. Clinical examination during this period entirely negative, and his spine and pelvis were radiograp normal. A full course of 'Sulphamezathine' had produced improvement.

On July 22 a blood-culture grew a scanty growth of *aureus*, which was sensitive to penicillin, and from Au to 5 he was given penicillin 500,000 units by cont intramuscular drip, without effect on the pyrexia. August 12 radiography of teeth and sinuses revealed abscesses of $\overline{54|}$; extraction of the affected teeth did *significantly affect the pyrexia.*

About this time he began to sleep badly, became anx and developed delusions of persecution and of his uncleanliness, being convinced that he was infected venereal disease. On Sept. 1 he complained for the first of a localised pain in the right loin. Physical exami did not reveal any abnormality in this situation, and a fu urine examination showed nothing abnormal. On the 8th still complained of this pain, and on examination a firm about the size of an orange was felt in the loin, moving respiration.

The *urinary tract* was then investigated in detail. Midst urine (Sept. 9): no albumin; deposit contained only a red cells and leucocytes; culture sterile. Intravenous graphy (Sept. 9): normal filling of left kidney, but on side only deformed lower calyces seen. Cystoscopy retrograde pyelography (Sept. 11): bladder and ure orifices normal; catheter passed easily into right ureter retrograde pyelogram showed right renal pelvis and cal. dilated and upper ones grossly deformed. Urea clea test (Sept. 11): blood-urea 24 mg. per 100 c.cm.; mean function 92% of normal. X ray of spine and pelvis (Sept 1 no evidence of secondary deposits.

Hypernephroma of right kidney was diagnosed and o tion decided on. Until the operation patient continued have persistent pyrexia and, during his three months hospital, had lost a further 2 stone in weight. Hæmogl had fallen to 64%, with red cells 3,500,000 per c.mm.

Operation and Recovery

Right nephrectomy (Mr. E. W. Bintcliffe) on Sept. 15. large mass was found adherent to the upper pole of the kid and extending up beneath the dome of the diaphragm. normal lower pole was discernible. There were num large veins round the tumour, which bled considerably du the operation. The ureter and pedicle were isolated w difficulty, and the kidney and tumour removed intact. specimen removed consisted of a tumour occupying the u two-thirds of the kidney. On its surface were num

Case 2.—A man, aged 73, had suffered ten years from a rineal dyskeratosis, with ulceration suggesting malignancy. n May 9, 1945, the lesions had been electrocoagulated, and stological examination had shown a skin-invading glandular ithelioma. Shortly after this operation urinary trouble peared, and per rectum the prostate felt large and hard, th a woody nucleus on one side and a hard region on the her.

Stilbœstrol 10 mg. daily was given from Nov. 24. In ember, 1945, and January, 1946, the urinary function roved, but the indurated area in the prostate tended to ad, and the general condition worsened. Stilbœstrol was efore discontinued, and Y59 20 mg. daily was given from . 4.

n April rectal examination showed an obvious reduction he hardness of the prostate, but the rectal mucosa had eloped anew a glandular epithelioma. The rectum was cted on May 29, when no macroscopic signs of invasion ards the prostate were found. From this date Y59 atment was interrupted, the operation having been very austing. In August the urinary troubles reappeared h more pain than ever, and the patient lost 13 kg. in ight. Stilbœstrol 10 mg. daily was prescribed without effect. t the end of September Y59 therapy was resumed (20 mg. ly). There was a rapid improvement: on Nov. 13 ient was in excellent condition, had regained his initial ight, and had no more urinary trouble. He has resumed occupation.

his patient reacted well to Y59, and stood very well operation for excision of the rectum at the age of 73.

ase 3.—A man, aged 69, with six months' history of poly- a and dysuria, was first examined on March 4, 1946. Per tum the prostate was hard all over, particularly at the edges. ince stilbœstrol 5 mg. daily for 00 weeks produced no provement, Y59 20 mg. daily was substituted. After a nth there was slight functional improvement and the state was less hard.

On July 24 the general condition was fairly good, the local ions remaining stationary.

At the beginning of August the Y59 was discontinued, d on August 23 his condition was worse. The Y59 was erefore prescribed again, in association with radiotherapy a dose of 12,200 r.u.

On Sept. 25 the patient had obviously improved, the ostate was smaller and the urinary trouble less acute. provement still continues.

Case 4.—A man, aged 57, with six months' history of urnal and nocturnal polyuria with dysuria and bad general alth, was first examined in October, 1945. Per rectum e prostate felt as hard as wood throughout.

Stilbœstrol 20 mg. daily was prescribed. In December ere was functional improvement, but œdema of the lower tremities appeared, and a glandular swelling developed in e right iliac fossa. The prostate remained unchanged.

At the end of January, 1946, the stilbœstrol was stopped d Y59 20 mg. daily was substituted. After two months of is treatment the pain and œdema decreased slightly, but e glandular swelling in the right iliac fossa persisted. The ostatic signs did not improve, and the patient's general ndition was becoming worse. Bilateral orchidectomy was rformed, but still without success, and a swollen gland peared at the root of the neck.

The patient died in July, just after a course of radiotherapy d begun. Determinations of the serum phosphatases during e different treatments gave the following results:

Date	*Serum phosphatase (units per 100 c.cm.)*		*Treatment*
	*Acid**	*Alkaline†*	
ct. 29, 1945	35·5	9	Start of stilbœstrol.
ov. 26, ,,	16	11·5	
n. 7, 1946	16	7·5	
b. 4, ,,	7	7	End of stilbœstrol; start of Y59.
,, 11, ,,	11	11	
,, 25, ,,	14	15	
ar. 4, ,,	7·9	7	
,, 27, ,,	14	16·2	End of Y59; orchidectomy.
,, 29, ,,	10·2	7·6	
pril 10, ,,	10·5	3	
ly 2, ,,	Patient died.		

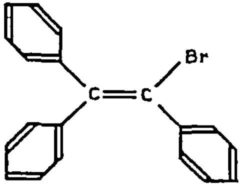
* Normal < 3 units per 100 c.cm.
† Normal 3–13 units per 100 c.cm.

DISCUSSION

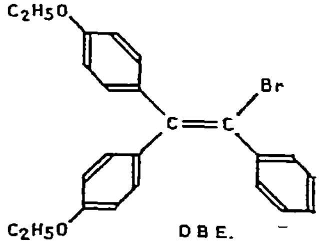
The observations to date suggest that Y59 is sometimes beneficial in cases of prostatic cancer resistant to stilbœstrol. Though Y59 cannot be said to cure the cancer, it does seem to put a partial or even a complete stop to its further growth. Radiography shows that metastases in the bones cease spreading; but as soon as treatment is interrupted the general condition deteriorates again, and, as with stilbœstrol, Y59 must be taken continuously without a break.

During treatment with Y59 we have not noted any digestive trouble or intolerance. Patients sometimes complained of tingling and a feeling of tension in the region of the breast, but did not have any real pain, and objective examination never showed either hypertrophy or adenoma of the breast.

Greene (1946) has reported negative results in one case of prostatic carcinoma with D.B.E., a substance of similar molecular structure and slow destruction but with a greater œstrogenic potency than Y59. Unfavourable results in clinical trials of D.B.E. have also been reported by Haddow (1947). Good results with very large doses (1346 g. in thirteen months) of chlorotriphenylethylene, another substance akin to Y59, have been reported by Watkinson et al. (1944) in one case of prostatic cancer, which was subsequently treated with stilbœstrol.



Y.59



D B E.

Our clinical studies with Y59 lead us to the conclusion that the therapeutic efficacy of this type of substance against prostatic cancer does not depend on its œstrogenicity, and that the beneficial effects of œstrogens are not exclusively due to a "biochemical castration." This leads us to question whether completely non-œstrogenic substances may not also exert a beneficial effect by some kind of direct action on prostatic epithelium, as has already been suggested by Kahle and Maltry (1940), and Kahle et al. (1942) in the case of stilbœstrol. Research along this line is now being pursued.

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"... Outside observers are aware of something new and important going on in Great Britain ... yet the mass of the people show very little sign of awakening to the responsibility which rests upon them. It was not until the fuel crisis occurred that the mass of the nation was roused to some sort of bewildered realisation that they were being called upon, in circumstances of great difficulty, in a country impoverished by war and in a world bedevilled by shortages of the most essential food and goods, to conduct a major experiment in social engineering which would call for a quite exceptional degree of understanding and devotion on the part of every man and woman in the country."—From *Planning* (1947, 14, 39) broadsheet issued by P.E.P.

(3) *Bromine Solution:*

(a) 20 g. of potassium bromide is dissolved in about 50 c.cm. of distilled water, 8 g. of pure bromine (2·5 c.cm.) is added, mixed till the bromide dissolves and made up with water to 1000 c.cm.; or

(b) 32 g. of potassium bromide and 2·8 g. of potassium bromate are dissolved in some water in a 1000 c.cm. measuring flask, 100 c.cm. of N sulphuric acid is added, and after waiting for 30 minutes the flask is filled with distilled water.

To 9 parts of the hypobromite solution (2) 1 part of the bromine solution (3) is added directly before use.

(4) *N/200 sodium thiosulphate.*

(5) *Potassium iodide crystals.*

(6) *0·25% starch solution.*

(7) *18% hydrochloric acid.*

Cadmium sulphate is added to the deproteinisation fluid because, in working with blood, hydrogen-sulphide compounds appear in the filtrate which require relatively much bromine (1 H_2S requires 4 Br_2). Cadmium sulphate, however, precipitates all sulphur compounds.

The hypobromite solution contains boric acid to hinder any reduction by glucose by binding the latter as a complex compound. It has been proved that in the presence of boric-acid ions even large amounts of glucose are not affected by hypobromite.

PROCEDURE

Store in short stoppered test-tubes 5·04 c.cm. of deproteinisation fluid (1).* With a capillary pipette measure into the fluid 0·1 c.cm. of serum, plasma, or blood drawn directly from the finger. Wash the pipette by repeatedly sucking in and blowing out the fluid. Centrifuge, or allow to stand for 5 minutes and filter.

In two wide test-tubes or flasks place 4 c.cm. of the clear centrifugate or filtrate and 5 c.cm. of the hypobromite solution (2). Mix and allow to stand for 1–2 minutes. After adding a few granules of potassium iodide and 2–3 c.cm. of the hydrochloric acid (7) to each sample, titrate with *N*/200 thiosulphate till yellow; add a few drops of starch solution (6) and continue the titration until the blue colour disappears.

As blank use 4 c.cm. of deproteinisation fluid (1), adding 5 c.cm. of hypobromite solution (2).

Calculation.—The difference between the number of c.cm. of thiosulphate required for the blank (B) and that required for the estimation (E), multiplied by 0·0467 (= atomic weight of nitrogen divided by 300), gives the nitrogen of the estimation in mg., if *N*/100 thiosulphate is used. Working with 0·0778 c.cm. of testing material ($5{\cdot}14 : 4 = 0{\cdot}1 : x \therefore x = 0{\cdot}0778$) and *N*/200 thiosulphate the difference multiplied by 30 gives the amount of nitrogen in mg. per 100 c.cm.

$$\frac{0{\cdot}0467 \times 100}{2 \times 0{\cdot}0778} = 30.$$

$$(B - E) \times 30 = \text{mg. nitrogen per 100 c.cm.}$$

Accuracy.—Compared with the Kjeldahl method,[2] the rapid method gives almost identical results, as the following example shows.

Non-protein nitrogen in mg. per 100 c.cm.

Kjeldahl ..	19·9	21·3	31·1	31·1	15·5	23·3	44·0	131·0	213·5
Rapid method ..	19·5	21·0	31·5	30·0	15·3	24·0	43·5	135·0	213·0

SUMMARY

A rapid and exact titrimetric method for the estimation of non-protein nitrogen without digestion and distillation is described. Inaccuracies likely to occur in the original more time-consuming Kjeldahl method are here avoided.

TREATMENT OF PROSTATIC CANC

WITH α-BROMO-α.β.β-TRIPHENYLETHYLENE (Y5

M. BERGER NG. PH. BUU-HOI

From the Radium Institute of the University of Par

THOUGH stilbœstrol has been used with great in prostatic carcinoma, some cases are resistant to treatment; moreover intensive dosage with stil has been shown to cause mammary carcinoma in (Lacassagne 1938, Shimkin and Grady 1940), and mary carcinoma has been noted in patients after ment with very large doses (Darget 1946). These led us to look for substances which though less œstr were still potent in prostatic cancer. Since the aim to deal with cases resistant to stilbœstrol, pref was given to compounds with a molecular stru quite distinct from that of stilbœstrol and allied stances.

One compound which attracted our attention *α-bromo-α.β.β-triphenylethylene* (Y59), whose genic activity, toxicity (which is extremely slight), absorption mechanism had already been investi (Lacassagne et al. 1946, Daudel et al. 1946). Th minimal œstrogenic dose, determined on mice by Allen-Doisy test, was about 10 μg. as against 0·1 for stilbœstrol. On the other hand, the enzym destruction of Y59 by living tissues is slower than of stilbœstrol; hence sufficiently large doses of Y produce very protracted œstrus, a fact which may of general therapeutic significance. Further, a st of the metabolism of Y59 marked with radioactiv bromine (Lacassagne et al. 1946. Daudel et al. 19 showed a selective accumulation in the preputial gla whose function has been associated with that of prostate (Gutman and Gutman 1938).

About 20 cases of prostatic cancer have been or being treated with Y59, by mouth in cachets contain 5 mg. The daily dosage was 15–20 mg.—considerab less than the usual dosage of stilbœstrol (up to 30 daily). The following 4 illustrative cases were all resist to stilbœstrol.

ILLUSTRATIVE CASE-RECORDS

Case 1.—*A man, aged 61, first examined on Sept. 1, 19 had a year's history of severe bilateral sciatica with abol of the left ankle-jerk and loss of sensation over the pelvis.*

On examination: His general condition was very bad; per rectum the prostate felt hard throughout, with a har nucleus in the right lobe.

Treatment.—Stilbœstrol 20 mg. daily for a month produced no improvement. The sciatic pain required morphine, and the patient's weight fell to 63 kg.

On Oct. 20 Y59 15 mg. daily was substituted for st œstrol. Eight days later a distinct improvement noted, particularly as regards the pain.

On Jan. 7, 1946, the improvement was remarkable: the patient had gained 9 kg. in two months, he no longer pain at night, and he slept without a sedative. In daytime the perineum was still painful, but the sciatic had disappeared. Per rectum the prostate did not feel hard.

On Feb. 4 the patient was progressing well, his weig had increased to 75 kg., and he felt in very good condit The prostate felt firm but not really hard.

From the beginning of May till June 15 the patient out of town and took his medicine very irregularly. Fr the second week his condition worsened, and pain return When he came back to Paris he had to stay in bed a mo At the end of July he began to take Y59 15 mg. daily more, which brought about a rapid improvement.

The patient is now in good general condition, weig 74 kg., has a good appetite and no urinary trouble, complains only of slight perineal pain.

In this case, after the complete failure of stilbœstr Y59 proved remarkably successful; its good effects continue twenty months later.

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* A 5·04 c.cm. pipette can be improvised by making a new mark at 5·04 c.cm. on a 5 c.cm. pipette.

2. Rappaport, F. *Klin. Wschr.* 1933, 12, 1184; 1937, 16, 1190; *Mikrochemie*, 1933, 14, 63.

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Reviews of Books

Sensory Mechanism of the Retina

RAGNAR GRANIT, M.D., director of the Nobel Institute for Neurophysiology, Stockholm. London: Oxford University Press. 1947. Pp. 412. 35*s*.

Dr. Granit believes that his book will be read mainly for its fourth and last section, dealing with the results of five years' intensive work on the colour sensitivity of the vertebrate retina obtained with his micro-electrode technique. He is probably right, for colour vision is in the news nowadays and he has given us many new and sorely needed objective data. His dominator-modulator conception, which separates the perception of brightness from that of hue, modifies the famous Young-Helmholtz theory of colour vision in a fascinating way. No-one who has visited Granit's laboratory and worked with his technique can doubt the validity of his observations on colour sensitivity, but his interpretations seem more questionable. He is almost certainly correct in claiming that he can record the responses of single ganglion cells, but he does not claim that these represent the reactions of single visual receptors. He does believe them, however, to represent groups of receptors acting as units. Owing to the extreme complexity of the nervous structure of the vertebrate retina, and particularly to the probable connexion of both rods and cones to many of the single ganglion cells in the animals he studied, as well as to the lateral connexions between neighbouring bipolar and ganglion cells, it seems probable that the actual pattern of impulses put out by any one ganglion cell is the result of the interactions, through both excitation and inhibition, of many groups of visual receptors. In nearly all the experiments the whole retina was stimulated, though the responses of single ganglion cells were recorded. Granit may possibly assume too readily that these responses represent single retinal "elements" (made up of a group of visual cells with their synapses all acting together as a unit), which he calls dominators or modulators according to the shape of their colour-sensitivity curves.

The interest of this particular section (which is one of the most readable) may cause the real value of the other three to be overlooked. In these, for the first time, most of the known facts about visual purple, the electro-retinogram, and the physiological effects of light and dark adaptation are gathered together and critically appraised. The account of visual purple alone would make the book important to the advanced student or the research-worker in visual physiology. The electro-retinogram, and the way it changes according to the type of retina (i.e., whether dominated by rods or by cones) and the state of adaptation, is unfortunately described in a way which those who are not neurophysiologists may find hard to follow, but the sections on it deserve careful study by all those interested in the physiological basis of vision.

The Road to Maturity

Editor: EDWARD F. GRIFFITH, M.R.C.S. London: Methuen. 1947. Pp. 232. 7*s*. 6*d*.

IN discussing how best to introduce adolescent boys and girls to sex as a natural and universal phenomenon, without surrounding it in clouds of mystery, Dr. Griffith is helped by the headmasters of Rugby, Marlborough, and St. Christopher's, Letchworth, by the headmistress of Cheltenham Ladies' College, and by Mr. T. F. Tucker who writes on elementary and secondary schools. It is a pity that the small minority of children who attend boarding-schools should thus get more attention than the majority who do not, but the balance is restored in a good discussion by Mr. C. W. Gillett (a managing director of Cadburys) of the difficulties facing boys when they enter industry. Mr. Julian Huxley, F.R.S., notes that emotional development can be helped by physical activities, travel, and adventure; and Dr. Noel Harris reviews the main psychological types. The last three chapters of the book, based on Dr. Griffith's lectures to boarding-school boys and girls aged 13, 16, and 18, show sex in perspective as one activity only of a developing organism.

Figures quoted by Mr. Tucker give some hint of the value of sex teaching. In one city 92·3% of children received sex lessons *for ten years*, and of the boys who came *before the juvenile court* for various sexual offences all except one were drawn from the 7·7% who had not attended these lessons in school.

Le fibro-myome utérin

J. DUCUING, professeur de clinique chirurgicale à la Faculté de Médecine de Toulouse; directeur du Centre Anticancéreux. Paris: Masson. 1946. Pp. 537. Fr 7[illegible].

THIS is a well-produced and well-illustrated book by a man who obviously has a strong bias towards radiation therapy. Between 1934 and 1942 he treated 56[illegible] cases of uterine myoma, and he reviews 485 of them. Of these 51 were treated on medical grounds only and are therefore eliminated from discussion, but 74 were treated by operation and 360 by irradiation. The fibroids were small in 154 cases, of medium size in 205, large in 152, and enormous in 36. By "large" Professor Ducuing means the size of a six months' pregnancy and English readers will be surprised and possibly shocked to read of such tumours being treated by radiation; but the author supports this unusual practice with *statistics, and a careful follow-up of the cases he treated.* Although this work does not agree with standard British practice it is worth reading if only to get the other man's point of view. The histological illustrations are good and the operative diagrams clear. His surgical technique does not differ much from the accepted British methods except that he seems to operate entirely with a diathermy knife.

El Diagnostico por la Puncion Esternal (Madrid. Ediciones Morata. 1946. Pp. 317.).—Whether there can be an appreciable demand for so large a book on so small a subject as sternal puncture is doubtful, but Dr. G. Forteza Bover has done useful work for the professional hæmatologist. Published work has been critically considered; and the numerous references to Italian and Spanish papers are of special value to those who see few journals from the Latin countries. The photomicrographs have the usual defect that they require an expert to interpret them, but the coloured pictures leave nothing to be desired. The book calls attention to a useful and novel method of recording the results of marrow biopsy. The author gives a number of graphs which he calls "curves of maturation," and others representing intensity of proliferation. The former are prepared from examination and enumeration of the different stages of each cell-type, while the latter represent the proportions of cells in each stage of mitosis. Like the Price-Jones curve these graphs save the clinician the trouble of remembering normal percentages, since the shape and position of the curves in different stages and types of myeloid activity is characteristic. But the method is laborious and has the defect of the Arneth count that classification of cell-types varies with the observer.

Annual Review of Physiology, 1947.—The editors of vol. IX (Stanford University, California. 1947. Pp. 736. [illegible]) are V. E. Hall, J. M. Crismon, and A. C. Geiso. Among the interesting points discussed this year is the possibility of *preserving skin for grafts by using very low temperatures; this is more successful with autoplastic than heteroplastic* grafts. Peptic ulcer receives a more than usually generous treatment, and attention is drawn to promising results obtained by the administration of extracts of intestinal mucosa. These are presumably due to a substance known to have a depressing action on gastric secretion; its purification, however, is held up by the lack of a simple and inexpensive method of assay. Intravenous catheterisation, familiar as a method of obtaining mixed venous blood from the right auricle, has now been employed for getting blood from the renal vein. The article on the kidney is somewhat provocative on the subject of clearances. The account of cutaneous sensation is a guide to the great advances made during the last few years in our knowledge of the innervation of the skin, and deals also with causalgia and the phantom-limb syndrome. The description of the fractionation on an industrial scale of the plasma proteins is technical but fascinating, including as it does an account of the fibrin preparations and of serum albumin. These are a few of the matters of clinical interest touched on in the reviews, which are in the main physiological and more useful for reference than for reading.

THE LANCET

LONDON: SATURDAY, AUGUST 2, 1947

B.M.A. in Session

xт year the British Medical Association will t to its normal practice of holding its annual ing outside London. Unless the "appointed day" in postponed. the Cambridge gathering will be within a week or two of the inauguration of the nal Health Service, and the representative body doubtless be much occupied in reacting to this ulus This year, on the other hand, the service ied only a small place on the agenda of the sentative meeting; for negotiations with the stry of Health have not yet reached a stage a full report can profitably be given and dis- d. Instead. the three days of debate were based ly on the council's report of the year's work. has been active in many directions, including ry into the care of the aged and infirm, the ons between psychiatry and the law, and the of films in medical education. In his presi- al address Sir Hugh Lett showed particular pride e efforts to strengthen bonds between doctors e Commonwealth and indeed in the world as ole—efforts finding expression in the formation British Commonwealth Medical Council. and mpire Medical Advisory Bureau at B.M.A. e, and in participation in the new World Medical iation which will hold its first annual meeting month in Paris. Together with the more calist activities of the association, which have uring the year to many favourable readjustments muneration and working conditions (including ssful opposition to the principle of the "closed " as applied to doctors), these various and useful vements provided ample topics for discussion.

vertheless the advancing shadow of the new h service was bound to be apparent, and it was esting to try to assess the attitude of representa- towards the events now in progress Early in lebate a note of anxiety was sounded—anxiety se negotiations are going steadily on, leading now not where, and the months are slipping ithout any information which would allow the sion to discuss what is happening. This anxiety nly partially dispelled by Dr. Dain's assurances he and his colleagues are still having profitable in Whitehall, that they have made no con- ns, and that they are still hopefully insistent e need for an amending Act. Assurances were that, when the present talks have been com- , a statement on all the issues raised with the ry's officials will be published, together (it is with the Minister's own reactions and views: ublished this document will form a basis led informed discussion in the divisions he convening of a special representative Even after hearing this explanation, how- meeting was not wholly satisfied · it agreed siderable majority that the Negotiating Com- hould be allowed to go on with their discussions being obliged to make early or frequent reports. but it wanted to be sure that the association would be ready with its own plans for ensuring that such problems as that of the proper distribution of doctors, and of the establishment of health centres, are solved in ways acceptable to the profession. In discussions on the appointments made by the Minister to statutory bodies such as the regional hospital boards, dissatisfaction was expressed that so few B.M.A. nominees had been appointed to boards. Those local health authorities which have so far resisted the Minister's strong recommendations that that should coöpt suitable medical members to their health committees were criticised, and action was demanded to see that there is proper medical representation on statutory bodies at all levels. In so far as regulations and orders already published under the Act are concerned, there was no criticism of the superannuation arrangements, and the recently issued memorandum no. 118 incited displeasure only because of its suggestion that midwifery provided under the Act shall be limited to those doctors whose names are on an approved list of general-practitioner obstetricians.[1] Although this limitation was cogently defended by Dr. Dain himself—and he was not without supporters—the meeting would not have it, and by a vote of 106 to 96 insisted that all registered practitioners shall be entitled to undertake domiciliary obstetrics under the Act.

Generally the impression given by this annual meeting was that the representatives were in a thoughtful and cautious mood, still anxious to resist any part of the new scheme which they thought infringed their rights or privileges—e.g., abolition of the sale of practices, or the restrictions upon the practice of midwifery—but not seeking to condemn it in any wholesale manner, nor to declare any immediate policy of complete non-coöperation. Indeed, where there were opportunities for constructive work on the statutory bodies being set up to administer the Act they were asking for greater chances to help than they have been accorded. Much of last year's controversy, particularly where it concerned hospital policy and the future of the consultant service, seems to have died, and from Dr. Dain's report it seems not impossible that sufficient accommodation may also be secured on the general-practice side to allow an acceptable service to take shape. The special representative meeting to be held later will show whether these hopes are too sanguine; but the atmosphere of this recent meeting suggests that the birth of the new service will take place at its appointed term without further delay in the second stage.

Poliomyelitis Precautions

A Ministry of Health memorandum on acute poliomyelitis which we published last week is prompted by the rapidly rising weekly notification figure, which has already reached the highest level ever recorded in this country. This year the seasonal rise in incidence began nearly a month earlier than usual, and if the disease follows the course to be expected, with a peak incidence about the middle of September, quite an exceptional prevalence is likely before the end of the year. Though the advice now offered by the Ministry differs little from that

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[1] See *Lancet*, July 19, pp. 101, 105.

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msiderably higher concentrations can be main- ined. Oily suspensions, giving a slower " release " penicillin, have been used to assist in building up aximal concentrations, and the various mechanisms y which renal excretion of penicillin is hindered ay be employed to the same end. Since the serous embranes, even when inflamed, are a partial barrier the diffusion of penicillin, the problems of preserving high concentration in the cerebrospinal fluid or the leural cavity are less difficult. Toxic reactions penicillin have become rarer as the product has een further refined; with the crystalline substance ow marketed they are said to be absent. Allergic actions appear to be related to idiosyncrasy rather ian to dosage. In short there seems to be no reason hy concentrations high enough to inhibit the growth several organisms earlier regarded as insensitive ould not be used in therapeutics. A word of rning, however, is necessary: it is recognised that, th in vitro and in vivo, organisms of the same ecies vary greatly in their response to antibiotics. hen dealing with organisms that are sensitive only the higher concentrations, the coöperation of the cteriologist is almost essential.

Published experiences support this thesis. Others ve failed to repeat MCSWEENEY's[10] success in treatg enteric with 2 mega units per diem in combination th sulphathiazole; but the weight of evidence is at some cases at any rate are benefited by this eatment. Similarly some though not all infections ith proteus apparently yield to a sufficient dosage penicillin.[9 11] Early work suggested that *Hæmoilus influenzæ* is resistant to penicillin, and treatment meningitis due to this organism was not attempted. was not until 1945 that it was shown[12] that, though is resistant in the rough phase, recently isolated rains in the smooth phase are sensitive to a varying egree. Clinical trials reported in this issue indicate iat acceptance of a probably fatal outcome of . *influenzæ* infections is no longer permissible. In iese trials the concentration of penicillin in the rebrospinal fluid is not recorded; but there is reason suppose that, with the dosage adopted, a concenation at least of 5 units per ml. is attainable over ng periods. The use of crystalline penicillin seems obviate the danger of the damage to the nervous ssue that was seen with less pure products. The gimen suggested by GOTTLIEB and FORSYTH may e taken as a guide, to be amended as proves necessary. the organism is found to be unduly resistant nd ALLOTT noted that the strains varied widely in nsitivity), or if clinical improvement is slow, there no reason why the dosage, either intramuscular or ntrathecal, should not be increased. No harm can ome from the concomitant use of drugs of the ulpha series, or of immune serum. Probably a urified streptomycin would be even more effective this condition; but the serious and unexplained quelæ to its use in meningitis should make for esitation before it is preferred to penicillin.

That four out of five cases of meningitis due to *I. influenzæ* were successfully treated with penicillin ives rare support to the Hunterian method at the xpense of Authority, and may point the way to profitable trials in patients infected with other organisms found resistant to the lower concentrations previously employed. To obtain a local concentration higher than 2 units per ml. is no longer difficult, costly, or dangerous: far more data are required on the relative sensitivity of organisms, especially on primary isolation from the body, but in the majority of bacterial infections the length of the odds against success no longer justifies a charge of " wasting " the penicillin used in their treatment. Plague, undulant fever, perhaps whooping-cough, are, for example, reasonable subjects for continued experiment. It is a safe working rule in most fields of therapy that benefit from any particular line of treatment will be seen, albeit not dramatically, soon after the treatment starts. Using this guide the dosage of penicillin is limited only by the physical difficulties of administration.

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10. McSweeney, C J. *Ibid.* 1946, ii, 114.
Randall, K. J. *Ibid*, 1947, i, 22.
ıann, K. *Brit. med. J.* 1945, ii, 795.

Annotations

THE DENTAL HYGIENIST

FOR the second year in succession the number of names on the Dentists Register has fallen—reaching 15,266 last May—and 1946 produced fewer recruits to the practising profession than any year since the Dental Board was established. Though this decline is attributable to the small entry to the schools during the war, and the board foresees a change in the right direction at the beginning of the next decade, improvement is unlikely to be on the scale considered desirable by the Teviot Committee, and may indeed fail to check the fall in total numbers.[1] In these circumstances more and more will be heard about the use of ancillary workers to help in tackling the arrears of dental work which are so painfully conspicuous today. In the statement reported on p. 186, the Minister of Health denies any intention to dilute the profession in any way, but says that the Government, following the suggestion of the Teviot Committee, want a proper test of the possible advantages of using dental hygienists.

It is important not to confuse two different types of auxiliaries—dental assistants as found in New Zealand and dental hygienists as found in the United States. The New Zealand dental assistants are permitted, after an abbreviated course of two years' training by officers of the school dental service, to practise dentistry in the full sense of the word, the only condition being that they limit their activities to school-children and nominally work under supervision. This is pure dilution and clearly unacceptable in this country. Unhappily, the fear of such an expedient seems to be responsible for opposition in the profession to the other type of auxiliary—the dental hygienist.

Dental hygienists came into being in America largely as the result of the work of Fones.[2] Their function is to scale and clean the teeth: they take no part in the treatment of pathological conditions, and their efforts are directed solely towards prevention. During the war the Royal Air Force, largely as the result of the far-sighted policy of its dental consultant, Mr. Kelsey Fry, trained dental hygienists and made good use of them in maintaining the oral health of air-crews.

Recently an experimental clinic for the treatment of school-children has, with the collaboration of the local authority, been established in the Turner Dental School of Manchester University. The clinic will be responsible for the treatment of some 1200 children attending near-by schools. An attempt will be made to translate research

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1. Address by president of Dental Board, May 14, 1947.
2. *Dental Cosmos*, 1919.

previously given,[1] more attention is paid to the frequent occurrence of a relatively slight prodromal illness which often appears a week or so before the main attack. At this stage the patient is probably as infectious as at any time later,[2] and the importance of isolating any child developing a febrile illness at this time of year—and continuing isolation until poliomyelitis can be excluded—is rightly emphasised. As for treatment, extensive trials in the United States and elsewhere have tended to confirm the view that convalescent serum is ineffective. Prophylaxis by nasal sprays and gargles, which seemed so promising ten years ago, has also been abandoned. Good nursing in the acute stage, and competent orthopædic care, remain the essentials of management in this distressing disease.

The Ministry now apparently accepts three weeks from onset as a long enough period for the isolation of cases. This is a change from the period of six weeks recommended in 1936; but there is remarkably little evidence that poliomyelitis tends to spread in hospitals, and the shorter period conforms with current American practice. Three weeks, from the isolation of the case, is likewise advised as the period during which home contacts should be excluded from school. The closure of day schools when cases are recognised is not regarded as justifiable, since most children have as much contact with other children when their school is closed as when it is open; and the watch for early symptoms is often closer at school than at home. Now that summer holidays are here this administrative problem has solved itself for the time being, but it may need reconsideration when the time comes for the schools to reopen in September. As a guide for boarding-schools the Ministry's memorandum refers to the Code of Rules prepared by the Medical Officers of Schools Association, which was revised and republished last year.[3] For day nurseries and nursery schools, which present a new and special problem, it is thought that prompt closure for three weeks may be the wisest course when a case is recognised among the children attending. As regards quarantine for adult contacts in affected households, as recently advocated in Ireland,[4] it is true that the virus of poliomyelitis has been isolated from the fæces of healthy adults and that the transmission of the disease by such carriers has been invoked to explain certain features of some carefully studied outbreaks, such as the one in Mauritius in 1945.[2] But the administrative difficulties involved in an effective quarantine of adult contacts seem almost insuperable. There is no practicable means of enforcing restrictions of this sort, and to attempt to apply them in urban industrial areas would cause awkward complications, including demands for compensation for loss of earnings. Further, the identification of healthy carriers by laboratory tests is not at present possible on what might be termed the "typhoid fever" scale.

On the advice to be given about crowded assemblies and gatherings of young children in their districts, medical officers are left to decide for themselves. Where many cases have occurred they will usually feel justified in warning the public that because spread is believed to be mainly by human contact all unnecessary aggregation—particularly of children—should be avoided. Cinema shows for children are obviously a potential risk; and also, possibly, swimming-baths. It has never been established that swimming-bath water polluted by virus-bearing excretions has spread poliomyelitis, but the plea for closure of baths, repeated in our correspondence columns this week, is supported by SABIN.[5] Sensible precautions are the avoidance of excessive physical exertion in children at competitive sports and games, and the postponement of non-urgent operations on the throat and nose. The possibility of the disease being spread by flies must clearly be borne in mind, especially as the virus of poliomyelitis has on occasion been recovered from flies which have had access to the excreta of infected persons. Though there has been suggestive evidence,[6] no clear instance of transmission by fly-contaminated food has ever been reported, and there is no obvious correlation in this country between the prevalence of flies and outbreaks of the disease. But the protection of food from flies is rightly described by SABIN as a "reasonable and warranted" part of our precautions.

Not Necessarily Invulnerable

MOST of us can recall the awe with which we handled the first samples of penicillin which came our way; it promised so much and there was so little to be had. We did not lavish it on all and sundry—as was customary with sulphanilamide ten years before—but rather were guided by Authority in the form of the published tables showing which organisms were sensitive to its action and which were not. Those of the first group responded beyond expectation to the recommended dosage of 12,500 units three-hourly; for infections by the second group we fell back on the rest of the pharmacopœia. Sometimes we received hints that we missed: the mixed infections of wounds caused by penicillin-sensitive staphylococci and insensitive "coliforms" responded remarkably well to treatment directed at the former only.

Further experience and improved technique soon made it evident that a third group of bacteria should be recognised—organisms which are "partially sensitive," or sensitive to penicillin in higher concentrations than those needed to inhibit the standard staphylococcus (whose position as the yardstick of susceptibility is, after all, the result of chance rather than of deep understanding). BIGGER[7] showed that a concentration of 2 units per ml. is inhibitory (though not bactericidal) to *Salmonella typhi*, and WINSTON EVANS[8] that the majority of typhoid strains are susceptible to a concentration of 10 units per ml. Figures of the same order were obtained for proteus,[9] for *Pasteurella pestis*, and for some strains of *Vibrio choleræ*. These findings were the result of observation in vitro, and their clinical significance seems to depend mainly on how large a concentration of penicillin can be built up in the tissues. By the use of 2 mega units or more daily a concentration of 2 units per ml. can be obtained in the serum; and with continuous injection

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1. For example, in Memo. 166/Med. (revised), 1936.
2. McFarlan, A. M., Dick, G. W. A., Seddon, H. J. *Quart. J. Med.* 15, 183.
3. *Lancet*, 1946, i, 972.
4. Deeny, J., MacCormack, J. D. *Lancet*, 1946, ii, 8, 124, 287.
5. Sabin, A. B. *J. Amer. med. Ass.* June 28, p. 749.
6. McAlpine, D. *Lancet*, 1945, ii, 130, 278.
7. Bigger, J. W. *Ibid*, 1946, i, 81.
8. Evans, R. W. *Ibid*, 1946, ii, 113.
9. Stewart, G. T. *Ibid*, 1945, ii, 705.

sires alcohol; (2) that an addict to alcohol is often neurotic; (3) that neurosis creates a demand for rtain metabolites which can be supplied by alcohol; d (4) that neurosis is not only a mental change but so a physical change. He warned his hearers against ducing that neurosis should be treated with alcohol; e lesson he himself drew was that the addict to cohol must be treated for the underlying neurosis.

CORPORATION FOR CARE OF THE OLD

THE Rowntree committee's report[1] convinced the uffield Foundation that some central agency equipped ith large funds is needed to look after the welfare of d people. They have therefore decided to sponsor a ational Corporation for the Care of Old People. Lord uffield was present at a meeting held, by invitation of r Bracewell Smith, the Lord Mayor, at the Mansion ouse, London, on July 28, when Sir William Goodnough announced that the Foundation have undertaken o provide £500,000 in the early years, and that the ord Mayor's Air Raid Distress Fund is adding a substantial sum for grants to be made towards help for old eople who have suffered distress from air-raids. It is oped that the corporation, which will be principally oncerned to find funds, will also attract large and small ums from other sources. The governing body has een appointed equally by the Foundation and by the Air Raid Distress Fund, and consists of Sir George Wilkinson s chairman, the Lord Mayor, Sir Frederick Wells, the Hon. Geoffrey Gibbs, Lady Somerleyton, and Mr. L. Farrer-Brown. An expert advisory council will suggest policy, recommend activities, and examine applications to the corporation.

The aim is "to encourage and support the efforts of local and national voluntary bodies working for the welfare of the aged, and particularly to assist them to provide in a kindly and efficient manner for the accommodation and care of old people, especially those who are lonely, infirm or invalid." The corporation will therefore be empowered to make grants and loans towards schemes for these purposes, and to accept gifts and hold property on trust. They will go further, maintaining an expert advisory and consultant service on technical points, and offering grants and loans to areas found to be backward in the care of the old. They will not be able to assist individuals seeking accommodation or financial help. Those bodies or authorities receiving grants will be required to maintain approved standards in homes or other schemes. The corporation will also encourage and undertake research and experiment, and publish the results. Integrated work between local authorities and voluntary bodies will be fostered, the corporation acting as the welcome complement and ally of the National Old People's Welfare Committee, which stimulates and organises local interest.

The value of such a corporation at this time is bound to be great, and the trustees of the Nuffield Foundation are to be congratulated on such an opportune and constructive project. In their second annual report[2] they foreshadow some of the developments they consider necessary. The most pressing problem, they suggest, is the need for more accommodation of various kinds; and they are ready to support well-conceived schemes for the adaptation of houses and for new buildings. So many different types of quarters are in use up and down the country that there is no need to experiment with different varieties: the important thing is to provide enough of each type, and see that they are integrated with the existing services for the old. Each area needs a comprehensive range of accommodation, so that old people can be transferred from one type to another, as their necessities demand, without trouble and distress, whether the need for transfer springs from failing or improving health. Their place must be among the younger people in the community, in order both to keep the old people lively and the young aware of their responsibilities towards the welfare of the old. The quarters provided should range from small houses, bungalows, and flats to residential clubs, communal homes, homes for the infirm and long-term sick, beds for the treatment of acute illness, convalescent homes, places where old people normally living with relatives can stay for short periods, and clubs providing meals and recreation rooms. The Foundation are concerned principally with schemes of a pioneer type, and have already received and examined many projects for immediate grants. A few grants, indeed, have been made already, including £2000 a year for two years to the National Old People's Welfare Committee, and £5000 to the Hill Homes, Highgate,[3] towards the purchase and equipment of a fifth home. The Hampstead Old People's Housing Trust, which hopes to provide for lonely and infirm old people who need care and attention, has been granted £3500 towards acquiring and adapting a house; and the Foundation have promised a grant of £15,000 towards a scheme for the housing and care of able-bodied and infirm old people in Colchester, provided the town raises the balance (£22,000) in a year. A grant of £10,000 has been offered to the Elderly Nurses' National Home, Bournemouth, to improve and enlarge the present sick-bay and increase the number of single rooms; and a further grant of £10,000 has been offered to the Christchurch (Hants) Old People's Welfare and Housing Society, to adapt two houses, one as a second residential home and the other as a rest home.

TREATMENT OF HYDRAMNIOS

HYDRAMNIOS is a serious obstetrical complication which, according to DeLee, arises about once in 200 labours. It is often associated with developmental abnormalities in the fœtus, such as monsters, spina bifida, and anencephaly. Treatment in such cases is surgical induction of labour, with no thought for the fœtus. A good radiogram will usually reveal fœtal abnormality, and one should be taken in every case of hydramnios before the treatment is decided on.

In the rare cases where hydramnios is associated with a normal fœtus the correct treatment is also as a rule fairly clear. The condition usually occurs between the sixth and eighth month, when induction of labour will produce a premature fœtus with small chances of viability. The accepted principle in the past has been to treat such cases conservatively as long as possible so as to give the fœtus the best chance of survival; interference has been resorted to only when the maternal condition demanded it. Abrams and Abrams[4] suggest that ammonium chloride is useful in reducing hydramnios, and in a preliminary report on two cases they show good results. They gave gr. 90 of enteric-coated tablets daily for seven days in one case, and gr. 75 daily for seven days in the second case; this produced diuresis, loss of weight, and reduction in uterine tension. In both cases live normal babies were born and both patients had normal deliveries. Abrams and Abrams claim that the drug is harmless to the mother, but it would be advisable to watch the urine carefully for signs of renal damage, such as the passage of albumin and casts, during the exhibition of the drug.

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[1] Old People. Published for the Nuffield Foundation. London. Oxford University Press. 1947, see *Lancet*, 1947, i, 112

[2] Report of the Trustees of the Nuffield Foundation for the year ended March 31, 1947. Oxford: The University Press. Pp. 113. Obtainable from the Nuffield Foundation, 12, Mecklenburgh Square, London, W.C.1.

[3] See *Lancet*, 1947, i, 800

[4] Abrams, A. A., Abrams, S. B. *Amer. J. Obstet. Gynec.* 1946, 52, 299.

findings into clinical practice, and to assess their value, both from the point of view of results and also from the cost in professional time. Obviously, with the present shortage of dentists, the value of any method of prevention or treatment will depend largely for its effectiveness upon the number of cases that can be dealt with by one man. Accordingly the Minister of Health, under the Dental Act, has granted permission for use to be made at the Manchester school of two or three dental hygienists, who have been trained in the Royal Air Force and who have passed an approved examination, and who on demobilisation wish to continue with the work. These women will instruct the children in the proper use of the tooth-brush and will periodically clean the children's teeth themselves. They will work under supervision, and will not fill teeth or attempt to treat any pathological condition; their job is entirely one of prevention. Apart from other considerations, the fact that the dental hygienist does something for the child will greatly enhance the value of propaganda to develop "tooth consciousness." She will also assist the dental surgeon by cleaning the mouth of patients and preparing the field in which he is going to operate.

ARTIFICIAL LIMBS

Time marches on, and so, fortunately, do wooden legs. The modern descendant of the old peg-leg is made in 'Duralumin,' but this material will doubtless give place in turn to something new—lighter but equally hardy. Already magnesium and its alloys have been considered for certain parts of artificial limbs, but tests carried out by the research department of Queen Mary's Hospital, Roehampton,[1] in conjunction with the metallurgical department of the National Physical Laboratory, have shown that these alloys are not strong enough and are too readily attacked by water and by electrolytic reactions. The standing advisory committee of the Ministry of Pensions, in their first annual report, mention other new substances tried for various accessories to the limbs—plastics as a substitute for leather, and nylon for surgical corsets, nowadays worn by women to suspend the artificial limb instead of an uncomfortable leather belt. Though these two materials have objections, it seems likely that other and better ones will come along soon. Since the appointment of the committee, 108 suggestions for improving artificial limbs and appliances have been received from the British Limbless Ex-Servicemen's Association, the British Legion, St. Dunstan's, doctors and limb-fitting surgeons, non-research members of the staff of the Ministry of Pensions, disabled persons, private firms, and members of the general public. Of these, 39 were accepted for research and experiment, but 15 were given up after further study; though many of the remaining 69 were ingenious, they would either have proved too heavy, or were unsuitable for incorporation in an artificial limb, or were too difficult to manufacture, or offered too much chance of breakdown, or were similar to designs already being used by the Ministry.

The research centre, under Dr. A. W. J. Craft, is experimenting with a special type of socket, for above-knee limbs, shaped to allow for normal contraction and expansion of the thigh muscles, and patients trying these are giving favourable reports. Suction sockets, popular on the Continent though discarded here after experiment in the 1914–18 war, are being given another trial, and foreign knee-mechanisms are also being studied. A redesigned artificial arm, with more flexion and more intermediate locking-positions at the elbow, and a naturally shaped wrist, is now being tried by a patient; while another pattern of arm is being made which can be set at any degree of flexion. A complicated mechanical hand submitted by an inventor proved dis being too heavy, with too many appendages and thumb which was difficult to control.

The appliances provided by the Ministry for an artificial limb have been criticised for being specific and too numerous. Patients now receive "universal appliance" which serves the turn of including the spade-grip, the carpenter's appliance, others. Several appliances have been redesigned suit the patient's work. Thus letters can be taken any direction by the sorter from the "postman's" and a small additional fitting enables him to tie mail-bag without changing the appliance. A lock on the "writing hand" enables the wearer to suitcases, handbags, and parcels without risk of them slip. Several new appliances have been for the man who has lost both arms, all giving him independence not only at work but in his toilet. accessory gadgets to help these disabled men rubber suction cups which can be attached to objects to stabilise them—fixing the egg-cup to the example, or the nail-brush or bath-brush to the the bath.

Statistics are being collected on the wearing of limbs and parts of limbs, as well as on the of various amputation sites. Foreign methods of making and limb-fitting and foreign operations, the cineplastic and Krukenberg operations, are also studied, and a German type of elbow-crutch with scopic assembly is being manufactured for trial Roehampton patients, who always prove interested coöperative.

THE LONGING FOR ALCOHOL

In his Kelynack lecture, delivered on July 15 to Society for the Study of Addiction, Prof. F. L. Golla, director of the Burden Institute, Bristol, dealt with the origin of a desire for alcohol. Metabolism, he said, regulated through the mechanism of taste. For example, herbivora require salt and therefore want and like it whereas carnivora do not. The metabolism of salt regulated by the suprarenal cortex: sometimes pe with a suprarenal cortical lesion become gluttonous salt; and in rats experimental destruction of the cortex leads to a similar lust for salt, with increased sensitiveness of the taste-buds to its presence in solution. Similarly, a rat with a pancreatic lesion causing diabetes, if given a choice of different food, will be greedy for fat and take a little more protein than usual, but will not touch carbohydrate. Both schizophrenic patients and animals injected with insulin and offered simultaneously (1) water, (2) 5% sucrose, and (3) 30% sucrose choose that drink which is physiologically requisite according to the amount of sugar in their blood. These experiments of Richter and others suggest that some change must be produced in the mechanism of taste, and it would be reasonable to suppose that the desire alcohol may arise in somewhat the same manner.

Professor Golla cited the work of Masserman, has produced anxiety neurosis in cats by inducing first a conditioned reflex and subsequently substituting irregularly a wrong sequence (electric shock instead food). It was found that such a neurosis could be caused to disappear by giving the cat an intraperitoneal injection of alcohol. Similarly, if the alcohol was injected before the attempts to produce a neurosis, the neurosis did develop. Again, cats with the neurosis, if offered choice of milk or of milk and alcohol, drank the latter with avidity and thus lost their neurosis. On disappearance of the neurosis the cat lost its addiction to alcohol (which normally is most distasteful to cat Then it was possible to precipitate the neurosis a by the usual method. These observations indica Professor Golla thought, (1) that a neurotic needs

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1. First report of the Ministry of Pensions Standing Advisory Committee on Artificial Limbs. H.M. Stationery Office. Pp. 10. 3d.

Special Articles

NTERNATIONAL CONGRESS OF PEDIATRICS

FROM A CORRESPONDENT

WITH well over 2000 registrations, the 5th International Congress of Pediatrics ran a successful and rowded course during four particularly humid days n New York in mid-July. Pædiatricians from over 0 nations heard Dr. HENRY F. HELMHOLZ, of the Mayo linic, president of the congress, deliver his formal pening address on a platform backed by a huge fan of ll their national flags. The colourful effect was later nhanced when Dr. EMMETT HOLT, jun., the energetic ecretary and organiser of the congress, accepted from r. TSU FEI SU two hand-embroidered banners from the hinese Pediatric Society and the Chinese Medical ssociation. Dr. THOMAS PARRAN, surgeon-general of he United States Public Health Service, welcomed the isitors with a message from President TRUMAN which ncluded the statement: "To promote the health of hildren the world over is a part of our task of building ermanent world peace." Other speakers emphasised he point that child care is of the greatest possible mportance, a fact clearly recognised by the success of his, the largest international medical congress since the war.

THE DISCUSSIONS

The first plenary session was concerned with *Nutrition*. Prof. R. A. MCCANCE (Cambridge) gave an account of his observations in Germany on the weight and height of children under the observation of the special Medical Research Council unit. Dr. J. H. P. JONXIS (Rotterdam) spoke on his investigations of blood chemistry in relation to food deficiencies in children. Dr. J. GILLMAN Johannesburg), observing that in South Africa there are 17 pædiatricians for 4 million children, described his observations on malnutrition. Other speakers included Prof. P. PLUM (Copenhagen), who commented on the increase in cœliac disease during the war; Dr. G. LOGARAS (Athens), who saw the problem in Greece as essentially economic; and Dr. DAG RIIS (Oslo) who mentioned that, despite the poor nutrition, the amount of dental decay had decreased in school-children in Oslo. Concluding remarks were made by Dr. M. S. MASLOV (Leningrad) and Dr. F. F. TISDALL (Toronto).

The second scientific session was divided into three periods. At the first *Diseases caused by Filtrable Viruses* were discussed. Dr. A. B. SABIN (Cincinnati) gave a masterly opening paper on neurotropic viruses, classifying them into those with a basic reservoir in human beings and those with a basic reservoir which is extra-human. He was followed by Dr. L. ALM (Gothenburg) and Prof. H. K. FABER (San Francisco). Prof. T. FRANCIS Ann Arbor) spoke on respiratory viruses, Dr. J. M. ADAMS (Minneapolis) on virus pneumonia in infancy, and Prof. C. A. JANEWAY (Boston) on the modern use of globulins in the control of outbreaks of measles. The second discussion, on the *Chemotherapy of Infectious Diseases* was opened by Prof. C. S. KEEFER (Boston). Subsequent speakers were Prof. G. FRONTALI (Rome); Prof. R. DEGKWITZ (Hamburg), who gave a fascinating account of the use of colloidal particles of azo dyes in the treatment of tuberculosis in animals; Dr. A. BOSÁNYI (Budapest); Dr. M. S. PERDIGUERO (Saragossa); and Prof. W. S. GAISFORD (Manchester), who emphasised the dangers of intraspinal therapy in meningitis. The third subject considered was *Neonatal Mortality*. The opener was Prof. A. A. MONCRIEFF (London), who emphasised the social factors and the need for early care of premature infants. Later speakers included Prof. C. GYLLENSWARD Upsala), Dr. A. REUSS (Vienna), and Dr. A. F. TUR Lenin

The morning of the last day was devoted to a plenary session on *Tuberculosis*. Prof. A. WALLGREN (Stockholm) opened with an account of the rationale, methods of use, and efficacy of B.C.G. in the prophylaxis of tuberculosis. His studies had indicated that the "artificial immunity" produced by the use of this vaccine could last as long as ten years. Prof. K. JONSCHER (Poznan) spoke of the excessive morbidity from this disease in Poland as a result of the war, and he recommended the inoculation of newborn infants by the oral route. Subsequent speakers included Dr. A. CHATTÁS (Cordoba) who spoke of the intracutaneous injection with B.C.G. of newborn infants, now achieved for about half of such infants in his city; Prof. R. DEBRÉ (Paris) who described extrapulmonary primary lesions; Dr. J. HUTCHISON (Glasgow) who discussed bronchial occlusion in primary tuberculous infection and the place of bronchoscopy in treatment; and Prof. G. WEBER (Munich) speaking of the influence of the genotype on the predisposition to tuberculosis.

The afternoon meeting was divided into three sessions. At the first Prof. G. DE TONI (Genoa) opened a discussion on *Incompatibility of Blood* and set out six fundamental questions still unanswered by modern work on the rhesus factor. Dr. B. BROMAN (Stockholm) touched on the possibility of damage to the fœtus by incompatibility due to other mechanisms than the rhesus immunisation of the mother. Some observations on the same aspect were made by Dr. I. HALBRECHT (Tel-Aviv). It was fitting that the concluding speakers in this session should have been representatives of two schools in friendly rivalry—Dr. L. K. DIAMOND (Boston) and Sir LEONARD PARSONS (Birmingham). The second session was concerned with *Alimentary Toxicosis*, the discussion being introduced by Prof. E. KERPEL-FRONIUS (Pécs) who reviewed modern work on water and mineral exchange in diarrhœa and concluded that the primary damage is a failure of circulation due to reduction of plasma volume caused by a loss of extracellular electrolytes and capillary injury. Among other speakers were Prof. L. F. MEYER (Tel-Aviv), Prof. G. FANCONI, and Prof. E. GORTER (Leiden) who though completely crippled by arthritis had made the journey by air from Holland.

The third session, on *Congenital Heart Disease*, was opened by Dr. A. CASTELLANOS (Havana), who in reviewing the subject laid special stress on the value of angiocardiography in arriving at an exact diagnosis and in selecting cases for operation. Dr. E. MANNHEIMER (Stockholm) gave a brief description of the value of fluoroscopy, phonocardiography, and the hypoxia tolerance test. Dr. A. COURNAND (New York) described the use of the radio-opaque catheter introduced into the heart through the venous system. Concluding speakers were Dr. D. KEITH (Toronto) and Prof. M. LAMY (Paris).

The scientific exhibits were of a high standard, numbering over 150 and illustrating some of the recent work in pædiatrics, much of great importance in general medicine. Nearly 40 films, including one from England on *Scabies*, were shown at intervals throughout the meeting.

THE TRANSACTIONS

The programme, giving summaries of papers and descriptions of the exhibits and running to nearly 200 pages, had been splendidly prepared by the *Quarterly Review of Pediatrics* and will be reproduced, with missing abstracts inserted, in the August, 1947, issue of this periodical. Copies may be purchased from the Washington Institute of Medicine, 1720 M Street, N.W., Washington 6, D.C. The official transactions of the congress will be published in *Acta Pædiatrica*, and may be obtained by writing to Almqvist and Wiksells Boktryckeri Aktiebolag, Upsala, Sweden. The next congress will be held in Switzerland in 1950 under the presidency of Prof. G. FANCONI (Zürich).

ŒSTROGENS IN PROSTATIC CANCER

THERE is no doubt that many patients with prostatic cancer, especially if metastases are present in bone, can be greatly relieved for a while by the administration of œstrogens. As a rule stilbœstrol has been used for this purpose because it is cheap and is effective by mouth; moreover extensive trials by clinicians in many countries have not revealed any disadvantages to outweigh its benefits.

In this issue Berger and Buu-Hoi, who are working with Professor Lacassagne in Paris, describe 4 cases of prostatic cancer which stilbœstrol had failed to ameliorate but in which considerable benefit was obtained from a different synthetic œstrogen, α-bromo-α.β.β-triphenylethylene, or Y59 for short. Success followed the use of this drug, though it was given by mouth in amounts not larger than those of stilbœstrol, and in spite of the fact that its minimal œstrogenic dose for mice, as judged by the commonly accepted standards, is about a hundred times greater than that of stilbœstrol. Did Y59 owe its superiority over stilbœstrol in the cases quoted to any peculiar quality? As Berger and Buu-Hoi point out, the œstrogenic capacity of Y59, though slight when calculated by the usual methods of assay, is yet remarkably protracted; and to this durability of action the superiority of Y59 over stilbœstrol in these cases may perhaps be attributed. At any rate the clue seems worth following, in the hope that it may lead to a further advance in the relief of prostatic cancer with œstrogens.

FACTS ABOUT MIDWIVES

ON paper, midwives are plentiful; but in actual fact we have nothing like enough practising midwives to meet our needs. The working party set up by the Minister of Health and the Secretary of State for Scotland[1] has been asked to inquire into the recruitment and training of midwives and any other matters which have a bearing on the present shortage. The problem is clearly quite different from that facing the working party on nursing, for among midwives there are plenty of recruits, most of whom complete the course for part I of the examination, and many for part II. At the end of March there were 74,219 women on the roll of qualified midwives, but only about 16,400 were practising midwifery, some 10,000 of these being in hospitals and 5500 in organised domiciliary services. The working party is anxious to find out exactly what proportion of those who notify their intention to practise actually do so, for at present we are pouring a stream of qualified midwives into a basin with many holes in it.

Several well-known causes of loss at once spring to mind: the demand of many local authorities for a midwifery qualification in those appointed to do health visiting or other social work seems likely to account for a large proportion, while others are lost because hospitals use them as sisters in surgical wards and elsewhere. We have no figures, however, to show what factors are chiefly responsible for the loss, or to what degree, and such figures the working party is determined to procure. To this end it is sending out a questionary to the midwives—more than 17,000 in England and Wales and 1200 in Scotland—who notified their intention to practise midwifery in 1944.

They ask 18 questions, most of which are divided into several parts. The first five ask for personal data, merely so that it will be possible to check the age-groups and qualifications of those who fail to answer. Other questions ask whether the midwife notified her intention to practise in 1945, 1946, and 1947; and if she did not what her main reasons were for not doing so—e.g., attraction of other work, dissatisfaction with midwifery, ill health, attainment of retiring age, or marriage. She is asked what are her additional qualifications, whether she was required to have a midwifery qualification for present post, who has employed her in the years the main ways in which she has used her midwifery qualification over those years, whether she worked in town or country and how many confinements she has attended yearly. Finally she is asked whether on the whole she is satisfied midwifery and if not why not.

This questionary, at first sight rather can be quickly answered by ringing certain opposite each question, as a covering letter and as soon as the answers have been sorted by the papers will be destroyed: they will thus be confidential. It is important to the country that questionaries should be carefully and fully by as large a proportion as possible of the re and doctors and hospital authorities who are in with midwives can give great help by encouraging midwife who hesitates to return her completed tionary. A pilot survey sent out to 275 mi produced a 60% response in a fortnight, but showed on the whole the practising rather than the non-p tended to reply. It would be unfortunate if the the main questionary showed this bias; perhaps the College of Midwives can influence non-practising grad to contribute their important share of information.

WILTSHIRE'S PROGRESS IN PART-TIME N

SINCE the part-time nursing scheme[1] was on April 18, the number of patients waiting for admission to Wiltshire county infirmaries has been reduced from 74 to 2. The response to the appeal for nurses been good: according to an interim report[2] of public-assistance committee, there are now 17 trained nurses, 8 enrolled assistant nurses, 32 nursing attendants, and 22 nursing orderlies at work in the infirmaries, as well as a further 16 part-time nurses in other hospitals. Four of the county's seven infirmaries are now fully staffed, and part-timers will be absorbed into the others as they come forward. Some matrons were outstandingly coöperative from the start, others perhaps less so, but the report notes that their general reception of the scheme has been satisfactory. Where the matron is convinced of the need for part-timers, both part-time and full-time staff settle down into a happy unit; and it is noteworthy that several people attracted by the part-time service have since taken up full-time nursing.

One remarkable outcome of the scheme deserves the notice of all authorities now arranging part-time services: Wiltshire is finding it possible to open more beds. At one hospital beds for the chronic sick are to be increased from 36 to 108; and at another a plan to provide dormitories for resident nurses is being given up, and the accommodation is to be converted for the use of 30 chronic sick, who will be nursed by non-resident part-timers.

AT a conference recently called by the United States Public Health Service it was recommended that a controlled study of B.C.G. vaccination should be undertaken in a community with a population of 100,000 or more. The conference concluded that B.C.G. "appears to confer increased resistance to tuberculosis" for the period covered by the studies presented, and that "there have been no proved cases of progressive disease from B.C.G. vaccination in human beings."

AT a meeting in London on July 23 Mr. Aneurin Bevan, Minister of Health, discussed with members of the 14 regional hospital boards some of the problems with which they will be faced. Mr. Bevan said that in his view it was best to bring the members together at the start, so that they might see themselves as part of an integrated service. Most of the boards, whose members give their services voluntarily, have already begun to meet and have advertised for their main officers.

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[1] See *Lancet*, April 26, p. 582.

[1] See *Lancet*, May 24, p. 719.

[2] Second Interim Report on the Part-time Nursing Service. Wiltshire County Council.

ute to the work of the congress secretary, Capt. W. Geidt, and to Prof. E. G. T. Liddell, on whom, he d, had fallen many of the responsibilities of a president. fessor Liddell in a witty reply ascribed the success the congress to the vigour of its members: it was a e of Sherrington's "postinhibitory rebound," which d in this experiment been as marked as the period of ibition had been prolonged. The President displayed pecially bound copy of the presentation edition of the *tegrative Action of the Nervous System*, which was to sent to Sir Charles Sherrington as an affectionate bute from the congress. Throughout its meeting, deed, the congress had been informed by the great and ting influence of this veteran physiologist.

More important than the formal work of the congress, the opinion of many who enjoyed it, were the oppor- nities offered by the communal life in the colleges. is allowed frequent and personal discussions among ople who might otherwise have remained unknown to e another outside their writings. From the first, ese International Physiological Congresses have been imarily of this domestic nature and have owed their tality to it. They are gatherings devoted to the change of ideas about work for the most part actually progress and which will eventually be published. here are no published proceedings of the congress.

INTERNATIONAL CONGRESS FOR MICROBIOLOGY

COPENHAGEN, JULY 20–26

At the 4th International Congress for Microbiology r. Th. Madsen, the president, in welcoming over 000 members and associates, spoke of the difficulties arranging hotel accommodation, which necessitated ousing many delegates in hospitals, student hostels, nd private houses (all free of charge). Trouble was lso experienced in preparing abstracts of proceedings, rogrammes, and other printed material, because of a our-month printers' strike. Of more than twenty oreign countries that were represented, Britain probably ad the largest contingent, with France and Sweden unners-up. Many American scientists were unable to ravel because of transport difficulties; and there were o Russian delegates. It was a week of almost unbroken unshine and heat, the like of which had not been xperienced in Copenhagen for 10 years.

The discoverers of penicillin and streptomycin (who met for the first time accidentally at the Hotel Angleterre n Sunday morning) attracted much attention; and hroughout the week press photographers were almost btrusively active with their flashlight cameras snapping elebrities and their wives.

All the sectional meetings were held in the Rigsdagen (Parliament House), which allowed members to switch easily from one meeting to another, although there were still no answers to the problems of being in two places at the same time or of ventilating rooms kept continually darkened to allow the showing of lantern slides.

ANTIBIOTICS

The sections of most general medical interest were those devoted to antibiotics, medical and veterinary bacteriology, viruses, and immunology; and a considerable proportion of the contributions consisted in reviews of work already published but not yet sufficiently known in continental Europe.

The antibiotic section was accorded pride of place as regards accommodation, and undoubtedly attracted the largest audiences. Papers were given on the production, varieties, and mode of action of penicillin. E. F. Gale's discourse on the effect of penicillin in preventing the as[illegible] of glutamic acid by the staphylococcus being particularly interesting. Two outstanding contributions in this section were made by R. J. Dubos, of the Rockefeller Institute, and H. C. Hinshaw, of the Mayo Clinic. Dubos, after referring to his new media for the growth of the tubercle bacillus, discussed as-yet unpublished work on the genetic factors affecting the pathogenesis of experimental tuberculosis in mice, and the effect on the severity of the lesion of superimposed virus respiratory infection. "If," said Dubos, "the pathologist or the clinician points to the dissimilarity of tuberculosis in mice and men, the experimentalist can answer that the same is true of pneumonia and yellow fever; but what progress could have been made towards the control of these latter infections without the help of the mouse?"

Hinshaw described experimental and clinical trials of streptomycin, undertaken with W. H. Feldman; and he showed photographs of patients recovered and well after tuberculous meningitis. He emphasised that the action of streptomycin in tuberculosis is mainly suppressive, and that cures in miliary tuberculosis and in tuberculous meningitis are not common, particularly if these two manifestations occur together. The drug in their experience was practically free of toxicity, apart from the production of temporary vestibular disturbances.

A new approach to the control of virus infections was suggested by the experimental work of D. W. Woolley (U.S.A.), a blind scientist, who has been able to prevent multiplication of the influenza virus in the chick embryo by the use of apple pectin, a polysaccharide to which the virus is adsorbed in much the same way as it is to the red blood-cell.

BACTERIOLOGY

In the section on medical and veterinary bacteriology the subjects discussed were diphtheria, pertussis, streptococcal infections, tuberculosis, and brucellosis. J. W McLeod demonstrated the important part which the gravis strain plays in outbreaks of diphtheria, and showed that there might occur remarkable declines in the incidence of the infection after such epidemics. This point was supplemented by Charlotte Ruys (Holland), who, in an important investigation of epidemic diphtheria in Amsterdam during 1942–44, had found from Schick testing that there was much latent immunisation among the population at the end of the epidemic wave.

The papers on pertussis caused considerable discussion. R. Cruickshank reported that in day and residential nurseries rabbit or horse antibacterial-plus-antitoxic sera had a protective effect if given in the incubation period; Stuart Mudd described the Philadelphia work with agglutinogen as a skin test of susceptibility or resistance to pertussis. A. J. H. Tomlinson had found the complement-fixation test more reliable than the agglutination reaction for measuring the level of antibody at different periods after artificial immunisation; and H. Proom concluded from experimental work in mice that pertussis toxin may play some part in the pathogenesis of the infection.

In discussing the epidemiology of streptococcal infections in man, V. D. Allison and W. R. Maxted made a plea, which was sympathetically received, for an international committee on streptococcal grouping and typing; and later in the week a previously constituted Streptococcus Committee was resuscitated with Allison as secretary.

For the veterinarians there was a useful discussion on bovine mastitis, including classification, sources, and mode of spread of *Streptococcus agalactiæ*. In the brucellosis discussion I. F. Huddleston (U.S.A.) described a remarkable phenomenon of non-inhibitory dilutions of sulphonamides acting as bactericidal agent when sensitising antibody in high dilution was added.

INTERNATIONAL PHYSIOLOGICAL CONGRESS

OXFORD, JULY 21–25

THE 17th International Physiological Congress, which met in Oxford last week under the presidency of Sir HENRY DALE, O.M., was the third to be held in this country since the inception of the congresses in 1889, and the first since the Zürich congress of 1938. But for the war, it would have been held in Oxford in 1941. The previous congresses in this country were those at Cambridge in 1898 and at Edinburgh in 1923. The 1231 delegates, representing 38 countries (there were none from Germany and Japan) were accommodated in the colleges and elsewhere. They were received in the hall of Christ Church by Mr. H. A. MARQUAND, the Paymaster-General, on the evening of their arrival.

At the opening session in the Sheldonian theatre on the following morning the delegates were welcomed on behalf of their English-speaking colleagues by the President, and replies were made by Academician ORBELI (U.S.S.R.), Prof. B. A. HOUSSAY (Argentina), General R. K. S. LIM (China), and Prof. H. FREDERICQ (Belgium). The President read a message of greeting from Sir CHARLES SHERRINGTON. Each member had already been presented by the Physiological Society with a copy of a special edition of the *Integrative Action of the Nervous System*, with a newly written and masterly introduction by its author.

COMMUNICATIONS

The programme of scientific business included 361 communications, which were distributed among meetings held simultaneously in nine lecture theatres throughout the congress. Each lasted fifteen minutes and was followed by a discussion. There were 37 demonstrations of experimental methods and results and 22 of actual experiments, and 26 films. It will be appreciated, therefore, that no attempt can be made to describe the proceedings in detail.

A striking feature of the programme was the numerical preponderance of electrical and chemical studies of muscle and nerve, which together provided the main business for two of the lecture theatres. A. L. HODGKIN and A. F. HUXLEY's ingenious new modification of classical membrane theory to accommodate recent difficulties in explaining the origin of the action potential in nerve aroused particular interest. The communications of D. NACHMANSOHN and of others on acetylcholine metabolism, including some which dealt with the new anticholinesterase diisopropylfluorophosphate (D.F.P.), were a reminder that the electrical propagation of the impulse is inseparable from chemical events within the nerve.

The chemistry of the contractile process in muscle was the subject of several discussions, but these were overshadowed by a brilliant and informal lecture by A. SZENT-GYÖRGYI, in which he indicated the complex interrelationships between actomyosin, adenosine triphosphate, and electrolytes on which his theory of theory of muscular contraction rests. This evoked a very brisk discussion; the criticisms raised in no way lessened the attractiveness of the theory, whose full implications, scientific and clinical, have yet to be realised.

In renal physiology the main topics were the renal circulation and the mechanism of renal hypertension, and the osmotic regulation of water excretion. An elegant demonstration of the advantages of the combined physiological, histological, and radiological approach in the study of the renal vascular bed was given by J. TRUETA and his colleagues.

Interesting papers on blood dealt with its enzymatic capacities, particularly histaminolytic and fibrinolytic. In pregnancy the histaminase content increases with the duration of pregnancy and is disturbed in such conditions as toxæmia, hydatidiform mole, and abortion (A. AHLMARK, R. KAPELLER-ADLER). Spontaneous fibrinolytic activity occurs in surgical shock, trauma and other states (R. G. MACFARLANE, M. ROCHA E SILVA). Interesting results were reported on the use of the Hartridge-Roughton-Millikan rapid reaction technique in studies of the oxygenation of hæmoglobin, and on their mathematical treatment. W. JACOBSON and P. M. GOOD suggested, from a correlation of the fluorescence of anti-pernicious-anæmia extracts with their biological activity, that the anti-pernicious-anæmia factor has the nature of a pterin. A product of war-time activity which has a use in investigations of blood clotting are the silicone compounds which, applied to the surface of glass vessels, delay clotting for a matter of two hours (L. B. JAQUES).

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The closing session followed at once. It was unanimously decided to accept the invitation, extended most whole-heartedly on behalf of the Danish delegates by J. LUNDSGAARD *in a charming speech, to hold the* 18th congress in Copenhagen in 1950. The President ute to the work of the congress secretary, Capt. W. **Geidt**, and to Prof. E. G. T. **Liddell**, on whom, he d, had fallen many of the responsibilities of a president. fessor Liddell in a witty reply ascribed the success the congress to the vigour of its members: it was a e of Sherrington's "postinhibitory rebound," which d in this experiment been as marked as the period of ibition had been prolonged. The President displayed pecially bound copy of the presentation edition of the *tegrative Action of the Nervous System*, which was to sent to Sir Charles Sherrington as an affectionate bute from the congress. Throughout its meeting, leed, the congress had been informed by the great and ting influence of this veteran physiologist.

More important than the formal work of the congress, the opinion of many who enjoyed it, were the opportunities offered by the communal life in the colleges. is allowed frequent and personal discussions among ople who might otherwise have remained unknown to e another outside their writings. From the first, ese International Physiological Congresses have been imarily of this domestic nature and have owed their tality to it. They are gatherings devoted to the change of ideas about work for the most part actually progress and which will eventually be published. here are no published proceedings of the congress.

INTERNATIONAL CONGRESS FOR MICROBIOLOGY

COPENHAGEN, JULY 20–26

At the 4th International Congress for Microbiology Dr. **Th. Madsen**, the president, in welcoming over 000 members and associates, spoke of the difficulties n arranging hotel accommodation, which necessitated ousing many delegates in hospitals, student hostels, nd private houses (all free of charge). Trouble was lso experienced in preparing abstracts of proceedings, programmes, and other printed material, because of a our-month printers' strike. Of more than twenty oreign countries that were represented, Britain probably had the largest contingent, with France and Sweden unners-up. Many American scientists were unable to ravel because of transport difficulties; and there were o Russian delegates. It was a week of almost unbroken unshine and heat, the like of which had not been xperienced in Copenhagen for 10 years.

The discoverers of penicillin and streptomycin (who met for the first time accidentally at the Hotel Angleterre on Sunday morning) attracted much attention; and throughout the week press photographers were almost obtrusively active with their flashlight cameras snapping celebrities and their wives.

All the sectional meetings were held in the Rigsdagen (Parliament House), which allowed members to switch easily from one meeting to another, although there were still no answers to the problems of being in two places at the same time or of ventilating rooms kept continually darkened to allow the showing of lantern slides.

ANTIBIOTICS

The sections of most general medical interest were those devoted to antibiotics, medical and veterinary bacteriology, viruses, and immunology; and a considerable proportion of the contributions consisted in reviews of work already published but not yet sufficiently known in continental Europe.

The antibiotic section was accorded pride of place as regards accommodation, and undoubtedly attracted the largest audiences. Papers were given on the production, varieties, and mode of action of penicillin, E. F. **Gale**'s discourse on the effect of penicillin in preventing the assimilation of glutamic acid by the staphylococcus being particularly interesting. Two outstanding contributions in this section were made by R. J. **Dubos**, of the Rockefeller Institute, and H. C. **Hinshaw**, of the Mayo Clinic. **Dubos**, after referring to his new media for the growth of the tubercle bacillus, discussed as-yet unpublished work on the genetic factors affecting the pathogenesis of experimental tuberculosis in mice, and the effect on the severity of the lesion of superimposed virus respiratory infection. "If," said **Dubos**, "the pathologist or the clinician points to the dissimilarity of tuberculosis in mice and men, the experimentalist can answer that the same is true of pneumonia and yellow fever; but what progress could have been made towards the control of these latter infections without the help of the mouse?"

Hinshaw described experimental and clinical trials of streptomycin, undertaken with W. H. **Feldman**; and he showed photographs of patients recovered and well after tuberculous meningitis. He emphasised that the action of streptomycin in tuberculosis is mainly suppressive, and that cures in miliary tuberculosis and in tuberculous meningitis are not common, particularly if these two manifestations occur together. The drug in their experience was practically free of toxicity, apart from the production of temporary vestibular disturbances.

A new approach to the control of virus infections was suggested by the experimental work of D. W. **Woolley** (U.S.A.), a blind scientist, who has been able to prevent multiplication of the influenza virus in the chick embryo by the use of apple pectin, a polysaccharide to which the virus is adsorbed in much the same way as it is to the red blood-cell.

BACTERIOLOGY

In the section on medical and veterinary bacteriology the subjects discussed were diphtheria, pertussis, streptococcal infections, tuberculosis, and brucellosis. J. W **McLeod** demonstrated the important part which the gravis strain plays in outbreaks of diphtheria, and showed that there might occur remarkable declines in the incidence of the infection after such epidemics. This point was supplemented by **Charlotte Ruys** (Holland), who, in an important investigation of epidemic diphtheria in Amsterdam during 1942–44, had found from Schick testing that there was much latent immunisation among the population at the end of the epidemic wave.

The papers on pertussis caused considerable discussion. R. **Cruickshank** reported that in day and residential nurseries rabbit or horse antibacterial-plus-antitoxic sera had a protective effect if given in the incubation period; **Stuart Mudd** described the Philadelphia work with agglutinogen as a skin test of susceptibility or resistance to pertussis. A. J. H. **Tomlinson** had found the complement-fixation test more reliable than the agglutination reaction for measuring the level of antibody at different periods after artificial immunisation; and H. **Proom** concluded from experimental work in mice that pertussis toxin may play some part in the pathogenesis of the infection.

In discussing the epidemiology of streptococcal infections in man, V. D. **Allison** and W. R. **Maxted** made a plea, which was sympathetically received, for an international committee on streptococcal grouping and typing; and later in the week a previously constituted Streptococcus Committee was resuscitated with Allison as secretary.

For the veterinarians there was a useful discussion on bovine mastitis, including classification, sources, and mode of spread of *Streptococcus agalactiæ*. In the brucellosis discussion I. F. **Huddleston** (U.S.A.) described a remarkable phenomenon of non-inhibitory dilutions of sulphonamides acting as bactericidal agent when sensitising antibody in high dilution was added.

INTERNATIONAL PHYSIOLOGICAL CONGRESS

OXFORD, JULY 21–25

The 17th International Physiological Congress, which met in Oxford last week under the presidency of Sir Henry Dale, O.M., was the third to be held in this country since the inception of the congresses in 1889, and the first since the Zürich congress of 1938. But for the war, it would have been held in Oxford in 1941. The previous congresses in this country were those at Cambridge in 1898 and at Edinburgh in 1923. The 1231 delegates, representing 38 countries (there were none from Germany and Japan) were accommodated in the colleges and elsewhere. They were received in the hall of Christ Church by Mr. H. A. Marquand, the Paymaster-General, on the evening of their arrival.

At the opening session in the Sheldonian theatre on the following morning the delegates were welcomed on behalf of their English-speaking colleagues by the President, and replies were made by Academician Orbeli (U.S.S.R.), Prof. B. A. Houssay (Argentina), General R. K. S. Lim (China), and Prof. H. Fredericq (Belgium). The President read a message of greeting from Sir Charles Sherrington. Each member had already been presented by the Physiological Society with a copy of a special edition of the *Integrative Action of the Nervous System*, with a newly written and masterly introduction by its author.

COMMUNICATIONS

The programme of scientific business included 361 communications, which were distributed among meetings held simultaneously in nine lecture theatres throughout the congress. Each lasted fifteen minutes and was followed by a discussion. There were 37 demonstrations of experimental methods and results and 22 of actual experiments, and 26 films. It will be appreciated, therefore, that no attempt can be made to describe the proceedings in detail.

A striking feature of the programme was the numerical preponderance of electrical and chemical studies of muscle and nerve, which together provided the main business for two of the lecture theatres. A. L. Hodgkin and A. F. Huxley's ingenious new modification of classical membrane theory to accommodate recent difficulties in explaining the origin of the action potential in nerve aroused particular interest. The communications of D. Nachmansohn and of others on acetylcholine metabolism, including some which dealt with the new anticholinesterase diisopropylfluorophosphate (D.F.P.), were a reminder that the electrical propagation of the impulse is inseparable from chemical events within the nerve.

The chemistry of the contractile process in muscle was the subject of several discussions, but these were overshadowed by a brilliant and informal lecture by A. Szent-Györgyi, in which he indicated the complex interrelationships between actomyosin, adenosine triphosphate, and electrolytes on which his theory of theory of muscular contraction rests. This evoked a very brisk discussion; the criticisms raised in no way lessened the attractiveness of the theory, whose full implications, scientific and clinical, have yet to be realised.

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Interesting papers on blood dealt with its enzymatic capacities, particularly histaminolytic and fibrinolytic. In pregnancy the histaminase content increases with the duration of pregnancy and is disturbed in such conditions as toxæmia, hydatidiform mole, and abortion (A. Ahlmark, R. Kapeller-Adler). Spontaneous fibrinolytic activity occurs in surgical shock, trauma and other states (R. G. Macfarlane, M. Rocha e Silva). Interesting results were reported on the use of the Hartridge-Roughton-Millikan rapid reaction technique in studies of the oxygenation of hæmoglobin, and on their mathematical treatment. W. Jacobson and P. M. Good suggested, from a correlation of the fluorescence of anti-pernicious-anæmia extracts with their biological activity, that the anti-pernicious-anæmia factor has the nature of a pterin. A product of wartime activity which has a use in investigations of blood clotting are the silicone compounds which, applied to the surface of glass vessels, delay clotting for a matter of two hours (L. B. Jaques).

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The closing session followed at once. It was unanimously decided to accept the invitation, extended most wholeheartedly on behalf of the Danish delegates by E. Lundsgaard in a charming speech, to hold the 18th congress in Copenhagen in 1950. The President pa rried assistants; and an adequate capitation fee. With se there need be no direction and no control of sale l purchase. Dr. Dahne's motion was, however, carried.

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NOMINATION FOR STATUTORY BODIES

Dr. J. HALLAM (North Staffordshire), moving that the ofession's nominations to all statutory bodies under e new service should be approved by the Minister, id that of 7 nominees from his area for the regional spital board, only 3 had been accepted. Speakers om other areas confirmed Dr. Hallam's experience. r. F. M. ROSE (Preston) said that for each of the two gions covered by his branch council, 6 nominations d been made; and for each only 1 had been accepted. the South-west region, said Dr. S. NOY SCOTT lymouth), only 2 out of 6 nominees had been accepted. . N. STEVENS (West Suffolk) said that in his area the minee had been turned down, leaving West Suffolk thout representation on the regional board.

Dr. DAIN observed: "This is the sort of thing that ay happen to you unless you have proper control ranged." It was hoped that the difficulty would be lved in the amending Act. The association had, he lded, put up altogether 85 candidates, of whom 27 had en adopted. "If we should come to terms with the inister and there should be a service—which, I think, ems very doubtful—we must know which is the body e Minister will consult. If we are not free to choose ose who are to represent medical opinion on these mmittees, we are sold." For the selection of members r the committees it might be possible to set up a joint ody representing the association, the Royal Colleges, nd perhaps other bodies.

The motion was carried.

Dr. J. M. ALSTON (City) moved that general-practitioner epresentation must be assured on the various statutory odies set up under the Act; and an amendment was dded that the holding of part-time appointments with cal authorities should not debar from service on local ealth committees.

Dr. TALBOT ROGERS said that regardless of the inister's directive urging the appointment of doctors o the local health committees authorities were still orming committees without consulting the local medical ommittees. Speaking as a county-councillor, Dr. W. N. EAK (mid-Cheshire) said that his council had established small committee of 6–8 doctors who discussed medical atters before they reached the council and liaised etween the profession and council.

The amended City motion was carried.

MIDWIFERY SERVICES

Dr. R. POOTS (Stratford) moved that all registered ractitioners should be entitled to undertake domiciliary bstetrics under the Act; that ten years' experience of omiciliary obstetrics should be accepted as an adequate reliminary condition of entry to an examination for diploma in obstetrics; and that if necessary an ppropriate new diploma should be established.

Dr. W. B. A. LEWIS (Shropshire and mid-Wales) uggested that action should be taken by the Royal ollege of Obstetricians and Gynæcologists to enable loctors to practise midwifery without first obtaining heir diploma; while Dr. J. H. E. MOORE (Leeds) conended that the solution lay in the hands of the General Medical Council, which should ensure that undergraduate raining was sufficient to enable doctors to practise bstetrics. Dr. C. MACKIE (Worcester and Bromsgrove) ressed the country doctor's claim to postgraduate raining. Lord HORDER (Marylebone) claimed that the estriction on the practice of midwifery by qualified ractitioners represented infringement of a statutory privilege: "I believe we have been taken a little far from our principles in this matter."

Dr. DAIN said that the Negotiating Committee would require the removal from the Act of the Minister's prerogative to approve doctors' qualifications to practise midwifery. An agreement had, in fact, been reached; women were to have the right to be attended, if they wished, by a doctor of their own choosing who would, if necessary, attend the confinement; and a separate payment was to be made for this service. A similar position to that under the Scottish Act had thus been achieved. Every doctor could practise midwifery if he wished; but there were not enough domiciliary cases to provide suitable experience for all. Quite a number would elect not to engage in obstetric practice, so that there would be enough cases to supply the remainder with experience. Doctors seeking to engage in obstetric practice must, however, give evidence to a local medical committee of their past experience and their opportunity for continued experience; there was no insistence on diplomas.

The motion was carried by 106 votes to 91.

WHOLE-TIME MEDICAL OFFICERS

Dr. R. Forbes won the meeting's support for a Hendon motion that whole-time medical officers employed by central, regional, or local authorities should have the right of appeal to a suitably appointed committee when their appointment was terminated on grounds reflecting adversely on their professional reputation or procedure.

ROTA OF PRACTITIONERS

The meeting rejected a motion by Dr. G. DE SWIET (Paddington) that in the new service provision should be made for a rota of practitioners for duty at night and weekends, and during holidays and sickness. This was damned by Dr. DAHNE as "totalitarian planning."

FEES FOR LIFE-INSURANCE EXAMINATIONS

Dr. S. WAND, chairman of the council's general-practice committee, gained the meeting's support for an agreement with the life-insurance offices by which 10*s.* 6*d.* is to be paid for a short form of medical report, to be used where the amount of the policy does not exceed £300; £1 11*s.* 6*d* is to be paid for a medical examination and report where the amount of the policy exceeds £300; and £2 2*s.* is to be paid if the form required by the company is exceptionally extensive.

TELEPHONE MESSAGES

In reply to a West Suffolk motion, Dr. Wand said that the resumption of the G.P.O.'s telephone message service was impossible, at least in London, because of shortage of equipment. However, a robot attachment to the telephone was a possible alternative. When the doctor is out the robot will say: "This is the robot speaking. Dr. X is out. Can I do anything for you?" The answer is recorded on a cylinder, and the doctor, on his return, plays it back. The company owning this device was willing, said Dr. Wand, to fit and to service the robot for £80 if 50 doctors came forward.

"DOCTOR" SIGNS ON CARS

Dr. D. A. FERMONT (Kensington and Hammersmith) called for the abolition of "doctor" signs on cars. This was opposed by a speaker who had heard that even the sheep in narrow country lanes respected the sign. Nevertheless, the motion was carried.

CERTIFICATION

A motion calling for reduction in the number of certificates which doctors may be called on to sign was withdrawn when Dr. DAIN explained that the association had formed, in conjunction with the Ministry of Health, a small committee to examine the question. "We hope that before the start of any new service we shall have done something to solve the problem of certificates."

SCOPE OF GENERAL PRACTICE

Dr. J. A. L. VAUGHAN JONES (Leeds), moving that the council should resist any attempt to diminish the present scope of general practice, said that a wide outlook was essential to the practitioner, who should not be divested of all his responsibilities by compulsory diplomas and postgraduate courses.

Dr. O. C. CARTER (Bournemouth) held that there had been considerable inroads into the general practitioner's

Discussions in the virus section centred around poliomyelitis and influenza, but were considerably curtailed by the absence of many American contributors. Poliomyelitis was shown by J. R. PAUL (U.S.A.) to have changed in areas such as the United States and Scandinavia from an endemic to an epidemic infection, with at the same time a steady decrease in the proportion of clinical cases among children under 5 years of age. Outbreaks with a case-incidence as high as ten times that recorded in America occurred among American troops in North Africa, the Middle East, and the Far East, while the native adult in the same areas was rarely affected. It was therefore suggested that the disease may be endemic in subclinical form among native populations. The part played by the fly in the spread of the disease was discussed by A. B. SABIN (U.S.A.) and others; while J. H. S. GEAR, from epidemiological studies on poliomyelitis in South Africa, was convinced that close personal contact such as occurs in households was the most important factor in the spread of the infection. The possibilities of immunisation against poliomyelitis by formolised vaccine were discussed by S. GARD (Stockholm) and others.

Among the papers on virus respiratory infections, the work by the Common-Cold Unit at Salisbury, described by C. H. ANDREWES and F. FULTON, attracted particular attention. G. and W. HENLE (U.S.A.) described a new test for assaying the potency of influenza-virus vaccine, and also discussed the mode of infection of the cell by influenza virus as it occurs in the chick embryo.

IMMUNOLOGY

In the immunology section an outstanding contribution was that by M. B. LURIE (U.S.A.) on the mechanism of immunity to tuberculosis as exemplified by the phagocytic action of mononuclear cells from normal and immunised rabbits transplanted into the anterior eye-chamber of normal albino rabbits. V. MENKIN (U.S.A.) discussed the mechanism of leucocytosis in inflammation; and G. SHWARTZMAN (U.S.A.) illustrated with coloured lantern-slides the phenomenon of local tissue reactivity in the golden hamster. A. FELIX queried the virus nature of Vi bacteriophage, and E. HAMMARSTROM (Sweden) described an extended scheme for the phage typing of *Shigella sonnei*.

In other sections contributions that evoked favourable comment were M. DELBRÜCK'S (U.S.A.) work on the biochemical deficiencies of bacterial viruses; the discovery by K. M. SMITH of the transmission of a new plant virus by a biting beetle; and G. S. WILSON'S illustrations of the epidemiological value of phage typing in tracing sources of staphylococcal food poisoning. At the general meetings the two lectures of particular interest to medical men were F. C. BAWDEN'S review of the lessons to be learned from work on virus infection of plants, and S. A. WAKSMAN'S (U.S.A.) lecture on antibiotics.

At the plenary session on the last day resolutions were adopted for a new Bacterial Code, put forward by the Nomenclature Committee, in which rules are laid down to regularise priority in the naming of bacteria already described and for new bacteria; for enlargement of the Salmonella Subcommittee to include all the enterobacteriaceæ; and for a new committee on enteric phage typing, under the joint chairmanship of CRAIGIE and FELIX, with the Enteric Reference Laboratory at Colindale as the International Reference Laboratory.

And so, after meeting many old friends and making new ones, and after a week of almost unexampled hospitality by their Danish hosts, the delegates dispersed, to meet again, perhaps, in three years' time in Rio de Janeiro.

CONGRESS OF EXPERIMENTAL CYTOLOGY

THE 6th International Congress of Experimental Cytology, held in Stockholm between July 10 and 17, under the presidency of Prof. Johan Runnström, was attended by nearly 450 delegates from twenty-three countries.

Prof. A. Mirsky (U.S.A.) described his methods of isolating chromosomes and of investigating their chemical composition. He emphasised that his findings confirmed the results previously reported by Prof. T. Caspersson, of Stockholm.

Professor Astbury surveyed the possibilities of explaining biological processes in the cell with the aid of X-ray spectrography and the electron microscope.

Prof. René Dubos (U.S.A.) spoke on the membranes of bacteria; he pointed out that the composition of these membranes probably determines the pathogenicity of organisms.

Dr. Wyckoff (U.S.A.) described his investigations on viruses. With Dr. Williams he has worked out a new preparation technique for electron microscopy; the preparations to be examined are covered with a very thin film of metal molecules—gold or chrome—in which the virus particles stand out in a system of lights and shades, not unlike a moon landscape.

Dr. Humberto Fernández-Morán (Venezuela) showed pictures of brain tumours taken with the electron microscope of Prof. Manne Siegbahn, the Swedish Nobel prize winner. With an improved technique, it is now possible to discern details of dimensions down to 0·000002 mm.

Dr. Rittenberg and Dr. Shemin (U.S.A.) gave an account of recent experiments carried out with isotopes to observe the continuous building-up and destruction of body-tissues.

Prof. P. de Fonbrune (France) showed in a film how, by means of his micro-manipulator, the nucleus may be removed from a living cell and another inserted.

Mr. A. F. W. Hughes spoke on new methods of measuring the viscosity of intracellular fluid. He has succeeded in making connective-tissue cells, with a diameter of about 0·01 mm., "swallow" small iron bars about 0·001 mm. long. By means of a regularly swinging magnet the small bars are set in motion; and by measuring these "compass swings" it is possible to estimate the viscosity of the intracellular fluid.

BRITISH MEDICAL ASSOCIATION

THE REPRESENTATIVE MEETING

(Continued from p. 147)

Dr. S. F. L. DAHNE (Reading) proposed that the council should formulate a plan to end the maldistribution of practitioners, because the Minister had given this maldistribution as a reason for abolishing buying and selling of practices. He pointed out that for young men borrowing money to enter practice, the rate of interest could be reduced to 1% if each member of the profession subscribed 10*s*. 6*d*. a year, and to nil if each doctor gave one guinea; alternatively, if each doctor were to lend £50 the resulting fund would be large enough to supply on loan and without interest enough capital to enable these men to purchase their practices. Mr. Bevan had been reported as having said lately in Reading: "The profession is at last seeing reason and *beginning to dance to my tune.*" Perhaps because of this, the public was now assuming that the profession was abandoning its insistence on the right to buy and sell practices.

Dr. GUY DAIN, *chairman of council, said* that when a 100% service was introduced the problem of distribution would settle itself; for doctors would be attracted to the most thickly populated areas. The association was agreeable that special terms should be offered in rural districts; there was no need for direction. The doctor who borrowed money to enter practice was troubled less by the payment of interest than by the repayment of capital; and the loan was to him not a millstone but an incentive to do his best.

Dr. J. A. BROWN (Birmingham) suggested that the greatest needs were: premises for dealing with the greater flow of patients in the new service; houses for rried assistants: and an adequate capitation fee. With se there need be no direction and no control of sale l purchase. Dr. Dahne's motion was, however, carried.

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NOMINATION FOR STATUTORY BODIES

Dr. J. HALLAM (North Staffordshire), moving that the ofession's nominations to all statutory bodies under e new service should be approved by the Minister, id that of 7 nominees from his area for the regional spital board, only 3 had been accepted. Speakers om other areas confirmed Dr. Hallam's experience. r. F. M. ROSE (Preston) said that for each of the two gions covered by his branch council, 6 nominations id been made; and for each only 1 had been accepted. the South-west region, said Dr. S. NOY SCOTT lymouth), only 2 out of 6 nominees had been accepted. r. N. STEVENS (West Suffolk) said that in his area the ominee had been turned down, leaving West Suffolk ithout representation on the regional board.

Dr. DAIN observed: "This is the sort of thing that ay happen to you unless you have proper control ranged." It was hoped that the difficulty would be ilved in the amending Act. The association had, he lded, put up altogether 85 candidates, of whom 27 had een adopted. "If we should come to terms with the linister and there should be a service—which, I think, ems very doubtful—we must know which is the body ie Minister will consult. If we are not free to choose iose who are to represent medical opinion on these ommittees, we are sold." For the selection of members or the committees it might be possible to set up a joint ody representing the association, the Royal Colleges, nd perhaps other bodies.

The motion was carried.

Dr. J. M. ALSTON (City) moved that general-practitioner epresentation must be assured on the various statutory odies set up under the Act; and an amendment was dded that the holding of part-time appointments with ocal authorities should not debar from service on local ealth committees.

Dr. TALBOT ROGERS said that regardless of the linister's directive urging the appointment of doctors o the local health committees authorities were still orming committees without consulting the local medical ommittees. Speaking as a county-councillor, Dr. W. N. EAK (mid-Cheshire) said that his council had established small committee of 6–8 doctors who discussed medical atters before they reached the council and liaised etween the profession and council.

The amended City motion was carried.

MIDWIFERY SERVICES

Dr. R. POOTS (Stratford) moved that all registered ractitioners should be entitled to undertake domiciliary bstetrics under the Act; that ten years' experience of lomiciliary obstetrics should be accepted as an adequate reliminary condition of entry to an examination for diploma in obstetrics: and that if necessary an ppropriate new diploma should be established.

Dr. W. B. A. LEWIS (Shropshire and mid-Wales) uggested that action should be taken by the Royal ollege of Obstetricians and Gynæcologists to enable loctors to practise midwifery without first obtaining heir diploma; while Dr. J. H. E. MOORE (Leeds) conended that the solution lay in the hands of the General Medical Council, which should ensure that undergraduate raining was sufficient to enable doctors to practise obstetrics. Dr. C. MACKIE (Worcester and Bromsgrove) ressed the country doctor's claim to postgraduate raining. Lord HORDER (Marylebone) claimed that the estriction on the practice of midwifery by qualified practitioners represented infringement of a statutory privilege: "I believe we have been taken a little far from our principles in this matter."

Dr. DAIN said that the Negotiating Committee would require the removal from the Act of the Minister's prerogative to approve doctors' qualifications to practise midwifery. An agreement had, in fact, been reached; women were to have the right to be attended, if they wished, by a doctor of their own choosing who would, if necessary, attend the confinement; and a separate payment was to be made for this service. A similar position to that under the Scottish Act had thus been achieved. Every doctor could practise midwifery if he wished; but there were not enough domiciliary cases to provide suitable experience for all. Quite a number would elect not to engage in obstetric practice, so that there would be enough cases to supply the remainder with experience. Doctors seeking to engage in obstetric practice must, however, give evidence to a local medical committee of their past experience and their opportunity for continued experience; there was no insistence on diplomas.

The motion was carried by 106 votes to 91.

WHOLE-TIME MEDICAL OFFICERS

Dr. R. FORBES won the meeting's support for a Hendon motion that whole-time medical officers employed by central, regional, or local authorities should have the right of appeal to a suitably appointed committee when their appointment was terminated on grounds reflecting adversely on their professional reputation or procedure.

ROTA OF PRACTITIONERS

The meeting rejected a motion by Dr. G. DE SWIET (Paddington) that in the new service provision should be made for a rota of practitioners for duty at night and weekends, and during holidays and sickness. This was damned by Dr. DAHNE as "totalitarian planning."

FEES FOR LIFE-INSURANCE EXAMINATIONS

Dr. S. WAND, chairman of the council's general-practice committee, gained the meeting's support for an agreement with the life-insurance offices by which 10*s*. 6*d*. is to be paid for a short form of medical report, to be used where the amount of the policy does not exceed £300; £1 11*s*. 6*d* is to be paid for a medical examination and report where the amount of the policy exceeds £300; and £2 2*s*. is to be paid if the form required by the company is exceptionally extensive.

TELEPHONE MESSAGES

In reply to a West Suffolk motion, Dr. Wand said that the resumption of the G.P.O.'s telephone message service was impossible, at least in London, because of shortage of equipment. However, a robot attachment to the telephone was a possible alternative. When the doctor is out the robot will say: "This is the robot speaking. Dr. X is out. Can I do anything for you?" The answer is recorded on a cylinder, and the doctor, on his return, plays it back. The company owning this device was willing, said Dr. Wand, to fit and to service the robot for £80 if 50 doctors came forward.

"DOCTOR" SIGNS ON CARS

Dr. D. A. FERMONT (Kensington and Hammersmith) called for the abolition of "doctor" signs on cars. This was opposed by a speaker who had heard that even the sheep in narrow country lanes respected the sign. Nevertheless, the motion was carried.

CERTIFICATION

A motion calling for reduction in the number of certificates which doctors may be called on to sign was withdrawn when Dr. DAIN explained that the association had formed, in conjunction with the Ministry of Health, a small committee to examine the question. "We hope that before the start of any new service we shall have done something to solve the problem of certificates."

SCOPE OF GENERAL PRACTICE

Dr. J. A. L. VAUGHAN JONES (Leeds), moving that the council should resist any attempt to diminish the present scope of general practice, said that a wide outlook was essential to the practitioner, who should not be divested of all his responsibilities by compulsory diplomas and postgraduate courses.

Dr. O. C. CARTER (Bournemouth) held that there had been considerable inroads into the general practitioner's responsibilities. He had spent some months on the Spens Committee; and a basic consideration had been that some of the best men should be persuaded to enter general practice. With further division of practice into watertight compartments the practitioner would, he suggested, *become just a filler-up of forms and a man* who refers patients to a specialist.

Dr. A. F. **Shirras** (Leeds) agreed that with all the pleasure going out of the work the best men would not be attracted to general practice. The doctor working in isolation was perhaps not going to trouble himself about retaining the disputed subjects; and possibly the aim should be to promote grouping or partnerships before the new service came into being. The motion was carried.

DOCTORS' CARS

Dr. W. **Gunn** (Greenwich and Deptford) put forward a motion expressing dissatisfaction with the arrangements by the association for obtaining doctors' cars. It was, he said, necessary to prove that a new car was essential and the present car unroadworthy; but, without being unroadworthy a car might be undependable. Dr. **Wand** pointed out that the motor trade is now free; there were no priorities as they had been known only a few months ago. There was a lag of at least 2–3 years before delivery; but, where the need was real the association's central office would probably be able to obtain a car at once or at least to get the applicant's name placed high on the waiting-list.

SHORTAGE OF NURSES

Dr. H. H. D. **Sutherland** (Kensington and Hammersmith) moved that the Minister of Health and the Secretary of State for Scotland should be asked to give urgent attention to the acute shortage of nurses. In London, he said, it was sometimes impossible to get grave and even urgent cases into hospital. Dr. J. B. W. **Rowe** (Harrow) held that the cause of the present impasse was shortage of student nurses. There were two main causes for this: (1) under the Rushcliffe scale the student nurse received in cash only 3¾*d.* per hour, or if she was working in a sanatorium 4¼*d.*; and (2) matrons tended to run nurses' hostels as a cross between a nunnery and an approved school.

Mr. **Weldon Watts** (Newcastle-on-Tyne) made a plea for private hospitals and nursing-homes; the largest nursing-home in Newcastle had, he said, lately been closed, entirely because of insufficient nurses. Another speaker contended that the student nurse must be paid at least enough to keep her—£90 per annum was a minimum. Dr. **Leak** suggested that nurses were being wasted in industry. Dr. C. K. **Cullen** (City) recalled that the General Nursing Council had refused a supplemental charter for tuberculosis nurses, and added: "It is time the council woke up from its world of fifty years ago." The nursing profession had been too regimented. "We don't want university graduates: we want people who can do the job." There must be a complete change of attitude; if the curriculum was too difficult, it must be modified.

Dr. C. F. **Mayne** (Plymouth) suggested that the trained nurse should be better paid; the part-time nurse, receiving 2*s.* 1*d.* an hour, had to pay 2*s.* 0*d.* an hour for a charwoman while she was away from home. The motion was carried.

Dr. **Talbot Rogers** advanced a rider calling for a special ad-hoc committee to make recommendations to the council. What was needed, he thought, was examination of all the evidence by a body which could take a wide view. Dr. A. C. E. **Breach** (Bromley), supporting this suggestion, said that not only nursing organisations but also probationers and even friends and relations of junior nurses should be approached to establish the origin of the present difficulty; the committee should also deal with the matter of domestic staffs.

Dr. R. **Kelson Ford** (Chelsea and Fulham) said that the number of nurses employed today was greater than before the war; yet the number of young women in the age-group from which recruits were drawn was smaller. There were simply not enough people to meet the demand; and the problem could be met only at the highest levels.

Dr. G. **MacFeat** (council) said that nurses tended to drift away from Scotland because of the better conditions in England. In his area part-time nurses, owing to their irregular attendance, had proved unsatisfactory. Nurses were, he added, being wasted in the social services where they often did only clerical work. "The training should not produce half-baked doctors instead of fully trained nurses"; and there should be some arrangement to cover the gap between leaving school and starting training.

Mr. R. L. **Newell** (council) also criticised the General Nursing Council—"that archaic body which is out of touch with present-day conditions." The association and the Ministry of Health had, however, done much; and since the Ministry's working party on nursing was soon to report he was opposed to the establishment of an ad-hoc committee.

A vote taken on this resulted in a tie; the chairman cast his vote in favour of the committee.

REMUNERATION FOR JUNIOR HOSPITAL POSTS

Dr. **Mayne** moved that, the present remuneration for junior hospital posts being inadequate, the association should formulate a scale of salaries for adoption by all hospitals. Mr. **Newell** replied that such a scale was being prepared; but the motion was carried.

REMUNERATION FOR PART-TIME EMPLOYMENT

The meeting approved the increased scales of payment for part-time work with local authorities; the increase on the 1938 figures, which is one of 40% for general practitioners and of 60% for specialists, has been in operation since last November.

CONSCRIPTION OF WOMEN DOCTORS

Dr. **Janet Aitken** won the meeting's support for a resolution passed by the Medical Women's Federation to the effect that the power to conscript doctors should be applied equally to men and women.

Annual Meeting

At the association's annual meeting on July 23 Sir **Hugh Lett**, the president, said that it had been decided that the affiliated and daughter associations in the Commonwealths should be invited to coöperate in the establishment of a British Commonwealth Medical Council. Each would appoint its own direct representatives, and meetings should be held in the principal centres overseas as well as is in London. It was also proposed to establish an Empire Medical Advisory Bureau at B.M.A. House, to advise and help those who came to this country from the Commonwealth and the Colonies for postgraduate or undergraduate study.

As a result of a world medical conference held in London last September on the initiation of the association, the World Medical Association came into being and this, he said, would hold its first annual meeting in Paris next September. The W.M.A. would be complementary to the W.H.O.; for while the W.H.O. would function at government level, the W.M.A. would function at professional level. The American Medical Association had, he added, just joined the W.M.A., which had already set on foot an inquiry into the trend of State policy in relation to medicine in different countries.

DENTAL HYGIENISTS

The Minister of Health, addressing the British Dental Students Association at Leeds on July 16, said that statements have been made that the Government intend to dilute the dental profession by employing ancillaries to undertake treatment which should properly be carried out by dentists. This was not true. The Teviot Committee, the majority of whose members were dentists, had recommended that a scheme for the training of dental hygienists should be initiated forthwith on such a scale as would provide an adequate test of their value. "The Government," said Mr. Bevan, "have accepted this recommendation. It is proposed to proceed with the experiment; but, until its results are known, no decision as to the future use of hygienists will be taken." There was no foundation for the suggestion that the Government intend to authorise dental technicians to undertake dental work which is at present the province of registered dentists. Technicians had a very important part to play in the new service but no alteration in the relations between dental technicians and dentists was contemplated.

In England Now

Running Commentary by Peripatetic Correspondents

THE Sheldonian Theatre was in summer mood, which tended to the bedels, when the closing session of the ysiological Congress was preceded by a convocation which honorary doctorates in science were conferred a distinguished pentarchy.

August in appearance and name, medium and bearded, iitening in age, Krogh, whose mien defied the Nazi olers he escaped, fulfilled our imagery of "a most ligent inquirer" whose "accuracy and elegance of ethod have led to those discoveries which have won m world-wide fame" and Nobel prize. Szent-Györgyi, 1o followed, as after Lind, seemed a veritable Puck, the discoverer of certain constituents of muscle, ranged spirally one around another," who well might dle the globe salving sailors "from the terror of scurvy"; d his later expression of thanks on behalf of the ngress reflected the goodfellow he was to conclude in rse! From the Rockefeller Institute and not from ensington Gardens came Herbert Spencer Gasser, ung in mind and long of limb, sized-companion of the rator and worthy American cousin. We looked to marvel at a great scientist who proceeded like 'a ief set to catch a thief' to detect those electrical anges that form a nerve impulse" with "an electrical vice" and "showed that each nerve-fibre sends its essages at a stable rate, but the smaller fibres more wly than the greater." Dr. B. A. Houssay "determined that he must live where the airs are good—Buenos ires—and in himself most certainly gives proof of the iceronian) theory that a man's life and character rrespond in quality to his native climate," said the rator; and this benign harmony was very evident in is short lively personage, hair dark in colour though te in middle age, who shared secrets with the conductor of the endocrine orchestra" to tell us that the agent exciting this disease (diabetes) in mankind, in the lower animals, is a hormone liberated by the aterior lobe of the pituitary gland itself." The young artner of "Frederick Banting, of immortal memory" ho shared "in those researches which discovered in ie pancreas of animals a substance of sovran aid to iabetics" was presented last. This fine and fair Canadian ousin was also comfortably cast for studies on the metaolism of fat. In Canada's wavy-navy, in war-time, "by adically decreasing the strain placed upon men so engaged e effected great improvements in submarine detection" nd he is the very embodiment of "a good messmate."

The visitors have gone home. To the far corners of ie earth they take their remembrances and our not considerable invisible exports—our good wishes and newed friendship.

* * *

Some years ago I received several cordial invitations go to the United States of America, but I didn't see ow I could possibly make both ends of the Atlantic eet, let alone visit both Coney Island and Hollywood. colleague however told me that the thing to do was work one's passage there and back as a ship's surgeon, nd my informant, who had done it himself, undertook introduce me to the appropriate shipping magnate. he introduction was effected after a big provincial inner, when the shipping magnate appeared to be omfortably in liquor and I was unusually tongue-tied. lind you, he may have always looked like that. And may I. I don't know. At any rate he seemed to emember me when I wrote to him, and replied by sking for a testimonial as a necessary formality emanded by his board. So I approached one of my igh-up friends in Harley Street, off whom I usually ake lunch when I am up in town, and asked him for a ood strong one. He doodled for a long while and then hrew down his pen saying, "Write your own damned estimonial and I'll sign it."

I tried hard to remember the nicest things that had ver been said about me, and couldn't recollect a thing. o I asked myself, "What's the very nicest thing you ould say of anybody?" I wrote it down carefully, ny high-up friend signed it, and I sent it off. Then for nonths I waited, wondering why I went on hearing nothing from the shipping company. The testimonial couldn't have been nicer. It ran: "This is to certify that of all my professional colleagues there is no-one with whom I would rather be shipwrecked on a desert island than with Dr. Peter Quince."

Eventually the penny dropped.

* * *

I imagine every G.P.'s wife is clamouring for a robot telephone. They know what it would mean, not only in time saved, but in the saving of emotional stress and the conservation of lipoids for exhausted suprarenals. A robot is undisturbed by pity, but it could get aggressive if it got stuck in the groove; "Dr. Blank is out, ring again in . . . again in . . . again in . . . again in . . ." How charming of it to be unmoved by rudeness, trivial calls, patronage, and pestiferousness; but its worst trick would surely be the "play-back" which says, in Lady Tweedlehampston's rasping tones, "Will the doctor ring Lady T. the moment he gets in?" Why stop at a robot phone? Why not a garage-door-opener, a front-door-answerer (the repertoire to include "Dr. Blank's away today; come again another day"). The robot phone could be fitted with an amplifier so that the patient could place the phone microphone below the left nipple with the preliminary words, "and here is the sound of my heart, doctor." In fact, the whole thing could probably be linked up with your electrocardiograph. This would save a lot of trouble. Oh yes, the G.P.'s wife would love to have one, but my wife is pretty certain that I wouldn't know we had it until I bumped against the thing in the hall. All this robot-mechanism will be controlled by a large switchboard so that by July, 1948, the kitchen will look like the cockpit of a modern bomber; then, on the Appointed Day, in one moment of careless rapture I shall press all the knobs at once, and Lo! we are nationalised.

* * *

The peripatetic correspondent writing about illegal immigrant ships (July 5) recalls an incident which occurred when one of the first of those ships arrived in port. There were a number of stretcher cases lined up waiting for the M.O., with as wide a variety of symptoms as one might find after searching through "Hutchison and Hunter." The M.O. was a dour Scot, who knew all there was to know about hysteria—and more besides. After examining the cases, he told a large proportion of them to get up and walk. The Tower of Babel does not hinder a determined Scot, and the effect was instantaneous. A corporal had watched the whole procedure with considerable admiration. "Blimey, sir," he said, "it's better than Lourdes."

* * *

What finally decided me to decline an offer of an administrative post was wood-turning.

At first I was tempted to give up my busy general practice and take a nice office job because it would give me plenty of time to do this; at present my hobby is like the carrot in front of the donkey's nose, for all I can hope to get in is about half an hour around midnight. But in a few minutes I had a vision of the house crowded to the front door with wooden bowls, plates, ash-trays, candlesticks, cups, disks, and twiddley bits, in all kinds of wood. Where would I get all this wood? It is impossible to buy it these days, and I am pleased to get a little bit of mahogany (which was apparently the centre-piece of a lavatory seat), or a heavy piece of jarrah which was left over from making a laboratory bench; once I had a piece of Canadian cedar which a dock pilot had treasured for years and reluctantly parted with, and another time a piece of a beam of a house which was beautifully dry and had the loveliest grain.

Kept in its right place all this is fun; it would spoil the joy to have too much of it.

* * *

You can't beat our old dog for perseverance. We watched him trying to get the marrow out of a knuckle bone the other day. First he stuck the open end in his mouth and sucked hard, but nothing happened because he hadn't drilled a hole in the other end first. I pointed this out to my wife, who said, "Leave the dog alone. He's doing his best and he's enjoying himself." Next he tried to stick his tongue inside the bone, but found that he couldn't reach far enough up. Several times it almost seemed as though he were trying to get himself into the marrow cavity. Eventually he gave up the tongue method and started the foot, or paw, method. Keeping one paw firmly fixed on the bone he tried to stick the other one inside. However, that also was doomed to failure because the external diameter of his paw was greater than the internal diameter of his bone. Just then my wife looked up, "Why don't you help the poor hound, instead of laughing at him?" she said. So I fished the marrow out with the end of a spoon from whence it disappeared rapidly down the dog's throat. I feel there is a moral in this somewhere.

* * *

Congresses may come and go; but the standard set by the Fifth International Congress of Pediatrics, held at the Waldorf Astoria Hotel in New York, will be difficult to rival. The meeting, at which 56 nations were represented, lasted officially from July 14 to 17, but the excitement began many days before that with the arrival of the first delegates from countries outside the United States. Pædiatricians who had known each other before the war met once more, and many new friendships were made before the conference began. These reunions and new associations were encouraged by the way in which Dr. Emmet Holt and his wife threw open their doors to delegates of all nationalities. They and the other organisers must have worked for months to make the congress a success.

The large number of exhibits and demonstrations arranged at the Waldorf by scientists, pædiatricians, and others working in the U.S.A. provided profitable entertainment for the whole four days. Practically all the papers and oral communications were given by the representatives of other countries. Monday (14th) was devoted to registration, exhibits, and an informal "smoker," and by the evening most people had sorted themselves out, decided what they wanted to see, and made contact with their friends. The congress was formally opened on Tuesday morning under the presidency of Dr. Henry F. Helmholz, and in the afternoon papers on nutrition were read by representatives from Great Britain, the Netherlands, South Africa, Denmark, Greece, and Norway, while delegates from other countries joined in the discussion. Communications could be made in English, French, Spanish, or German, and translations into all these languages could be heard through earphones. On Wednesday there were three short plenary sessions in the morning and less formal sectional meetings at the New York Academy of Medicine in the afternoon. In the evening we embarked on a six-hour steamer trip up the Hudson River. It had been a very warm day and the coolness and relaxation of this evening were much appreciated. Supper was provided on board and a great deal of shop was talked, but the beauties of the Hudson, Washington Bridge, and the lights of New York were not altogether neglected. On Thursday, after a day of plenary sessions, 1600 of us sat down to a banquet in the ball-room of the Waldorf Astoria, followed by speeches and then dancing. Most people went to bed feeling that they had not seen enough of the exhibits and demonstrations but they had had a wonderful week. After the official congress was over there were clinical demonstrations at the Babies Hospital, the Bellevue, Mt. Sinai, New York Hospital, and the Postgraduate Hospital, and on July 21 tours began to Boston, Chicago, Minneapolis, Rochester (Minn.), Detroit, and the Niagara Falls. Many arranged their own tours to see people or work which specially interested them.

Few of the delegates from Europe could have gone to the congress without financial assistance, and this was generously provided from funds collected by the organisers. I hope the people who provided this money will learn how much it was appreciated. The great value of such congresses lies in the chance they give people with kindred interests to get together, discuss their common problems, and hear about new work and new techniques. In New York the programmes were short enough to allow ample time for private talks, and the many minor conferences arranged by six or seven people were probably the most valuable part of the whole visit.

By the end of July most of the foreign delegates had left, some for lands where freedom and plenty have not yet returned, but all with a warm sense of gratitude to the pædiatricians of the United States.

Letters to the Editor

FATTY HERNIATION IN LOW BACK PAIN

SIR,—In your annotation last week you reported this subject and its recent confirmation by and Hench.[2] As to the accuracy of our c shall trust to future workers for further confirmation refutation.

You mention three difficulties in the way of acc work without reservation, and in the circumstances feel that some comment on these is called for.

(1) "Lack of anatomical evidence as to the of Copeman and Ackerman's basic fat pattern." is an academic point which is not relevant to our tion that fat lobules wherever they are situated become œdematous, and provided they are c within an indistensible fibrous covering or fascia, the result give rise to pain. Such pain moreover be temporarily abolished by dehydration of the cellular type.[3] If this increase in tension is herniation of the lobule will in certain cases occur, this may perpetuate the condition.

(2) "Subcutaneous fatty nodules are to be found over 50% of persons not complaining of backache" ourselves made this observation and suggested that abnormality which differentiated our nodules from painless type is the presence of the pathological non-inflammatory œdema which we demonstrated.[1]

(3) "These views conflict with those of . . . Burns Young, who believe that the prolapsed disk is the of most cases of persistent low back pain." The two distinguished orthopædic surgeons hold this can scarcely be considered as proof that the lesion cribed by us has no existence. We have never moreover that our lesion constitutes the cause of important proportion of cases of "fibrositis" of back—merely of those in which we have c demonstrated it by biopsy.

W. S. C. COPEMAN
W. L. ACKERMAN.

London, W.1.

DENTAL CARIES

SIR,—The letter from Dr. Neumann, of New York in your issue of June 7 cannot be allowed to p unchallenged.

The premises with which Dr. Neumann begins letter are as follows:

1. "The teeth being part of the bony skeleton, it is able to suppose that they, like bone, react to such with demineralisation and atrophy."
2. "For various reasons these changes cannot readily demonstrated in teeth, by either radiography or analysis."

There is of course no doubt that dental caries is a associated with civilisation, but the theory that odontoporosis, as Dr. Neumann terms it, is the which leads to dental caries requires some exp

With regard to Dr. Neumann's first premise, the in dental caries is primarily upon the inorganic p of the enamel of the tooth, or possibly, according to workers, upon the organic matrix. It is the e therefore, that bears the brunt of the carious a The enamel is formed by the enamel organ, an epit structure derived from a downgrowth of the epithelium. After eruption, the enamel organ atrophied, no living cells with nuclei remain within enamel. There is no analogy between the reactions bone *and the reactions* of the *acellular* ect enamel. Osteoporosis in bones is of course about through the mechanism of osteoclasts. suggest that the processes of "demineralisation" bones and teeth are analogous, presumes either osteoporosis can obtain without osteoclasis or osteoclasts or similar cells in some way absorb erupted enamel; the latter phenomenon has never observed, and both theories are equally untenable.

The further premise that "for various reasons changes cannot readily be demonstrated in teeth, either radiography or chemical analysis," as a prelude

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1. *Ann. rheum. Dis.* 1947, 6, 201.
2. *Ibid*, p. 204.
3. *Lancet*, 1946, ii, 553.

development of the argument along less precise and entific lines. is curious.

Thewlis, working at the National Physical Labora-y, has shown that very fine differences in degree of cification can be demonstrated radiologically. Micro-emical analysis will determine fine differences in emical composition. Histology, though at times mittedly dangerous, at least would show the presence osteoclastic cells, should they be present.

Later in the letter, in order to sustain the argument, e idea of any connexion between fluorides and dental ies is dismissed. It must be pointed out, however, at while much is still unknown, research in this country, the United States, and elsewhere has at least proved yond dispute the connexion between high fluoride ake and low caries incidence. As I have already id, the connexion between civilised diet and dental ies is not in doubt; but Dr. Neumann's suggestion at the disease is due to disuse odontoporosis, based arguments which do not bear critical analysis, may most misleading.

London, W.1. ALEXANDER B. MACGREGOR.

HOSPITAL RECORDS

SIR,—Mr. Cotton's article of June 21 (p. 881) presents merous observations that will be of great value in ture hospital organisation, and it is most important that perience such as his should be available to guide others anning records.

I have attempted to plan a system which has only been ied on a much smaller scale; but it has been adapted to of practical value to the clinician and may therefore erit incorporation in a planned national system. It based on the Copeland-Chatterson Paramount Sorting stem, which has already been employed for medical cords in special departments but which I have adapted general use in all hospital departments (see figure). his has been achieved by using the Medical Research ouncil's classification of diseases.[1]

Essential particulars regarding the patient and clinical tes are summarised in the centre of the card. Coding the data is recorded by punching out the appropriate holes round the edge. If a needle is passed through the corresponding holes in a batch of cards all those punched will fall out and be sorted from those not punched.

Compiling a complex form regarding hospital patients for some central authority will be regarded as one of the most irritating features of a National Health Service. If the records were compiled on a card such as this the cards could be forwarded to a central bureau, the information coded there, and the cards returned for use at the hospital concerned. At a central bureau obviously a punch-card system with mechanical sorting would be employed, and it might be possible to transpose the records from a Copeland-Chatterson card to a punch card by mechanical means. The apparatus for mechanical sorting is elaborate and expensive and obviously will only be available at a few selected centres.

The return of the cards to the hospitals from whence they were sent would mean that the clinician had them at hand for his personal use. Instead of being obliged to fill in forms in which he had no interest (to put it mildly), he would compile a record card which would be always available for reference. If he was making an inquiry which involved searching through a large number of records he could avail himself of the facilities of mechanical sorting by means of the duplicate set of punch cards kept at the central bureau. Record cards compiled by a clinician who is interested in their value are going to afford much more accurate information than a form completed under compulsion and forwarded to an inaccessible Government department.

Such a system will be useful to the clinician in many ways. All cases of a certain disease can rapidly be traced and subdivided with regard to complications, symptoms, or age- and sex-incidence, while the relationship between occupation and disease can be studied both ways. Complex relationships can readily be studied—for example, the age-incidence of a particular complication occurring in a disease or a group of related diseases, or the incidence of different causes of a specific symptom at different ages. In practice the system is often useful in unexpected ways. Thus a rather unusual rash is seen which is difficult to classify, and perhaps is thus not properly coded. Later I meet a similar case and want to trace the first case for comparison. I cannot recollect

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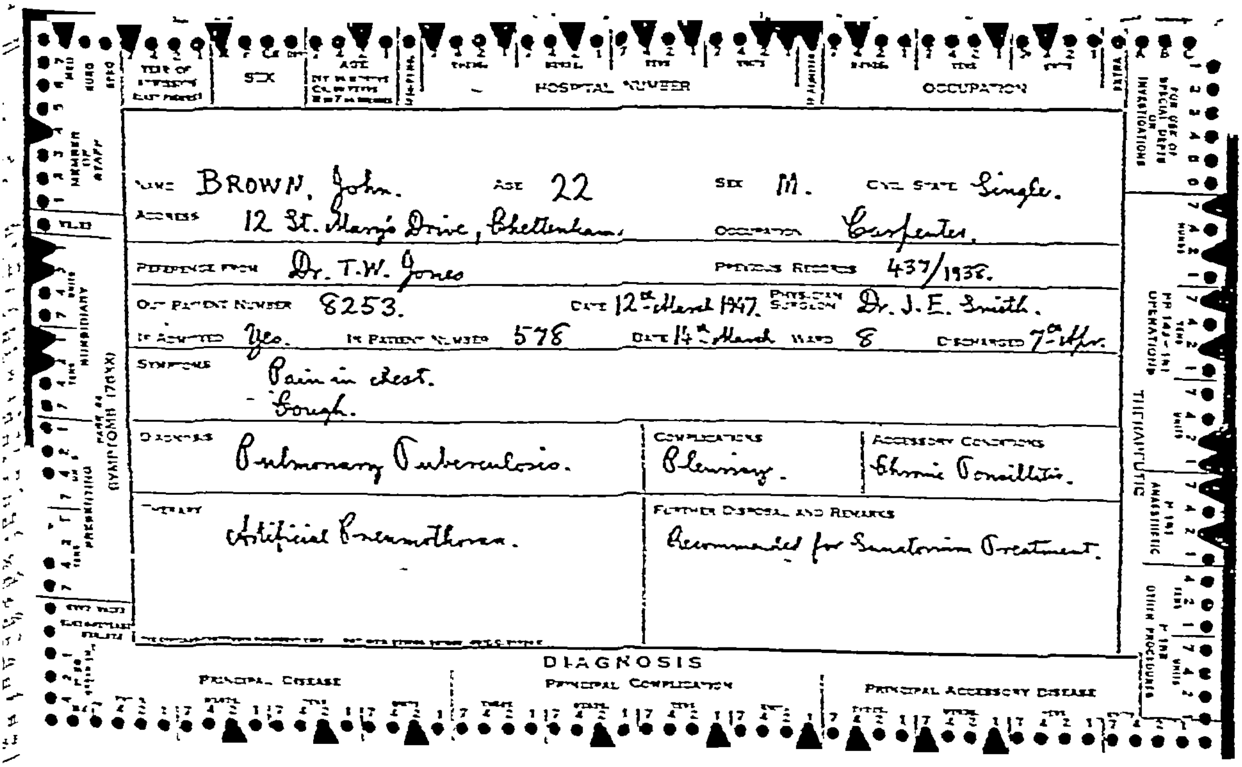
1. *Spec. Rep. Ser. med. Res. Coun., Lond.* no. 248, 1944.



NAME BROWN, John. AGE 22 SEX M. CIVIL STATE Single.
ADDRESS 12 St. Mary's Drive, Cheltenham. OCCUPATION Carpenter.
REFERENCE FROM Dr. T.W. Jones PREVIOUS RECORDS 437/1938.
OUT-PATIENT NUMBER 8253. DATE 12th March 1947. PHYSICIAN SURGEON Dr. J.E. Smith.
IF ADMITTED Yes. IN-PATIENT NUMBER 578 DATE 14th March WARD 8 DISCHARGED 7th Apr.
SYMPTOMS Pain in chest. - Cough.
DIAGNOSIS Pulmonary Tuberculosis. COMPLICATIONS Pleurisy. ACCESSORY CONDITIONS Chronic Tonsillitis.
THERAPY Artificial Pneumothorax. FURTHER DISPOSAL AND REMARKS Recommended for Sanatorium Treatment.

Specimen card (reduced from 9¹/₂ × 6 in.).

the patient's name or the main diagnosis, but I remember she was a girl of about 14 with scoliosis whom I saw about a year ago. On that information she could easily be traced.

The system has been tried for about a year in the children's department of the Cheltenham General Hospital, and it is hoped that some clinicians will give it a more extensive trial. The essential purpose of this letter, however, is to emphasise that the incorporation of some such system in the records of the National Health Service would add greatly to their efficiency and accuracy as well as being of practical help to the clinician in his daily work.

Cheltenham. C. P. DONNISON.

BATHING AND POLIOMYELITIS

SIR,—A striking omission from official advice on the control of infantile paralysis is specific reference to the danger inherent in the use of swimming-pools and in river bathing.

This is in striking contrast to public-health measures enforced in other countries. In Canada, for example, bathing establishments are all closed immediately a prevalence of poliomyelitis reveals itself—and this in a country where towns are widely separated and focal densities are much sparser than in Britain.

Unfortunately, it seems that we are on the brink of a widespread epidemic. It is generally believed that the causal virus is harboured predominantly in the intestine; and there is little doubt that, at the moment, there exists a considerable proportion of carriers.

The danger in bathing is not confined to the possibility of receiving the virus; muscular overstrain, fatigue, and chill provide, in bathing, an additional risk, since these may potentiate clinical attacks in cases where infection might otherwise have remained latent or abortive.

At this time of year, with children returning for school holidays, these considerations assume a very special importance.

London, W.1. MICHAEL ALBURY.

VITAMIN A IN LEUCOPLAKIA

SIR,—Last week's annotation leads me to say that in the past year I have used high dosage of vitamin A in a number of cases of so-called "leucoplakia vulvæ" with marked success in the relief of symptoms. My results are recorded in the 3rd edition of my book, *Diseases Affecting the Vulva*, which is now in the press.

The successful use by dermatologists of vitamin A in the treatment of various hyperkeratotic eruptions suggested to me that it might be effective for these vulval cases. I have given vitamin A in capsules or in drops by mouth only; I have not used hydrochloric acid but have occasionally prescribed an alkaline mixture half an hour before meals in cases with sluggish liver or gall-bladder complaints. One of the main difficulties of vitamin-A therapy in Great Britain is that concentrated preparations are in short supply and treatment may be interrupted in consequence.

For many years now I have been making a study of vulval cases of this type, and recently I have gained the impression that the numbers presenting themselves are increasing and that the type is more severe. Inquiry among these women has revealed that most of them are in the habit of surrendering the greater part of the rations which contain vitamin A to the male members or the children of their households. They themselves thus go short of vitamin A, and all declare how intensely they miss an adequate supply of fresh milk.

The term "leucoplakia" was originally suggested for whitish lesions occurring on mucous surfaces, to distinguish them from white-looking eruptions on the skin; the word is still used in this sense by dermatologists. The term "leucoplakia vulvæ" is used by gynæcologists not only for whitish eruptions on the inner or mucocutaneous surfaces of the vulva but for more widespread eruptions on the thighs, genitocrural furrows, and buttocks, and around the anus. The histology of this eruption is identical with that of lichen sclerosus—a variety of lichen planus. Lichen planus occurs on mucous surfaces and on the glabrous skin, and not infrequently the woman with a lichen-sclerosus eruption affecting the vulva and adjacent regions—i.e., what is termed "leucoplakia vulvæ"—has a lichen-planus eruption in the mouth and may have patches of lichen sclerosus at other sites remote from the vulva.

Your annotation speaks of "wide excision" as the most effective method of treatment. I agree that the results of this operation are often unsuccessful; and may I add, though I have seen a similar eruption on the scrotum; I have never heard it suggested that the scrotum should be excised for a non-malignant skin eruption.

London, W.1. ELIZABETH HUNT.

INTRAVENOUS IRON

SIR,—Your leading article of July 12 states that the hæmoglobin content of the circulating blood is 150 g. This is surely incorrect? If the volume of the circulating blood is taken to be 6 litres, and the hæmoglobin concentration 14·5 g. per 100 c.cm., the amount of hæmoglobin is of the order of 900 g.

London Hospital Medical College, E.1. J. C. MITCHELL.

*** We regret the mistake. The figure intended was 750 g.—ED. L.

Parliament

ON THE FLOOR OF THE HOUSE

ALL who were with the B.L.A. in Germany or with the B.A.O.R. in its earlier period must have known something of the currency deals, with cigarettes as a prime article of exchange, which have led to the loss of £58 million to the British taxpayer. They will recall the swapping of cigarettes for gold watches and jewellery, and the sale of ration bars of chocolate for a sum in marks which could be changed into English currency for perhaps 25s. In Paris soon after its liberation the friendly gift of a piece of ration soap to a lady would raise the gravest concern in the recipient, being roughly equivalent to a present of a string of pearls before 1939. The attack launched last week on the Secretary of State for War, Mr. Bellenger, served at least to place on record a part of the story as it affected Europe. But all over the world the war has degraded standards of personal conduct; and this degradation is part reason for the lack of confidence, the distrust, and the suspicion which haunts the body politic and the body economic in most countries. What is singular about the case brought against Mr. Bellenger is that in Great Britain such a loss of money is still regarded as a subject for the moving of what was practically a vote of no-confidence. We have kept our national resistance to black-market blandishments up to a relatively high level.

A Scots day including Scotch Education showed that when Sassenachs are absent, the representatives of the northern kingdom, of all parties, including the Communist, manage to agree to a very large extent among themselves. There is much to be said for self-government of areas which are geographically unified and where problems are not too vast for the ordinary mind to keep in clear relation to everyday experience.

The draft regulations on pensions and superannuation in the National Health service cover 87 pages. Introducing them, the Parliamentary Secretary to the Ministry of Health laid stress on "interchangeability" between one branch of the Service and another. It is intended that no-one shall be penalised by the new scheme if transferred from an existing scheme. And he gave a specific assurance that the principle of interchangeability as regards benefits, would be kept open so that other classes of persons engaged in medical or health work, besides those at present within the scope of the Act, can be included in the future.

MEDICUS, M.P.

FROM THE PRESS GALLERY

N.H.S. Superannuation Regulations

In the House of Commons on July 24 Mr. J. EDWARDS, Parliamentary Secretary to the Ministry of Health, asked approval for the draft National Health Service (Superannuation) Regulations, 1947. They had, he said, been fully discussed with all the representative associa-s concerned, and he was not aware of any opposition. scheme would cover all employees of regional boards, erning bodies of teaching hospitals, executive councils, other bodies set up under the Act, together with practitioners providing the general medical and tal services—probably a total of more than 300,000 ple. It was contributory, requiring contributions of of remuneration from the employee, and 8% from employer, except in the case of manual workers. re the rates were 5% and 6% respectively. The ployer's contribution would be paid by the Exchequer n the accounts of the hospital boards and other ies.

fter describing the benefits payable,[1] Mr. Edwards l that arrangements were made for interchange with federated superannuation scheme for nurses and the erated superannuation scheme for universities, and other interchanges. The object of the superannua- n scheme was to serve those who came under it— to tie them up in a system which might erect barriers en they wished to move from one employment to other. At the same time, the extensive interchange angements should help to promote wider experience ong the staffs.

The teething stages would set substantial problems. large number of persons would enter from local- ernment service, and there would be a considerable mber from voluntary hospitals who were now subject a variety of arrangements ranging down through ral expectations to nothing at all. The general n was to preserve existing rights as far as possible, and ensure that nobody would be worse off than before. ose who were now subject to the federated schemes uld have an option to continue on the same condition they wished, or to come into the new scheme and do at they liked with their policies. Those subject to her arrangements would be allowed to carry on with em if they could show that otherwise there would be due hardship. Any causes of dispute would be ferred to tribunals.

Voluntary-hospital officers of at least ten years' service ho had previously had expectations but no rights ould have the value of their expectations assessed relation to past service and, subject to Treasury pproval, a supplementary payment would be made on tirement in addition to what they earned in the new heme. In dealing with these provisions it was intended take a sympathetic and generous attitude. The heme also provided that all previous hospital service ould count for qualification purposes in the new scheme. his was of substantial benefit to those who now had no ghts; for though the service would not count in the lculation of benefit, it would mean that such an officer ight immediately become eligible for benefits—e.g., r the death annuity, which had a minimum of one ear's salary. A new division was to be set up in the inistry of Health to deal with the arrangements for terchange.

Mr. RICHARD LAW asked that a simple guide to the [illegible] ld be published. Regulation 38 (m), [illegible] a practitioner (doctor or dentist) who ad a contract with an ordinary life assurance company o opt out of the superannuation proposals: to help im pay his premiums the health authorities would pay him the share they would have paid for him under the scheme. This regulation, however, applied only if the practitioner joined the health service by the appointed day: if he did not do that, because he was rather suspicious of the service at first, he would lose this advan- tage. In Mr. Law's view, this introduced an element almost of blackmail; it was exercising very strong pressure on these practitioners to enter a service in which, it might be, they did not yet feel full confidence. In counting years of service for pension purposes the doctor was placed at a decided disadvantage by the fact that a manual worker could enter the service at the age of 18, whereas the doctor could not do so till he qualified, at perhaps 23, 24, or 25. Again, what would be the position of the practitioner who entered at 56? The retiring age was 65, and he did not begin to qualify for pension until he had had ten years' service. This appeared to be a real injustice. It could not be soundly argued that the Government, having paid compensation once, could not do so again by giving added years under the superannuation scheme. Nobody could say what the value of money would be in ten years' time, but it was likely to depreciate. That meant that the practitioner who was compensated for his practice in terms of today's money might find on retirement that his compensation was worth considerably less than at present.

Dr. HADEN GUEST hoped that the principle of inter- changeability would be maintained to enable different sectors of medical work to be brought in on an equal footing. At present there was no more than the founda- tion of a health service, which might be greatly and widely extended.

Colonel M. STODDART-SCOTT hoped that the Minister would interpret the regulations sympathetically and generously, for if a great National Health Service was to be built up the people who were to work in it must be contented and happy. It was quite easy for the Minister to coerce voluntary hospitals and to direct local authorities, but when it came to the personnel he must show a wise and "motherly" attitude and convince them that he was interested in every aspect of their welfare.

Sir WILLIAM DARLING called attention to regulation 33 which states that "an officer who is dismissed, resigns, or otherwise ceases to hold his employment in con- sequence of an offence of a fraudulent character . . . shall, if the Minister so directs, forfeit all claim." Who, he asked, was to be the judge of an offence? Was there to be an arbitrary decision by a medical superintendent or a hospital matron or somebody else?

Dr. H. B. MORGAN urged that care should be taken to see that health-service workers did not lose their right to superannuation through technicalities of legal procedure. If for health reasons a health-service worker was compelled to retire prematurely, superannuation should be given after a proper hearing and exchange of medical evidence and testimony. He knew of men who had been compulsorily retired on wrong medical diagnoses.

Mr. H. N. LINSTEAD said that there would be many people of one kind or another—not only doctors, but also radiographers, physiotherapists, and speech-therapists— who had been in private practice, and who, thinking that private practice was going to disappear, would wish to come into the public service at a late period of their lives. They would have had little hospital service on which to calculate for superannuation, and he hoped it might be found possible to extend in spirit hospital service to cover at least some of these older and experienced practitioners.

Mr. EDWARDS said that the Ministry of Health was preparing a simplified version of the regulations which would be available to everyone who wanted it. As to the restriction of claims as regards insurance policies, it would be difficult to have a different option in this respect from those permitted in other cases where the appointed day was the operative date. The Government could not go on indefinitely into the future and allow people to ask for these options. It had not been originally intended to have any such option at all, but it had been put in at the request of the British Medical Associa- tion representatives. Nor was it possible to single out doctors by adding years in respect of their training: a scheme of this kind could deal only with actual service. Doctors would now enter the service when they were qualified at the age of 23 or 24, and they could complete the full 40 years before they retired at 65, and thus could earn the full pension. The elderly practitioner, who was now relying on the value of his practice to provide for his retirement, would not be any worse off under these arrangements, and in addition he would earn some- thing in the national health scheme; but he could not expect some special benefit because he had entered late in life. Referring to Dr. Haden Guest's remarks on interchangeability, Mr. Edwards said that the Govern- ment wanted the scheme to be as broad in scope as they could make it, and if at any stage it was found to be restricted they would not hesitate to alter it. As to the loss of rights due to misconduct, presumably a disciplinary code would be worked out in collaboration with the people representing the new service, and there was no reason to suppose that the negotiating machinery would find it difficult to handle these cases. He felt that in this enormous scheme no real injustice had been done to any class of contributor, but if in the light of experience need was found for changes, the scheme would certainly be modified.

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[1] See *Lancet*, July 5, p. 31.

The motion to approve the draft regulations was agreed to.

QUESTION TIME

Salaries of Veterinary Officers

Mr. S. HASTINGS asked the Minister of Agriculture how many appointments for veterinary surgeons in his Animal Health Division were unfilled; and what salaries were being offered for these posts.—Mr. T. WILLIAMS replied: There are about 140 vacancies on the permanent staff of which 75 are at present filled by temporary officers. These vacancies are in the basic grade for which the salary scale in the country is £520 for men of 25 rising to a maximum of £960. The salary is slightly higher for veterinary surgeons stationed in London and certain provincial cities.

Mr. HASTINGS: Does my right hon. friend regard this basic salary as sufficient considering the long training and the responsibility of the work involved?—Mr. WILLIAMS: My advisers are satisfied that these salary scales are regarded as satisfactory when compared with those of other professional and scientific civil servants.

In response to a further question by Sir E. GRAHAM-LITTLE, the Minister said that these salaries are substantially higher than those previously in operation.

Measles and Scarlet Fever in Scotland

Mr. W. ELLIOT asked the Secretary of State for Scotland what were the notifications and the deaths for measles and scarlet fever in each of the years from 1935 to 1946.—Mr. J. WESTWOOD replied: The following are the figures:

Year	Measles		Scarlet fever	
	Notifications	Deaths (all Scotland)	Notifications	Deaths
1935	7891	141	22,670	199
1936	30,981	610	18,320	172
1937	7543	119	20,493	123
1938	26,383	549	19,605	98
1939	3516	15	12,023	47
1940	26,125	262	8353	35
1941	4467	103	8760	26
1942	17,888	144	13,792	24
1943	13,601	88	14,722	22
1944	13,900	46	12,057	18
1945	12,714	89	11,654	15
1946	17,503	85	9774	5

Measles is not generally notifiable in Scotland but only in certain areas under local arrangements. About one-half of the 55 local health authorities have made such arrangements covering rather more than three-fifths of the population.

Botulism

In answer to a question from Mr. B. JANNER, Mr. A. BEVAN, Minister of Health, replied: There may be a risk of botulism from home-canned or home-bottled vegetables because the high steam pressure needed to ensure complete sterility during the canning process cannot ordinarily be applied in the home. Even this slight risk does not arise with home-canned or home-bottled fruit because of its acid content, or with beans preserved in salt. With commercially canned vegetables there has never been a reported case of botulism in this country and the risk is considered negligible.

Mental Defectives

Mr. S. SHEPHARD asked the Minister of Health how many persons who had been reported as mentally deficient were awaiting admission to an institution for treatment.—Mr. BEVAN replied: On Jan. 1 last, the latest date for which comprehensive statistics are available, the number was 3898.

Mentally Defective School-children

Mr. SHEPHARD also asked how many children of school age had been reported as mentally deficient and were still awaiting admission to an institution for treatment.—Mr. BEVAN: During 1946 the number of children reported under section 57 of the Education Act, 1944, was 4209. I regret that information is not available as to the number now awaiting admission to an institution.

Public Health

Vital Statistics for First Quarter of 1947

THE Registrar-General announces[1] that births were registered in England and Wales quarter ended March 31, representing a birth-rate 22·8 per 1000 total population. This is the birth-rate recorded for any March quarter since For the same quarter of 1946 the number of 181,220 with a rate of 17·1: for the December of 1946 it was 221,815 with a rate of 20·5. births totalled 12,286, or 5·1% of the total births tered, compared with 14,930, or 8·2%, in the same of 1946.

The following table compares the birth-rate quarter with the annual rate for each year from

RATE PER 1000 POPULATION (ENGLAND AND

Live births registered in ..	1938	1939	1940	1941	1942	1943	1944	1945	1
March quarter	15·3	15·0	14·8	14·3	15·3	16·6	17·4	16·9	17
Whole year ..	15·1	14·9	14·5	14·1	15·6	16·2	17·5	16·1	19

Deaths registered in the quarter were 181,933, a death-rate of 17·2 per 1000 compared with 14·7 for same quarter of 1946. Deaths of children under year numbered 12,502; the provisional infant-mo- *rate of 55 per 1000 related live births* was 11 per below the average rate for the first quarters of ten preceding years 1937–46.

The "natural increase" of population—i.e., excess of births over deaths in the quarter—was while the corresponding excess for the March of 1946 was 25,995.

There were 74,820 marriages during the quar this is 1009 more than the average for the same of the five years 1942–46.

Sickness Survey.—A new feature of the return section containing the results of a sample inquiry the prevalence of sickness during October, and December, 1946. Each month about 2900 people over 16 (so selected as to be representative of the population) were interviewed by workers for the Social Survey and questioned about their health during the previous two months. Similar sample inquiries have been undertaken for the Ministry of Health since 1944, but this is the first time the results have been published in this way. They are recorded in a series of tables showing the incidence and severity of illness and injury, the days of incapacity, and the number of medical consultations. The incidence of sickness in certain occupations and income groups is also shown.

In November, out of 2523 men interviewed, 1570 suffered from some illness or injury, and 1090 of them had consulted a doctor; out of 3182 women, 244 complained of illness and injury, and 1420 had a doctor. Colds and influenza caused far more days of incapacity in November than any other single illness, respiratory diseases and rheumatism being the next most disabling forms of sickness. Taking the three months as a whole, illness and injury of some kind was reported by 72·3%; there was an average loss of 1 day a month for all persons interviewed; 60 out of every 100 people reporting illness consulted a doctor, and there was an average of 27 consultations for every 100 illnesses recorded. Among housewives, illness injury was reported by 78·4%, compared with average of 72·3% for all people interviewed.

It is proposed to include the results of later inquiries in subsequent issues of the Registrar-General's Quarterly Return.

THE SECOND QUARTER

The *Registrar-General* has also published[2] for the June quarter. Live births numbered 235,0 stillbirths 5805, and deaths 118,169; the corresponding rates were 22·0, 0·54, and 11·1 per 1000 population.

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1. Registrar-General's Quarterly Return of Births, Deaths and Marriages for the March Quarter, 1947. H.M. Stationery Office. Pp. 27. 6*d*., post free 7*d*.
2. Registrar-General's Weekly Return of Births and Deaths for the Week Ended July 19, 1947. H.M.S. 6*d*.

Food Poisoning

st week[1] an account was given of an outbreak of poisoning in 16 people who attended a luncheon party wyford, Hants, on July 12. Examination of ducks se eggs were used for a blancmange eaten at the lunch revealed that two had been infected with salmonella me time. It is thought likely that eggs from these s caused the outbreak and also the carrier state d in residents and domestic staff.

Poliomyelitis

the week ended July 19 there were 177 notifications liomyelitis in England and Wales. This is the highest e since compulsory notification was introduced in ; previously, the highest figure was 85, recorded he week ended Oct. 22, 1938. It is feared that the l in the past week has been still higher and that the has not yet been reached.

ases are widely scattered: they occurred in 36 differ- counties in the week ended July 19. The overall ure is therefore one of a large number of outbreaks, etimes spreading locally a little, rather than of an lemic spreading from one centre. The number of ifications rises regularly every year about this time; this year the rise came early and has been more rapid n ever before. In the past we have never suffered the ere epidemics which have been experienced in some er countries. In New York, for example, in 1916 re were 9023 notifications among a population of ut 5½ million: in England and Wales in 1938 there e 1480 notifications in a population of about 41 lion. The highest weekly figure for New York in 1916 s 1200, as against our latest figure of 177 for the whole England and Wales.

ince July 1, 135 patients suspected of having polio- elitis have been admitted to L.C.C. hospitals; but ny of these did not develop paralysis. Since July 22 admissions have ranged from 7 to 16 a day.

The spread of the disease is difficult to control because every case with obvious signs there are many re with mild and indefinite illness. There are also fectly healthy carriers who cannot be recognised by practicable method. In the opinion of the Ministry Health, the essential principles in control are there- e to secure the segregation of suspicious cases of ness occurring in the contacts of a definite case, and limit the aggregation of susceptible persons. The act application of measures to this end must be a atter for the discretion of the medical officer of health.

Smallpox

There have been no confirmed notifications of smallpox ring the past week. The disease was suspected but s eventually excluded in a member of the Polish settlement Corps who entered England from Holland July 10.

The 16-day surveillance of contacts of the last cases Bilston, Willenhall, and Barnsley has now ended thout further incident. There is a reasonable chance at the country is once again free from smallpox.

Infectious Disease in England and Wales

WEEK ENDED JULY 19

Notifications.—Smallpox, 1; scarlet fever, 1036; hooping-cough, 1931; diphtheria, 202; paratyphoid, ; typhoid, 10; measles (excluding rubella), 8400; eumonia (primary or influenzal), 306; cerebrospinal ver, 60; poliomyelitis, 177; polioencephalitis, 16; cephalitis lethargica, 3; dysentery, 56; puerperal rexia, 136; ophthalmia neonatorum, 75; relapsing ver, 1. No case of cholera, plague, or typhus was tified during the week.

The case of smallpox, which was imported, was notified at bury and Wilton.

Deaths.—In 126 great towns there were no deaths from teric fever, 1 (0) from scarlet fever, 1 (0) from diphtheria. (0) from measles, 7 (3) from whooping-cough, 60 (5) from iarrhoea and enteritis under two years, and 3 (0) from fluenza. The figures in parentheses are those for ondon itself.

The number of stillbirths notified during the week as 216 (corresponding to a rate of 22 per thousand otal births), including 15 in London.

Notes and News

"IRON LUNGS"

THE growing prevalence of poliomyelitis raises the question whether enough "iron lungs" are to be found in this country. It will be recalled that in 1938 Lord Nuffield offered this apparatus to hospitals in this and other countries; and these were distributed approximately as follows:

England, Wales, Scotland, Northern Ireland, and the Services	750
Canada	347
Australia	198
India and Burma	183
South Africa	46
Eire	40
New Zealand	33
Newfoundland	14
British hospitals in North Africa, China, Egypt, France, and South America	10
Elsewhere in the British Empire	134
	1735

Provided they are still in working order, there should thus be sufficient machines in this country to meet all needs, though hospitals may have to help each other out.

ROYAL NAVAL MEDICAL SERVICE

THE Admiralty announces that applications are invited to fill vacancies for medical officers in the Royal Navy. Candidates below the age of 28 years are preferred; they must be medically fit for service at sea and in any part of the world. No examination in professional subjects will be held, but applicants will be required to attend for interview by a selection board. Selected candidates will be entered initially for a period of four years' short service. Officers who leave the Service at the end of this time will be eligible for a gratuity of £600, tax-free. At the end of four years' short service permanent commissions will be given to selected officers who wish to make the Naval Medical Service their permanent career. Officers on the permanent list are given opportunities for postgraduate study in order to obtain further qualifications and to specialise. Copies of the regulations for entry and conditions of service, including details of counting civil hospital time, and forms of application may be obtained from the Medical Director-General of the Navy, Admiralty, S.W.1, and from the deans of all medical schools.

University of Oxford

On July 25, as reported on pp. 182 and 187, the honorary degree of doctor of science was conferred on Dr. C. H. Best, F.R.S., Prof. H. S. Gasser, Prof. B. A. Houssay, Dr. August Krogh, and Dr. A. Szent-Györgyi. Next day the same degree was conferred on Dr. A. E. Barclay, honorary radiologist to the Nuffield Institute of Medical Research.

University of London

Mr. E. S. Horning, D.SC., has been appointed to the readership in experimental pathology tenable at the Royal Cancer Hospital, as from May 1, 1947.

Dr. Horning graduated B.A. at Oxford in 1924, M.SC. at Melbourne in 1925, and D.SC. in 1928. In 1925 he won a Victorian government research scholarship in biology at the University of Melbourne. In 1928 he was appointed cytologist to the Cancer Research Committee, University of Sydney. In 1930 he won a Rockefeller fellowship; and in 1931 and 1932 he held an honorary appointment on the staff of Washington University medical school. Between 1933 and 1937 he held a Beit fellowship at the Imperial Cancer Research Fund laboratories, and in 1938 he was appointed to the permanent scientific staff, where he remained until this year when he joined the staff of the Chester Beatty research institute of the Royal Cancer Hospital. He is the author of numerous original articles; a paper by him on the induction of glandular carcinomas of the prostate in mice appeared in these columns on Dec. 7 last year.

Dr. P. C. G. Garnham has been appointed to the university readership in medical parasitology tenable at the London School of Hygiene and Tropical Medicine.

Dr. Garnham studied medicine at St. Bartholomew's Hospital, qualifying M.B. Lond. in 1923. In 1924 he obtained a diploma in public health; and in 1928 he graduated M.D. Since 1925 he has served in the East African Medical Service, in which he became senior parasitologist in charge of the division of insect-borne diseases. He has made a special study of the epidemiology of malaria and of anopheles.

Dr. F. T. G. Prunty has been appointed to the university readership in chemical pathology tenable at St. Thomas's Hospital medical school, as from Oct. 1 next.

Dr. Prunty, who graduated M.A. at Cambridge in 1935, took his medical training at Cambridge and St. Thomas's Hospital, qualifying M.B. in 1941. In the same year he became M.R.C.P. After qualifying he was appointed house-physician at St. Thomas's Hospital. In 1944 he was awarded the Raymond Horton-Smith prize for his

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[1] *Lancet*, July 26, p. 156.

Cambridge M.D. thesis. Since then he has been lecturer in chemical pathology at St. Thomas's Hospital; and in the past year he held a Rockefeller travelling fellowship and a research fellowship in medicine at Harvard University.

Dr. F. R. Selbie has been appointed to the university readership in bacteriology tenable at Middlesex Hospital medical school, as from Oct. 1 next.

Dr. Selbie is a graduate of Aberdeen, where he won the Alex Anderson scholarship. After qualifying as M.B., with first-class honours, in 1928, he held appointments at Aberdeen Royal Infirmary. He graduated M.A., and M.D., with highest honours, in 1932. For a time he was a scientific assistant to the Imperial Cancer Research Fund, and since 1939 has been assistant pathologist at the Bland-Sutton institute of pathology, Middlesex Hospital. He is a vice-president of the section of pathology of the Royal Society of Medicine.

Royal College of Physicians of Edinburgh

At a meeting of the college on July 15, with Dr. D. M. Lyon, the president, in the chair, the following were introduced and took their seats as fellows:

Joseph Bryant, T. E. Elliot, J. D. Allan, T. F. Rodger, and R. W. Craig.

The following elections were made:

Fellows.—John Craig, J. M. Rogan, J. M. Macfie, J. C. R. Greig, A. W. Wright, Neil Macmichael, Charles Cameron, and J. A. L. Gilbert.

Members.—R. W. B. Ellis, Simon Btesh, J. P. J. Paton, V. H. Wilson, A. J. Tinker, L. F. E. Lewis, P. L. E. Wood, J. H. Goonewardene, S. J. Fleishman, A. A. Williams, A. W. B. Edmunds, L. G. Woods, J. C. Williams, A. A. Guild, N. R. Stewart, jun., D. C. Haig, R. F. Robertson, and S. H. B. Blaikie.

Beit Memorial Fellowships

Sir Henry Dale, F.R.S., and Lord du Parcq have been elected trustees of the fund. The following awards have been made:

FOURTH-YEAR FELLOWSHIP

F. SANGER, B.SC. To study the structure of proteins with special reference to insulin: at the department of biochemistry, University of Cambridge.

JUNIOR FELLOWSHIPS

J. W. LITTLETON, M.SC. To study the purification and subsequent physicochemical characterisation of proteins involved in the coagulation of blood: at the Lister Institute of Preventive Medicine, London.

A. J. MARSHALL, B.SC. To study the humoral and nervous control of the decidual reaction of the mammalian uterus: at the department of zoology and comparative anatomy, University Museum, Oxford.

L. SILBERMAN, B.A., B.SC. To study the community costs of tuberculosis in terms of public-assistance and industrial outlay to patients and dependants, man-day wastage, and social-service provisions with special reference to the problems of reinstatement and revocation: at the University of Birmingham.

G. WEBER, M.D., PH.D. To investigate the reactions and behaviour of physiologically important proteins: at the Sir William Dunn School of Biochemistry, University of Cambridge.

Medical Society of the L.C.C. Service

A clinical meeting of this society will be held at the Northern Hospital, Winchmore Hill, N.21, on Thursday, August 7, at 2.30 P.M.

Removal of Control on Quinine

The Ministry of Supply has published an order ending from July 28 control over the supply in this country of quinine and its salts, and other products of cinchona bark.

Foot-and-Mouth Disease Committee

The Foot-and-Mouth Disease Research Committee has been reconstituted by the Minister of Agriculture and Fisheries with the following membership: Dr. A. N. Drury, F.R.S. (chairman); Dr. C. H. Andrewes, F.R.S.; Prof. S. P. Bedson, F.R.S.; Sir Daniel Cabot, M.R.C.V.S.; Mr. T. Dalling, M.R.C.V.S.; Mr. R. E. Glover, D.SC.; and Mr. Russell Greig, PH.D. Mr. I. A. Galloway, director of the Foot-and-Mouth Disease Research Station, and Mr. F. A. Eveleigh, of the Ministry of Agriculture, have been appointed secretaries to the committee.

Prof. R. R. Macintosh and Mr. A. Lawrence Abel will be among the lecturers in a course on the surgery of the digestive system, to be held in Barcelona between Sept. 29 and Oct. 7.

TELEPHONE MESSAGES.—Messrs. Finders Ltd., of 77, Dean Street, London, W.1, inform us that they operate a message service which may be useful to doctors. Messages are accepted by the firm (Tel.: Gerrard 9050) and delivered by telephone on request. The first dozen calls are free; thereafter the charge is 10s. per dozen calls or £3 per hundred calls.

Appointments

ABELES, F. M., M.D. Frankfurt, D.M.R.: radiologist, Oldchurch County Hospital, Romford.

BLAIR, E. J., M.D. Durh., M.R.C.P.: physician, New Cross Hospital, Wolverhampton.

BYRNE, A. A., M.C., L.R.C.P.I.: health officer, Malaya, Colonial Medical Service.

DUGDALE, H. R., M.B. Lpool, D.P.H.: M.O.H. and school M.O., Macclesfield.

GILLESPIE, HELEN, M.R.C.S.: psychiatrist, Essex County child guidance clinic, Chelmsford.

MABERLY, ALAN, M.B. Camb.: psychiatrist, Essex County child guidance clinic, Chelmsford.

PILKINGTON, F. E., M.B. Camb., M.R.C.P., D.P.M.: physician in psychological medicine, Prince of Wales's Hospital, Plymouth.

REID, D. A., M.B. Edin., F.R.C.S.E.: senior surgical officer, St. Margaret's Hospital, Epping.

Canadian Red Cross Memorial Hospital, Taplow:

ARDEN, G. P., M.B. Lond., F.R.C.S.: asst. orthopædic surgeon.

BELFRAGE, D. H., M.B. Camb.: anæsthetist.

BROWN, J. M., F.R.C.S.: surgeon.

CUDDIGAN, J. P., M.B. N.U.I., D.A.: anæsthetist.

DAWKINS, C. J. M., M.D. Camb., D.A.: anæsthetist.

FINLAISON, F. H. H., M.B. Camb., F.R.C.S., M.R.C.O.G.: obstetrician and gynæcologist.

HADLEY, G. D., M.D. Camb., M.R.C.P.: director of department of medicine.

MACONIE, A. C., M.B. Lond., F.R.C.S.: asst. ear, nose, and throat surgeon.

MARNHAM, RALPH, M.CHIR. Camb., F.R.C.S.: director of department of surgery.

MAXWELL, D. M. W., M.B. Edin., F.R.C.S.E., M.R.C.O.G.: obstetrician and gynæcologist.

PAYNE, R. V., M.CHIR. Camb., F.R.C.S.: surgeon.

PEACOCK, J. R., B.CHIR. Camb., F.R.C.S.: ear, nose, and throat surgeon.

RYCROFT, B. W., O.B.E., M.D. St. And., F.R.C.S., D.O.M.S.: ophthalmic surgeon.

SCOTT, F. E. T., M.B. Camb.: asst. pathologist.

SHACKLETON, R. P. W., M.R.C.S., D.A.: anæsthetist.

SHEPPARD, R. G., M.B. Lond., D.A.: anæsthetist.

SMILEY, W. K., M.B. St. And., D.O.M.S.: asst. ophthalmic surgeon.

WALLACE, H. J., M.D. Camb., M.R.C.P.: dermatologist.

WILLCOX, P. H., M.B. Camb., M.R.C.P.: physician.

Births, Marriages, and Deaths

BIRTHS

BENIANS.—On July 15, in London, the wife of Dr. R. G. Benians—a son.

BUTTLE.—On July 20, at Bognor, the wife of Dr. R. L. Buttle—a daughter.

CHALLIS.—On July 26, in London, the wife of Dr. A. W. H. Challis—a daughter.

CRAWSHAW.—On July 25, in London, the wife of Dr. George Crawshaw—a son.

DAWES.—On July 20, in London, the wife of Dr. A. J. A. Dawes—a son.

DE WYTT.—On July 8, in London, to Dr. Kathleen de Wytt (née Vickers), wife of Dr. William H. de Wytt—a daughter.

FAIRRIE.—On July 25, the wife of Dr. A. J. Fairrie—a son.

HALLINAN.—On July 25, the wife of Dr. T. C. Hallinan—a daughter.

HODGKIN.—On July 20, at Newcastle-on-Tyne, the wife of Dr. G. K. Hodgkin—a daughter.

KERSHAW.—On July 26, at Liverpool, to Dr. Mary Cowell, wife of Dr. W. E. Kershaw—a daughter.

REID.—On July 22, in London, the wife of Dr. D. D. Reid—a daughter.

RITCHIE.—On July 21, the wife of Dr. J. A. Ritchie—a son.

ROSS.—On July 20, at Newcastle-on-Tyne, the wife of Dr. G. M. Ross—a son.

SALKIELD.—On July 27, the wife of Dr. J. P. Salkield—a son.

SCOTT.—On July 23, at Milford on Sea, the wife of Major D. L. Scott, R.A.M.C.—a son.

SIDDONS.—On July 27, in London, the wife of Mr. A. H. M. Siddons, F.R.C.S.—a daughter.

SMALL.—On July 15, at Croydon, the wife of Dr. M. H. Small—a son.

WOLSKEL.—On July 14, in London, the wife of Dr. H. G. Wolskel, M.B.E.—a son.

MARRIAGES

FLINDT—SLOPER.—On July 19, at Semley, Michael Leighton Huntley Flindt, M.R.C.S., to Mary Pruen Sloper.

SHAW—HILLIER-HOLT.—On July 26, at Rotherfield, C. Stuart Shaw, M.B., to Jean Hillier-Holt.

DEATHS

BUCHANAN.—On July 23, at Glasgow, John Scouler Buchanan, M.B. Glasg.

FRY.—On July 10, Humphrey Francis Warren Fry, M.B. Bell., flight-lieutenant, R.A.F.

JUDSON.—On July 27, at Bournemouth, Joseph Edward Judson, M.R.C.S.

MUMMERY.—On July 20, in Jersey, Norman Howard Mummery, M.R.C.S., aged 70.

PHIPPS.—On July 23, in Jersey, George Constantine Phipps, L.R.C.P.I., lieut.-colonel, I.M.S., aged 45.

SENIOR.—On July 26, at Weston Green, Thames Ditton, Arthur Senior, M.B. Camb., D.P.H., aged 78.

STAWELL.—On July 26, at Falmouth, [illegible] de Salis Sta O.B.E., M.B. Camb., F.R.C.S., aged

SUBACUTE AND CHRONIC HEPATITIS

A. R. KELSALL
M.D. Camb., M.R.C.P.
GRADUATE ASSISTANT

ALICE STEWART
M.D. Camb., F.R.C.P.
FIRST ASSISTANT

L. J. WITTS
M.D. Manc., F.R.C.P.
UNIVERSITY PROFESSOR

rom the Nuffield Department of Medicine, Radcliffe Infirmary, Oxford

THE standard descriptions of subacute hepatitis and rhosis in present textbooks are in some respects idequate, if not misleading, and many of the clinical, diological, and laboratory aids to diagnosis are not t widely known. As a result, there is still a tendency r these patients to be subjected to unnecessary and ngerous surgical interference, though in nearly all ses the diagnosis can be reached with certainty and ithout recourse to laparotomy by consideration of all he available data.

Since 1940, patients with liver disease have been bjected to intensive study in our department, chiefly om the biochemical aspect. Among the cases observed ring this period have been some 50 patients with ubacute or chronic hepatitis (cirrhosis), and the records 35 of these were sufficiently full to be suitable for a cent analysis in detail. A paper dealing with tests of ver function (Higgins et al. 1944) has already been ublished, besides a review of dietetic factors in the tiology and treatment of disorders of the liver (Witts 947). The present paper is primarily concerned with he clinical phenomena.

CLASSIFICATION

We do not propose to discuss in detail the histological hanges in the liver or the classification of cirrhosis. rom a study of our cases and of the relevant literaure we have formed the opinion that in hepatitis, as in nephritis, every gradation of chronicity exists, and the lack of agreement on this question among morbid anatomists has been mainly due to the necessity for drawing arbitrary lines in what is a continuous spectrum. The histological appearances of the livers in many of our fatal cases have corresponded to those described as toxic cirrhosis (Mallory 1911), chronic yellow atrophy of the liver (Bergstrand 1930), or subacute necrosis of the liver (Cullinan 1936); a few have shown the features of what would be generally accepted as the Laennec type of cirrhosis; while in the remainder there has been a coarsely nodular type of cirrhosis whose precise classification must remain a matter of individual opinion.

In view of these facts, we prefer to use the simple terms *subacute* and *chronic hepatitis*, meaning thereby a combination, in various proportions and distributions, of necrosis, cellular infiltration, fibrosis, and regeneration of liver cells. The *distinction* between subacute and chronic disease must again be purely arbitrary, and we have used the term "subacute" in cases whose estimated total duration of illness lies between two months and two years, cases of more than two years' duration being termed "chronic."

From the clinical point of view, patients with hepatitis fall into two fairly well-defined groups which may be further subdivided according to the following scheme; it should, however, be emphasised that the final clinical and pathological findings in the subacute and chronic cases in both groups may be identical.

Type I.—Onset with a clinically recognisable acute hepatitis, followed by:

(a) Rapid recovery.
(b) Rapid death ("acute yellow atrophy," "acute hepatic necrosis").
(c) A subacute stage with ultimate recovery.
(d) A subacute stage progressing to death.
(e) Chronic hepatitis.

In cases which become subacute or chronic, latent periods may occur; hence a further distinction can be made between those with continuous symptoms and those with intermittent symptoms.

Type II.—Onset insidious, progressing through a subacute stage to death within two years, or to chronic hepatitis. In this group, again, the disease may be latent for part or even for the whole of its course.

This classification is essentially similar to that of Bloomfield (1938), who was also struck by the resemblance to the natural history of nephritis, and it recalls the classification of nephritis proposed by Ellis (1942). One possible source of error was pointed out by Bloomfield: an acute exacerbation of a previously latent subacute or chronic hepatitis may be clinically indistinguishable from an initial acute hepatitis. A second difficulty is that in some patients a history is obtained of a previous attack of jaundice followed by many years of normal health; in such cases it is impossible to be certain whether there has been an unusually long latent period or whether a second attack of hepatitis has occurred.

ÆTIOLOGY

Initial Acute Hepatitis.—In most of our cases with an initial acute hepatitis the history suggested infective hepatitis, and in more than half a history of contact was obtained. We have also seen chronic hepatitis following acute hepatitis due to arsenotherapy and to carbontetrachloride poisoning. Subacute hepatitis may likewise follow homologous-serum jaundice (Turner et al. 1944).

Subacute and Chronic Hepatitis of Insidious Onset

In these cases obvious ætiological factors were less often discovered. Of the 35 patients studied in detail 18 are included under this heading.

One had been exposed to trichlorethylene for nine years while working in a laundry.

One had taken a bromide and arsenic mixture for epilepsy for many years and presented clear evidence of chronic arsenic poisoning.

One had a positive Wassermann reaction, but the necropsy appearances were not those of a syphilitic cirrhosis.

In one the diet had obviously been inadequate.

One, whose disease evidently started early in life, since splenomegaly was first found at the age of 7 years (present age 24), had had a brother who had died at the age of 16 years from ulcerative colitis and was said to have shown the lesions of hepatolenticular degeneration at necropsy. The patient presents no signs of neurological disease; he is, however, the Rh-positive son of a Rh-negative mother, and it may be that his cirrhosis is a sequel of unrecognised erythroblastosis fœtalis. Such a possibility has been suggested by Karsner (1943) and by Drummond and Watkins (1946).

In the remaining 13 cases there was no clue to the ætiology of the disease. We think it is worthy of special emphasis that not one of these patients was a chronic alcoholic. This is remarkable in view of the fact that in the United States chronic alcoholics still form slightly over half of the patients with cirrhosis (Ratnoff and Patek 1942, Fleming and Snell 1942). It seems that among hospital patients in this part of Britain at the present time chronic alcoholism as a factor in the causation of liver disease has practically disappeared.

The change in ætiological factors is accompanied by a difference in sex-incidence, to which we also wish to draw attention. Among our patients with acute hepatitis becoming subacute or chronic the sex-incidence was about equal, whereas in the group of patients with hepatitis of insidious onset females outnumbered males by nearly 3 to 1. This contrasts strongly with the series analysed by Fleming and Snell (1942), in which males outnumbered females by 3 to 1.

The age-incidence also showed a difference between the two groups, as follows:

Decade	1	2	3	4	5	6	7
Acute hepatitis becoming subacute or chronic	2	4	6	3	1	1	..
Subacute or chronic hepatitis of insidious onset	3	2	3	1	5	2	2

It will be seen that in the first group 15 out of 17 cases occurred in patients under the age of 40, whereas in the second group the number under 40 at the onset of symptoms was exactly equal to the number over 40.

The age-distribution is therefore more scattered, and the average is lower, than in alcoholic cirrhosis, which is essentially a disease of late middle life. Thus in our second group of patients the average age was 34·1 years at the onset of symptoms, 38·4 years at the time of first admission to hospital, and 41·4 years at death. Among the 200 cases studied by Fleming and Snell (1942), in 51% of which there was a history of alcoholism, the average age on admission to the Mayo Clinic was 50·4 years.

CLINICAL FEATURES

Acute Hepatitis Progressing through a Subacute Stage to Recovery

This clinical picture became very familiar to Service medical officers during the war. The initial stages of the disease are similar to those of other cases of acute hepatitis, and the anticipated improvement during the third or fourth week may occur, with apparent clinical recovery; the disease, however, has merely become latent, and a few days or several weeks later there is a return of jaundice and often of the associated gastro-intestinal symptoms; the liver may again become palpable and tender, and pyrexia may recur. After one or more such relapses, each of which may last days or weeks, final recovery takes place, though biochemical tests of liver function may remain abnormal after the disappearance of clinical symptoms and signs.

In other cases the jaundice lasts 8, 10, 12, or more weeks; during this period the patient may feel well and have a good appetite, but the liver often remains palpable and tender; occasionally attacks of undoubted biliary colic develop, and the gall-bladder may be felt. This may lead the unwary to diagnose extrahepatic obstructive jaundice and even to an unnecessary and hazardous laparotomy. Hæmorrhage from the gums, epistaxis, purpura, temporary ascites, and cutaneous spider nævi may arise. After a variable period, between two and four months, the jaundice starts to fade and recovery takes place; again the biochemical abnormalities often persist longer than the clinical manifestations.

Acute Hepatitis Progressing through a Subacute Stage to Death

The onset and initial course in this group are similar to those described for the patients who pass through a subacute stage to recovery. The subsequent progress, however, is increasingly unfavourable. Jaundice either continues without any change in its intensity, or fluctuates without ever disappearing entirely, or reappears at intervals. Ascites is common, and the fluid may be bloodstained. Pleural effusions may develop, though they are seldom large enough to be recognised clinically with certainty. Hæmorrhages into the skin and from mucosæ are common and may be the predominant symptom. Œsophageal varices may cause fatal hæmatemesis, splenic enlargement is common, and cutaneous spider nævi may be found. Intermittent pyrexia may develop. Death takes place from cholæmia or gastro-intestinal hæmorrhage, the former sometimes precipitated by intercurrent infection.

Acute Hepatitis becoming Chronic

Of our 35 patients 10 were included under this and all of them were still alive when contact was made with them. The illness lasted from two to ten years. Only 1 of the patients has had symptoms; in the other 9, latent periods have This suggests that patients in whom diffuse liver sufficient to cause clinical symptoms, progresses remission are unlikely to survive more than two Though 9 of the patients are leading active lives, or laboratory evidence of hepatic damage is still

After the initial acute hepatitis, which was with jaundice in all the cases, the course of the has been more variable in this group than in the ones. In 6 of the cases there have been several descences of jaundice, associated in 1 case with of pyrexia. Intermittent or transient ascites developed in 3 cases, and persistent ascites in 1 this patient is remarkable in that in thirty-two a paracentesis abdominis of 8–16 pints has been formed every seven to ten days (over 120 t an operation for obstructed umbilical hernia has necessary, yet she is still working full time as a nurse. Splenic enlargement, sometimes and cutaneous spider nævi have each occurred in the 10 patients. A palpable liver, skin and a hæmorrhagic tendency have each been found

Subacute and Chronic Hepatitis of Insidious Onset

This group comprises most of the patients so-called "cirrhosis of the liver," but the great in the duration and intensity of the process does seem to be generally appreciated. Progress may be relatively rapid, and death may occur within a year of the onset of symptoms; on the other hand, may be slow and insidious over many years, with minor or intermittent symptoms, until a final breakdown of liver function or the complications of advanced hypertension ensue; finally, there may be no clinical manifestations until death takes place either from a fatal complication, such as hæmorrhage from a ruptured œsophageal varix, or from some intercurrent illness.

Among our patients the duration of the disease from the onset of symptoms varied from 11 months to 11½ years, with an average of $4^1/_2$ years, in the 11 patients who have died; and from 3 years to 19 years, with an average of 9 years, in the 7 patients who are still alive, 4 of whom are leading normal lives. We wish to emphasise these figures, since to many the diagnosis of "cirrhosis of the liver" implies a prognosis which is considerably less favourable as regards duration of life than has been our experience; this is presumably due to the recent diminution in chronic alcoholism as a factor in the genesis of the disease, and to previous difficulty in making the diagnosis before the terminal stages.

The clinical features of these cases were very variable but tended to fall into patterns which are on the whole well known, and we do not propose to consider them in detail. The following symptoms and signs were found most often, in every conceivable combination and in this order of frequency: palpable liver; ascites (intermittent more often than continuous); splenic enlargement; jaundice (much more often intermittent than continuous); dyspepsia, particularly discomfort or pain under the right costal margin, intolerance of fried or greasy food, and flatulence; pigmentation; intermittent pyrexia; cutaneous spider nævi; gastro-intestinal hæmorrhage from œsophageal varices; and other hæmorrhagic phenomena (purpura, epistaxis, and bleeding from the gums).

DIAGNOSIS OF SUBACUTE AND CHRONIC HEPATITIS

A review of our cases shows the great advances which have been made of recent years in t osis ute and chronic hepatitis. The difficulty of making diagnosis with certainty ten to twenty years ago e appreciated by reference to the paper by Cullinan): of the 20 cases of subacute hepatic necrosis ted by him exploratory laparotomy had been rmed in 12, with 7 postoperative deaths. Similarly, (1931), in a review of 399 cases of cirrhosis seen at Mayo Clinic in six years, reported that in 135 of the liver disease was discovered for the first time parotomy. In the present series, apart from patients hom laparotomy was deliberately performed for ectomy or for relief of an obstructed umbilical ia, exploration has not been necessary for the nosis except in 2 cases, neither of which had been by a physician before operation.

he diagnosis of subacute or chronic hepatitis following e hepatitis should not prove difficult, provided that occurrence is appreciated. Persistent ill health, cially if associated with recurrent or continuous dice, a hæmorrhagic tendency, a palpable liver, or enlarged spleen, following an illness in which initial rexia or gastro-intestinal disturbance was followed aundice, should arouse strong suspicion of progressive atic damage.

ubacute or chronic hepatitis of insidious onset should considered in the differential diagnosis of any patient h splenomegaly, jaundice, persistent dyspepsia, a norrhagic tendency, or pigmentation, as well as with more dramatic and familiar symptoms such as ites and hæmatemesis. The relative frequency of mentation, pyrexia, and cutaneous spider nævi is thy of note. The pigmentation is a rather muddy wn and is often patchy, but has not been seen in the uth; skin biopsy in 2 cases showed that the pigment s melanin. The pyrexia is usually low-grade and ermittent, but occasionally the temperature rises to °F, apart from intercurrent infection; in 2 of our es this phenomenon led to erroneous diagnoses of nical malaria and of recrudescence of subphrenic ppuration. The spider nævus, if present, provides luable confirmatory evidence of hepatic damage, ugh Bean (1945), in a detailed account of these eresting structures, has pointed out that they may be n in pregnancy, hypovitaminosis B, and sometimes normal people. They are found particularly on the per part of the body and consist of a coiled central tery with radiating branches, appearing to the naked e as a small circular patch of erythema with a central, en pulsatile, bright red spot. The rarity of a caput dusæ, a sign still accorded a prominent place in some xtbooks, should be stressed; it was seen in only 2 of r patients.

Pleural effusion is a common terminal event in subacute d chronic hepatitis. Bilateral effusions were found in and right-sided effusions in 2, of our 13 cases which me to necropsy: in only 4 of them, however, were e effusions large enough to be detected clinically. ven when bilateral effusions are present, the amount fluid is often much greater on the right side, and a inical diagnosis of bilateral effusion was made in only patient. Occasionally, pleural effusion develops as a tem- rary event, and more rarely still is found in the absence ascites. No evidence of underlying infection was found these cases; the pleural fluids were always sterile, tubercle bacilli were found in them, and no evidence tuberculosis was found at necropsy.

Recent work on prothrombin deficiency in liver disease as perhaps tended to obscure the fact that other echanisms are often concerned in the hæmorrhagic ndency in these patients. Evidence of capillary bnormality, shown by a prolonged bleeding-time or positive tourniquet test, and moderate degrees of hrombocytopenia were found on one or more occasions in about a third of the patients with purpura or mucosal hæmorrhages.

Biochemical investigations provide valuable evidence in the diagnosis of subacute and chronic hepatitis, and in assessing the activity of the disease. This aspect has already been dealt with by Higgins et al. (1944), and we shall merely recapitulate that in most cases a combination of plasma-bilirubin, alkaline-phosphatase, and protein estimations will give as much information as can be obtained from more elaborate tests, though a lævulose-tolerance test in addition may sometimes be helpful. In subacute and chronic hepatitis slight or moderate elevation of bilirubin and phosphatase levels, diminution of albumin level, and rise in globulin level may form a distinctive pattern which is virtually pathognomonic. It must be emphasised, however, that any one of these tests may give normal results in liver disease, or abnormal results in diseases of other organs; a combination of tests is therefore essential, and the practice of attempting to diagnose the presence or absence of hepatic damage on the basis of a single biochemical investigation cannot be too strongly condemned.

Radiology may also be useful in the diagnosis of subacute and chronic hepatitis. Though the possibility of demonstrating œsophageal varices by a barium swallow was first described by Wolf (1928) and an entire chapter is devoted to the subject by Buckstein (1940) on radiology of the alimentary tract, this method is still not so widely known as it might be.

The patient is examined in the horizontal position, and in this hospital a thick barium paste is used, though Buckstein (1940) recommends a mixture of equal parts of barium and water. The paste travels more slowly through the œsophagus but may compress and obscure lesser degrees of varicosity of the veins. The mixture is not so liable to mask varices but often travels through the œsophagus too fast for satisfactory films to be taken.

If varices are present, the films may show irregularity of contour of the lower œsophagus, with abnormally prominent mucosal folds or circumscribed rounded defects.

Of 22 patients in whom this investigation was performed, varices were demonstrated in 6. A negative barium swallow, however, does not exclude the presence of varices; in one patient a radiogram seven weeks before death did not show varices which were revealed at necropsy, and in another patient a barium swallow was reported as negative though œsophagoscopy two weeks later showed eleven varicosities.

The value of radiology in assessing the size of the liver and spleen is also considerable, and minor degrees of splenic enlargement, insufficient to render the organ palpable, can often be demonstrated in this way (Dell and Klinefelter 1946), especially if a barium meal is given and the patient is examined in the horizontal position; the failure of the stomach to fall back into the left loin, together with any displacement or indentation of its wall, is thereby revealed.

In the presence of ascites the laparoscope is a useful diagnostic weapon.

We have no personal experience of aspiration-biopsy of the liver, but there seems little doubt that it will be increasingly used to elucidate difficult cases.

DISCUSSION

Our experience suggests that the type of cirrhosis seen most commonly in this country today is essentially different from the "alcoholic cirrhosis" which forms the basis for textbook descriptions and still appears to be common in the United States. Since alcohol per se has never been convincingly shown to cause hepatic damage (Moon 1934), though it can apparently intensify the damage caused by deficient or unbalanced diets (Bollman 1938, Lillie et al. 1941), "alcoholic cirrhosis" is presumably due to the dietary deficiencies so common in the chronic alcoholic, and may thus be comparable to the cirrhosis found so often among the malnourished populations of Asia and Africa. The types of cirrhosis which we now encounter, however, are in nearly all cases the result either of an initial infective or chemical hepatitis which has become chronic, or of insidious liver damage of unknown cause.

Whether subclinical or non-icteric attacks of infective hepatitis, such as were observed during the war among large military communities, are in some cases the starting-point for progressive hepatic damage, and whether the latter is due to a local vicious circle of malnutrition within the liver, are problems about which it is tempting but profitless to speculate. The fact remains that cirrhosis, in the Oxford area at any rate, is considerably commoner in women than in men, and that alcohol no longer ranks as an important ætiological factor. Recognition of this change in the incidence and type of hepatic cirrhosis, combined with knowledge of the diagnostic assistance now provided by biochemical and radiological investigation, should lead to earlier diagnosis and thus to the chance of more successful treatment.

SUMMARY

Some 50 cases of subacute and chronic hepatitis have been studied during the past six years, and the records of 35 of these have recently been analysed in detail. The present paper records briefly the results of this study.

The cases can be divided into those in which an initial acute hepatitis, due to virus infection or to chemical poisoning, becomes subacute or chronic; and those in which subacute or chronic hepatitis originates insidiously. In the latter group women outnumber men by three to one, chronic alcoholism has not been an ætiological factor, and in most cases the cause of the disease is quite obscure. The final clinical and pathological features in the two groups may be indistinguishable, and periods of latency are common.

The commonest symptoms and signs are a palpable liver, ascites, splenic enlargement, jaundice, dyspepsia, pyrexia, spider nævi, gastro-intestinal bleeding from œsophageal varices, and other hæmorrhagic phenomena. Ascites and jaundice are more commonly intermittent than continuous. The caput Medusæ occurs but rarely. Pleural effusions are often found at necropsy, and are occasionally large enough to be recognised clinically, especially on the right side. They are usually, but not invariably, associated with ascites.

Attention is drawn to the assistance in diagnosis which can be obtained from biochemical and radiological investigation.

We are indebted to our colleagues in the departments of clinical biochemistry and radiology for much help in the investigation of these patients.

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ELECTRONARCOSIS

A NEW TREATMENT OF SCHIZOPHRENIA

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IN 1902 a French physician called Leduc produced a narcotic-like state in rabbits and dogs by applying a unidirectional pulse current (Leduc 1902). Later he had a current applied in this way to himself and though he was not unconscious he was in a dream-like state and unable to move. In 1907 the Parisian surgeon Tuffier performed an operation on a patient rendered unconscious by similar means (Tuffier and Jardry 1907).

At Pasadena, California, Frostig et al. (1944) have found that electronarcosis differs from chemical narcosis in that the narcotic action of the current depends on its stimulating effect. The metabolism of the brain is reduced in chemical narcosis but remains practically unchanged during electronarcosis. Any current capable of stimulating the central nervous system could be used to produce narcosis. The stimulation, however, must be prolonged. For this reason either a pulsating or an alternating current is effective, whereas a direct current is not. The machine used gave a current of constant intensity, because changes in the resistance of the organism were automatically compensated by a special device. It was found advisable to give a relatively strong current to begin with (300 mA of a 60-cycle alternating current), to make the animal unconscious from the start.

After a brief period in which the legs were actively flexed, the animal's muscles became atonic for a few seconds, and thereafter it developed a strong extensor spasm in the legs, with opisthotonus. The condition resembled decerebrate rigidity. Respiration was arrested for the entire period, and the heart was momentarily inhibited.

After the first 30 sec. one of two syndromes might develop. These were described as the narcotic and hyperkinetic types. In the narcotic type, after some gasping respiration, the animal lay quietly, with occasional sporadic clonic twitches. It was generally necessary to increase the current by 5 mA every 1/4 min.; otherwise the animal tended to wake up. If the current were decreased by 20 mA catalepsy developed.

In the hyperkinetic type the animal kept trying to right itself with violent and incoördinated movements.

It was found, however, that if at the beginning of electronarcosis the strong initial current was kept up for 30 sec. the narcotic syndrome was more likely to develop.

In no case did examination of the brain after death reveal any irreversible changes.

Electronarcosis was also produced in 9 patients who had shown severe symptoms of dementia præcox for over four years. The initial dose was somewhat lower, 150–250 mA, and this was maintained for 30 sec., after which it was decreased to 45–90 mA, when respiration started again. It was found that, if the current were slowly increased by 5 mA when the patient showed signs of coming out of the narcosis, the condition could be kept up for half an hour in many cases. Some patients, however, tended to wake up after so short a period as 7 min. The symptoms in man were a mixture of narcosis and hyperkinesis, tending more to the former.

A further publication from the same school (Tiet et al. 1946) described the results t in zophrenic patients. They again used the high current 30 sec. and they applied the lesser current for another min. It did not appear to be of any value to prolong treatment beyond that limit. The period of 7 min. chosen because it was the minimum within which a ient might come out of the narcotic state, despite ease of current up to 120 mA or more.

A NEW ELECTRONARCOSIS APPARATUS

n July, 1946, one of us (A. S. P.) approached Mr. G. F. itter, M.I.E.E., and Mr. A. I. Rich, and they devised Shotter-Rich electronarcosis apparatus (see figure). s measures $8\times8^1/_2\times14^3/_4$ in. and weighs only 33 lb. : apparatus is designed to meet the following uirements:

1) It must be reliable, easily worked, and proof against possibility of an accidental shock, either to the patient the operator.

2) It should be easily portable.

3) Since the resistance of the living organism decreases idly with the application of the current, the predetermined ensity of current should be kept constant by means of a nce which automatically compensates for any change of istance. Even if the patient's resistance should fall to o, there should not be any considerable increase in the rent applied.

4) It should be possible for the operator easily to control current from zero to maximum, preferably by a rotary itrol device.

The Shotter-Rich electronarcosis apparatus consists of primary circuit which is connected to the 230/240 -cycle supply mains. The connexion to the mains this case 240 volts a.c.) is through a 3-core flexible ble.* The "patient circuit" is isolated from the ains by a transformer.

An entirely novel method, however, is used in this achine to obtain a constant current without the use of ermionic valves, and consequently there is no difficulty ith self-oscillation or the possibility of an increase of e "patient current" through faults in the apparatus. he constant current is made possible by electromagnetic eans in a specially designed circuit of proved reliability. he output current does not vary by more than a very nall percentage from the selected value, whatever may the resistance of the "patient circuit."

The current can be varied between zero and maximum the rotary device.

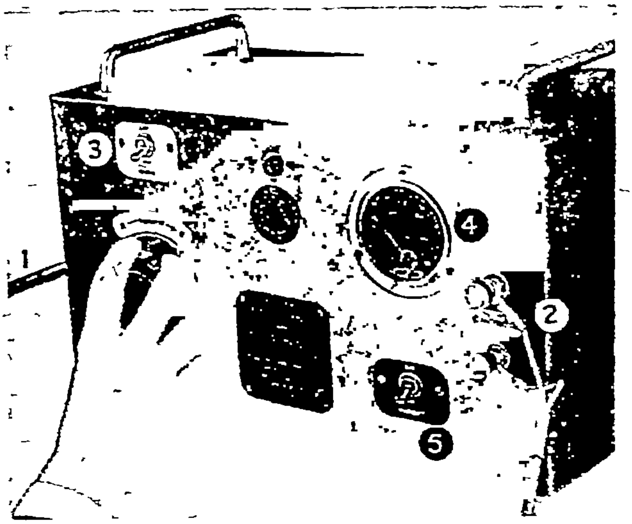
An ammeter calibrated in milliamps is used to measure e treatment current and is always in circuit. It is sed for pre-setting the value of the current and indicates e intensity of the current being passed through the atient.

There is a protective arrangement of neon lamps inside e apparatus. If the resistance of the patient should ach a high value, either through poor contact between ectrodes and patient or through any disconnexion at a rminal, these protective lamps light up. All the component parts have been fully tested at 2000 volts to rule ut any failure of insulation.

TECHNIQUE OF ELECTRONARCOSIS THERAPY

reparation of Patient

Each patient should be subjected to a thorough hysical examination, with special reference to the irculatory and respiratory systems. An electrocardiogram and a radiogram of the chest are highly desirable. f there is any hint of a previous convulsive disorder, an lectro-encephalogram should be taken. The thoracic nd lumbar spines should also be radiographed. Especilly in cases with any hint of memory impairment, full loses of vitamin-B complex should be given for some lays beforehand.



Apparatus for inducing electronarcosis: (1) cable to mains; (2) terminals of "patient circuit"; (3) mains switch; (4) ammeter; (5) "patient circuit" switch.

Before the actual treatment the patient's stomach and bladder must be empty. Other precautions are taken as with electric convulsive therapy. Women's hair-pins and clips are removed. The teeth are examined and dentures removed. Lipstick, rouge, and nail varnish are not permissible as they hinder the recognition of cyanosis.

A quick-acting barbiturate may be given before the treatment—e.g., seconal gr. 3–$4^1/_2$—or in excited patients up to gr. $7^1/_2$ sodium amytal intravenously. The patient is given atropine gr. $^1/_{75}$ half an hour before treatment. Alternatively, morphine gr. $^1/_4$ and hyoscine gr. $^1/_{150}$ may be given three-quarters of an hour before. This tends to prevent any apprehension. These sedatives hinder the development of unpleasant reflexes, such as undue cardiac inhibition, but in many cases they are unnecessary.

The patient should be on a fairly rigid bed, with a firm pillow or sandbag under the 4th, 5th, and 6th dorsal vertebræ. The tonic spasm, however, is not so strong as in electric convulsion therapy, and it is likely that no fractures will be recorded in this treatment.

An ordinary gag of tubing surrounded by gauze 10 in. long by $^1/_2$ in. thick will suffice, but many will prefer to have a special type of gag made (cf. Andratschke et al. 1946). At Pasadena they use two piles of 4-tongue blades wrapped in gauze which are placed between the molars on each side to prevent biting of the tongue. They also use an airway and two soft rubber catheters, one fixed within the airway, through which saliva is sucked out by an apparatus attached to a running tap. If the nasal passages are thoroughly cleansed first, these procedures will probably not be found necessary.

A cylinder of 5% carbon dioxide in oxygen is provided which should be able to run for at least 7 min. A gas flow of about 15 litres a min. is usually sufficient.

A stethoscope, a sphygmomanometer, and an emergency stimulant, such as 'Coramine,' are advisable. We have also found it useful on occasion to insert about 5 in. of a lubricated rubber tube through one nostril. This is transfixed with a safety-pin to prevent it from slipping. The distant end will then be in the nasopharynx. This sometimes greatly facilitates respiration.

Fitting of Electrodes

A special headgear has been constructed. It consists of a headband of flexible rubber $1^1/_2$ in. broad widening to 4 in. over the occiput. This prevents the band from slipping upwards or downwards. It is fastened at one side by means of two adjustable metal clips made of nickel-silver. The two electrodes are about 2 in. square, with rounded edges and rounded corners. The terminals have non-detachable heads and slotted holes and are self-locking. They are made of nickel-plated copper and are non-corrosive. They are easily slipped off the band for cleaning. Saline pads are applied to the electrodes, which are placed over the temples. The patients find the band quite comfortable. As in electric convulsion therapy, care should be taken that none of the contact jelly is continuous between the two electrodes, as this will lessen the current passing through the skull.

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* The apparatus is manufactured and marketed by Messrs. Rich & Bundy, 18, New Road, Ponders End, Middlesex.

Treatment

The apparatus is connected to the mains by plugging in the cable (see figure). Wires run from the terminals on the machine to electrodes applied to the patient's temples. After the "patient circuit" has been completed, the mains switch is turned on. This enables the operator to adjust the ammeter to a predetermined value, generally 160 mA. The treatment is actually started by switching on the patient switch, causing an immediate tonic flexion of the extremities. After about 10 sec. there is a momentary atonia, followed by extension of the legs and opisthotonus. The pulse disappears for a few seconds, after which the heart beats slowly and irregularly. Respiration is arrested, and the patient may become cyanosed.

After 30 sec. the second stage of treatment is begun. The current is reduced to 65 mA. A few clonic twitches occur, lasting a few seconds. Within 15 sec. the patient gasps and thereafter breathes regularly. If the onset of respiration is delayed, or if it is difficult, the rubber tubing may be inserted into the nose. Carbon dioxide and oxygen are administered as soon as the current is reduced. It is usual to increase the current by about 5 mA every 15 sec.

There is a convenient physiological sign which indicates that the correct level of narcosis has been attained. This is a mild inspiratory stridor, which appears in most cases. It is thought to be caused by a moderate apposition of the vocal cords. If the narcosis is too deep, the vocal cords may become too much approximated, and respiration becomes difficult. If the stridor disappears, the patient is probably beginning to come out of the narcosis. In either case the correct level can be attained by raising or lowering the current. In the second stage a current of 140 mA should not be exceeded, as a second onset of severe tonic spasm may ensue.

COMPARISON WITH ELECTRIC CONVULSION THERAPY

Electronarcosis is more scientific, because a current of known intensity is passed through the patient. In electric convulsion therapy, on the other hand, the actual current passed through the patient is not known, as the patient's resistance drops during the passage of the current, and these changes are not compensated for electronarcosis.

In electronarcosis the current is not so strong as in convulsion therapy and usually does not cause a [illegible] at 160 mA, even given for several seconds. When strong current is reduced, the clonic movements relatively feeble and last only a few seconds.

In electric convulsion therapy the hypotonic period between initial flexion and extensor rigidity may last up to $^1/_2$ min., but it is only momentary in electronarcosis.

In electric convulsion therapy the extensor rigidity continues for some time after the current has been switched off, but in electronarcosis it ceases when the high current is decreased at the end of $^1/_2$ min. In [illegible] cases respiration starts again about $^1/_2$ min. after the current has been switched on, for in electronarcosis the duration of the strong current is the same as that of the fit in electric convulsion therapy—i.e., $^1/_2$ min.

RESULTS OF TREATMENT

Twenty patients have been treated by us. They were all schizophrenics who were definitely hallucinated. They had been ill for various periods and it is as yet too early to assess the results of treatment.

American pioneers in this method of treating schizophrenia have reported results as good as those obtained by insulin-coma therapy (Tietz et al. 1946). Though we were not particularly hopeful when starting this treatment, the results so far attained are distinctly promising. In every case the hallucinations have disappeared, for some weeks at least, and in some instances the recoveries have been most striking after only a month's treatment.

DISCUSSION

Until recently insulin-coma therapy has proved the most successful treatment of early schizophrenia. It has, however, certain disadvantages. Owing to shortage of staff, only a limited number of hospitals can use it. It requires a team of specially trained staff, who can treat only a few patients at a time. It is lengthy and not without danger. Patients who should have treatment at the earliest possible moment are therefore compelled to wait for an indefinite period. If, on the other hand, the favourable first impressions with regard to electronarcosis are confirmed, great benefits may accrue in the treatment of schizophrenia, because it will become available to many patients in each hospital.

Moreover, since a method has been devised for passing a constant current through the human brain, a current which in varying intensity can produce controlled narcosis, hyperkinesis, convulsions, and sometimes catalepsy, the possibilities of further research into the electrophysiology of the nervous system are immense. It is likely that, as more knowledge is accumulated, the field for therapy in different psychiatric disorders will be greatly expanded.

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e wish to thank Dr. Thomas Beaton for allowing us to t patients at St. James' Hospital, Portsmouth; and E. Jean Straker, of Photo-Union, 12, Soho Square, W.1, he photograph.

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DETERMINATION OF HÆMOGLOBIN

I. DETERMINATION BY A CYAN-HÆMATIN METHOD

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th an Addendum on the selection of suitable green filters by DONALDSON *and* R. B. SISSON, *of the National Physical Laboratory*

METHODS of hæmoglobin determination differ greatly their accuracy. The acid-hæmatin procedures are ually held to be the least reliable, and the cyan- ethæmoglobin procedures to yield the most exact ures. King et al. (1944a) found that several colorimetric ethods would all give good results, provided they ere submitted to precise colorimetry—e.g., Duboscq photo-electric—but that the cyan-methæmoglobin rivative could be measured with greatest accuracy.

The alkaline-hæmatin procedure has the advantage at a standard is easily prepared from crystalline emin (Clegg and King 1942); but it is not as accurate the cyan-methæmoglobin method, and the hæmin andard suffers from the theoretical disadvantage of t giving, mol. (4) for mol., the same colour as hæmo- obin does. Hæmoglobin contains 4 molecules of hæmin, it hæmin yields 30% less colour than it should in mparison with hæmoglobin.

A new method has now been discovered which is even ore accurate than the cyan-methæmoglobin method d uses a hæmatin standard in which the hæmin is used the theoretical proportion of 4 mols. of hæmin to 1 mol. hæmoglobin. The cyan-hæmatin colours produced by emin, on the one hand, and by blood, on the other, o in fact show a slight difference in their spectral bsorption curves (see figure). Both have maxima at 544–48 mμ and minima at 504–510 mμ, but the whole curve r the cyan-hæmatin from blood seems to be slightly isplaced toward the shorter wave-lengths, and its aximum is not quite so pronounced as that for the yan-hæmatin from hæmin. Nevertheless, for some lters which transmit a broad band in the green part of he spectrum, the overall absorptions for cyan-hæmatin rom both sources agree very closely. Thus, with a uitable filter, an amount of hæmin containing 1 mg. of ron will give the same absorption when converted into yan-hæmatin as will the equivalent amount of hæmo- lobin—i.e., that amount which contains 1 mg. of iron. The cyan-hæmatins from both sources are therefore omparable, and consequently hæmin may properly be sed as a natural standard with a suitable filter. Alterna- ively, the colours may be compared in visual instruments without light filters, since they appear identical to the eye, and since the overall absorptions for the whole visible spectrum are not appreciably different.

MATERIALS AND SOLUTIONS

Bloods.—The specimens used have all been from normal healthy human beings or from animals. The human bloods were taken by venepuncture and were oxalated. Those from animals were obtained from the slaughter-house and were defibrinated.

Hæmins.—These were all prepared by the classical procedure of running blood into a hot mixture of glacial acetic acid and potassium-chloride solution. The crystals which separated on cooling were well washed with salt solution and water by decantation and settling, and then by alcohol and ether on a Buchner filter (Delory 1943). The product was usually beautifully crystalline. Amorphous precipitates were occasionally obtained, and these were discarded, since their colours were not to be relied on in either the alkaline hæmatin or the cyan-hæmatin methods—i.e., their extinctions, relative to their iron analyses, were variable, and differed from those of the crystalline products (cf. Gibson and Harrison 1945). No hæmin which is not crystalline should be used as a standard in any hæmoglobin method.

Recrystallisation of hæmin was tried, but without much success. The Fischer (1941) method of solution in chloroform and pyridine and precipitation in hot acetic acid sometimes improved the purity of the specimen but was as apt as not to yield a less pure powder. Recrystallisation was therefore abandoned and the "crude" product always used. These "crude" hæmins were always of a high degree of purity however; and it seems, from a very considerable experience with hæmin preparations, that any crystalline specimen which has been accurately analysed for iron is acceptable as a standard, and that its colour is always directly proportional to its content of iron.

N/10 Hydrochloric Acid.—10 ml. of concentrated HCl diluted to 1 litre.

2% Sodium Cyanide.—20 g. of NaCN (A.R.) dissolved in water and diluted to 1 litre.

5% Sodium Cyanide.—50 g. of NaCN (A.R.) dissolved in water and diluted to 1 litre.

ANALYTICAL PROCEDURES

Iron.—Duplicate samples of 5 ml. of blood, with a little conc. HNO_3, were carefully evaporated to dryness in 50-ml. 'Pyrex' beakers, dried at 110°C, and ashed at 450°C overnight. The ash was dissolved in HCl and titrated with $TiCl_3$. The technique is described in full by Delory (1943), the only modification used being that the $TiCl_3$ was diluted with freshly distilled water, which had been boiled and cooled in a stream of CO_2.

Oxygen.—The Van Slyke manometric method was used as described by Peters and Van Slyke (1932).

A full discussion of the analytical procedures most useful for establishing "base-line" values for the standardisation of hæmoglobin procedures is given by King et al. (1947).

CYAN-HÆMATIN METHOD

Standard Solution of Cyan-hæmatin in 1% Sodium Cyanide.—28·8 mg. of pure crystalline hæmin (8·57% Fe) is weighed into a one-litre volumetric flask; 200 ml. of 5% sodium cyanide is added and water till the flask is nearly full. The mixture is left at room temperature, and occasionally shaken, till all the hæmin is dissolved. It is then made up to the mark and mixed.

Impure hæmins—i.e., those having less than the theoretical content of iron—may be used for the standard, provided they are crystalline and their percentage of iron is known, the assumption being that the impurity present does not contain iron and is non-chromogenic. That this assumption appears to be justified is seen in the results. A hæmin which, for instance, contains 8·41% of iron (instead of the theoretical 8·57%) would be used in the proportion of $\frac{28\cdot 8 \times 8\cdot 57}{8\cdot 41}$ = 29·3 mg./l. of 1% sodium cyanide.

side by means of two adjustable metal clips made of nickel-silver. The two electrodes are about 2 in. square, with rounded edges and rounded corners. The terminals have non-detachable heads and slotted holes and are self-locking. They are made of nickel-plated copper and are non-corrosive. They are easily slipped off the band for cleaning. Saline pads are applied to the electrodes, which are placed over the temples. The patients find the band quite comfortable. As in electric convulsion therapy, care should be taken that none of the contact jelly is continuous between the two electrodes, as this will lessen the current passing through the skull.

Treatment

The apparatus is connected to the mains by plugging in the cable (see figure). Wires run from the terminals on the machine to electrodes applied to the patient's temples. After the "patient circuit" has been completed, the mains switch is turned on. This enables the operator to adjust the ammeter to a predetermined value, generally 160 mA. The treatment is actually started by switching on the patient switch, causing an immediate tonic flexion of the extremities. After about 10 sec. there is a momentary atonia, followed by extension of the legs and opisthotonus. The pulse disappears for a few seconds, after which the heart beats slowly and irregularly. Respiration is arrested, and the patient may become cyanosed.

After 30 sec. the second stage of treatment is begun. The current is reduced to 65 mA. A few clonic twitches occur, lasting a few seconds. Within 15 sec. the patient gasps and thereafter breathes regularly. If the onset of respiration is delayed, or if it is difficult, the rubber tubing may be inserted into the nose. Carbon dioxide and oxygen are administered as soon as the current is reduced. It is usual to increase the current by about 5 mA every 15 sec.

There is a convenient physiological sign which indicates that the correct level of narcosis has been attained. This is a mild inspiratory stridor, which appears in most cases. It is thought to be caused by a moderate apposition of the vocal cords. If the narcosis is too deep, the vocal cords may become too much approximated, and respiration becomes difficult. If the stridor disappears, the patient is probably beginning to come out of the narcosis. In either case the correct level can be attained by raising or lowering the current. In the second stage a current of 140 mA should not be exceeded, as a second onset of severe tonic spasm may ensue.

As a rule the patient remains quiet, and there is considerable flexor tone in the arms, with extensor tone in the legs. Often the hand resembles that in tetany, with the thumb clenched between the second and third digits. The tendon-reflexes disappear at first but reappear in the later stages. The plantar reflex is extensor during the treatment. All these signs, however, are variable.

After 7 min. the current is switched off, and the patient recovers as in electric convulsion therapy, generally within half an hour. Anti-headache tablets should be available in case of need. Under ideal conditions there will be two doctors and at least two nurses. One doctor will manipulate the current. Experience is required to gauge the best current in each case, as there are considerable variations in muscular response. The other doctor will administer the carbon dioxide and oxygen, and two nurses will be able to cope with the patient if he should become unduly restless during or after treatment.

Plan of Treatment

The treatment is given three times a week for four weeks, followed by a week's rest. Thereafter a second course can be given, if a satisfactory result has not yet been attained.

COMPARISON WITH ELECTRIC CONVULSION THERAPY

Electronarcosis is more scientific, because a current of known intensity is passed through the patient. In electric convulsion therapy, on the other hand, the actual current passed through the patient is not known, as the patient's resistance drops during the passage of the current, and these changes are not compensated for as in electronarcosis.

In electronarcosis the current is not so strong as in convulsion therapy and usually does not cause a convulsion at 160 mA, even given for several seconds. When the strong current is reduced, the clonic movements are relatively feeble and last only a few seconds.

In electric convulsion therapy the hypotonic period between initial flexion and extensor rigidity may last up to 1/2 min., but it is only momentary in electronarcosis.

In electric convulsion therapy the extensor rigidity continues for some time after the current has been switched off, but in electronarcosis it ceases when the high current is decreased at the end of 1/2 min. In most cases respiration starts again about 1/2 min. after the current has been switched on, for in electronarcosis the duration of the strong current is the same as that of the fit in electric convulsion therapy—i.e., 1/2 min.

RESULTS OF TREATMENT

Twenty patients have been treated by us. These were all schizophrenics who were definitely hallucinated. They had been ill for various periods and it is as yet too early to assess the results of treatment.

American pioneers in this method of treating schizophrenia have reported results as good as those obtained by insulin-coma therapy (Tietz et al. 1946). Though we were not particularly hopeful when starting this treatment, the results so far attained are distinctly promising. In every case the hallucinations have disappeared, for some weeks at least, and in some instances the recoveries have been most striking after only a month's treatment.

DISCUSSION

Until recently insulin-coma therapy has proved the most successful treatment of early schizophrenia. It has, however, certain disadvantages. Owing to shortage of staff, only a limited number of hospitals can use it. It requires a team of specially trained staff, who can treat only a few patients at a time. It is lengthy and not without danger. Patients who should have treatment at the earliest possible moment are therefore compelled to wait for an indefinite period. If, on the other hand, the favourable first impressions with regard to electronarcosis are confirmed, great benefits may accrue in the treatment of schizophrenia, because it will become available to many patients in each hospital.

Moreover, since a method has been devised for passing a constant current through the human brain, a current which in varying intensity can produce controlled narcosis, hyperkinesis, convulsions, and sometimes catalepsy, the possibilities of further research into the electrophysiology of the nervous system are immense. It is likely that, as more knowledge is accumulated, the field for therapy in different psychiatric disorders will be greatly expanded.

SUMMARY

The physiological state known as electronarcosis is described in dogs and in man.

It has been claimed in America that the procedure is as successful as insulin-coma therapy in treating schizophrenia.

A new portable machine is described, in which a constant current is obtained without the use of thermionic valves.

We have treated 20 schizophrenics, in most cases with 12 treatments in one month.

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ith an Addendum on the selection of suitable green filters by Donaldson *and* R. B. Sisson, *of the National Physical Laboratory*

Methods of hæmoglobin determination differ greatly their accuracy. The acid-hæmatin procedures are ually held to be the least reliable, and the cyan-ethæmoglobin procedures to yield the most exact gures. King et al. (1944a) found that several colorimetric ethods would all give good results, provided they ere submitted to precise colorimetry—e.g., Duboscq photo-electric—but that the cyan-methæmoglobin erivative could be measured with greatest accuracy.

The alkaline-hæmatin procedure has the advantage at a standard is easily prepared from crystalline æmin (Clegg and King 1942); but it is not as accurate s the cyan-methæmoglobin method, and the hæmin andard suffers from the theoretical disadvantage of ot giving, mol. (4) for mol., the same colour as hæmo-lobin does. Hæmoglobin contains 4 molecules of hæmin, ut hæmin yields 30% less colour than it should in omparison with hæmoglobin.

A new method has now been discovered which is even ore accurate than the cyan-methæmoglobin method nd uses a hæmatin standard in which the hæmin is used the theoretical proportion of 4 mols. of hæmin to 1 mol. f hæmoglobin. The cyan-hæmatin colours produced by æmin, on the one hand, and by blood, on the other, o in fact show a slight difference in their spectral bsorption curves (see figure). Both have maxima at 544–48 mμ and minima at 504–510 mμ, but the whole curve or the cyan-hæmatin from blood seems to be slightly isplaced toward the shorter wave-lengths, and its aximum is not quite so pronounced as that for the yan-hæmatin from hæmin. Nevertheless, for some lters which transmit a broad band in the green part of he spectrum, the overall absorptions for cyan-hæmatin rom both sources agree very closely. Thus, with a uitable filter, an amount of hæmin containing 1 mg. of ron will give the same absorption when converted into yan-hæmatin as will the equivalent amount of hæmoglobin—i.e., that amount which contains 1 mg. of iron. The cyan-hæmatins from both sources are therefore comparable, and consequently hæmin may properly be used as a natural standard with a suitable filter. Alternatively, the colours may be compared in visual instruments without light filters, since they appear identical to the eye, and since the overall absorptions for the whole visible spectrum are not appreciably different.

MATERIALS AND SOLUTIONS

Bloods.—The specimens used have all been from normal healthy human beings or from animals. The human bloods were taken by venepuncture and were oxalated. Those from animals were obtained from the slaughter-house and were defibrinated.

Hæmins.—These were all prepared by the classical procedure of running blood into a hot mixture of glacial acetic acid and potassium-chloride solution. The crystals which separated on cooling were well washed with salt solution and water by decantation and settling, and then by alcohol and ether on a Buchner filter (Delory 1943). The product was usually beautifully crystalline. Amorphous precipitates were occasionally obtained, and these were discarded, since their colours were not to be relied on in either the alkaline hæmatin or the cyan-hæmatin methods—i.e., their extinctions, relative to their iron analyses, were variable, and differed from those of the crystalline products (cf. Gibson and Harrison 1945). No hæmin which is not crystalline should be used as a standard in any hæmoglobin method.

Recrystallisation of hæmin was tried, but without much success. The Fischer (1941) method of solution in chloroform and pyridine and precipitation in hot acetic acid sometimes improved the purity of the specimen but was as apt as not to yield a less pure powder. Recrystallisation was therefore abandoned and the "crude" product always used. These "crude" hæmins were always of a high degree of purity however; and it seems, from a very considerable experience with hæmin preparations, that any crystalline specimen which has been accurately analysed for iron is acceptable as a standard, and that its colour is always directly proportional to its content of iron.

N/10 Hydrochloric Acid.—10 ml. of concentrated HCl diluted to 1 litre.

2% Sodium Cyanide.—20 g. of NaCN (A.R.) dissolved in water and diluted to 1 litre.

5% Sodium Cyanide.—50 g. of NaCN (A.R.) dissolved in water and diluted to 1 litre.

ANALYTICAL PROCEDURES

Iron.—Duplicate samples of 5 ml. of blood, with a little conc. HNO_3, were carefully evaporated to dryness in 50-ml. 'Pyrex' beakers, dried at 110°C, and ashed at 450°C overnight. The ash was dissolved in HCl and titrated with $TiCl_3$. The technique is described in full by Delory (1943), the only modification used being that the $TiCl_3$ was diluted with freshly distilled water, which had been boiled and cooled in a stream of CO_2.

Oxygen.—The Van Slyke manometric method was used as described by Peters and Van Slyke (1932).

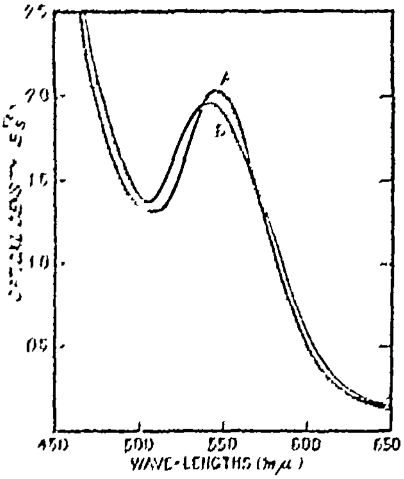
A full discussion of the analytical procedures most useful for establishing "base-line" values for the standardisation of hæmoglobin procedures is given by King et al. (1947).

CYAN-HÆMATIN METHOD

Standard Solution of Cyan-hæmatin in 1% Sodium Cyanide.—28·8 mg. of pure crystalline hæmin (8·57% Fe) is weighed into a one-litre volumetric flask; 200 ml. of 5% sodium cyanide is added and water till the flask is nearly full. The mixture is left at room temperature, and occasionally shaken, till all the hæmin is dissolved. It is then made up to the mark and mixed.

Impure hæmins—i.e., those having less than the theoretical content of iron—may be used for the standard, provided they are crystalline and their percentage of iron is known, the assumption being that the impurity present does not contain iron and is non-chromogenic. That this assumption appears to be justified is seen in the results. A hæmin which, for instance, contains 8·41% of iron (instead of the theoretical 8·57%) would be used in the proportion of $\frac{28\cdot8\times8\cdot57}{8\cdot41}=29\cdot3$ mg./l. of 1% sodium cyanide.

Macro-method for Blood.—0·5 ml. of blood is accurately measured into a 100-ml. volumetric flask containing about 75 ml. of 0·1 *N* hydrochloric acid, with which it is well mixed. About 10 min. is allowed for the transformation of hæmoglobin into acid hæmatin, as shown by the solution turning a clear yellow with no trace of residual pink; 20 ml. of 5% sodium cyanide is added and water to the mark. The solution is mixed, and the intensity of the bright red colour of the cyan-hæmatin is measured by comparison with the standard solution.



Optical density of cyan-hæmatin solutions from hæmin (A) and from hæmoglobin (B), 1 cm. layer of solution containing 1 mg. hæmin or hæmoglobin iron per 100 ml.

Micro-method for Blood.—0·05 ml. of blood is mixed with 4·95 ml. of 0·1 *N* hydrochloric acid and left for 10 min. to complete the transformation to acid hæmatin; 5 ml. of 2% sodium cyanide is then added and the solution mixed. (Alternatively, 0·02 ml. blood, with 1·98 ml. 0·1 *N* hydrochloric acid, and 2 ml. 2% sodium cyanide may be used.) The sodium cyanide may conveniently be added from an automatic pipette obtainable from any scientific or medical supply house.

These three methods give the same final dilution of 1 in 200.

Measurement of Colour Intensity.—Any colorimeter or photometer (visual or photo-electric) may be used for measuring the colour of cyan-hæmatin. A light filter, with maximum transmission between 530 and 550 mμ, transmitting a fairly broad band in the green part of the spectrum (limits about 480–600 mμ), such as Chance green or Ilford T.C. green, is suitable. For standardisation of high accuracy the green filters, especially those with narrow transmission bands, have to be selected very carefully for reasons which are dealt with below.

All reported measurements were made in a King (1942) photo-electric colorimeter. This is a single photo-cell instrument, and is fitted with square glass cells (1 cm. optical thickness) and a Chance OGR1 green light filter. The zero settings were made with water in the cell; the readings were taken on the linear scale, and the extinctions calculated from E = log (Io/I).

TABLE I—SPECIFIC EXTINCTION COEFFICIENTS OF CYAN-HÆMATIN SOLUTIONS OF VARIOUS PREPARATIONS OF HÆMIN

(Solutions of crystalline hæmin (about 30 mg.) in 1 litre of 1% sodium cyanide, King photo-electric colorimeter, 1 cm. cell, Chance OGR1 green filter.)

Code	Fe (%)	E_S^{Fe} (for 1 mg. Fe/100 ml.)
(16 BDH)	8·41	1·64
(17 GED)	8·26	1·58
(18 KJK)	8·26	1·56
(19 BDH)	8·13	1·58
(23 MG)	8·26	1·64
(D & G)	7·60	1·59
(26 MG)	8·36	1·55
(28 AH)	8·00	1·60
(29 BDH)	8·12	1·63
(30 AH)	8·42	1·57

Mean = 1·59
Standard deviation = 0·03
Coefficient of variation = 2·05%

Calculation of Results.—The standard cyan-hæmatin solution is equivalent to 14·8 g. of hæmoglobin per 100 ml. of blood at a 1 in 200 dilution. This concentration has been chosen because it is that of the B.S.I. Haldane standard (Macfarlane and O'Brien 1944, King et al. 1944). 28·8 mg. of hæmin is therefore the equivalent of 14,80- 200=740 mg. of hæmoglobin. Since hæmin co 8·57% iron and hæmoglobin 0·334%, the 28·8 mg. hæmin and the 740 mg. of hæmoglobin both co 2·46 mg. iron. From this it will be apparent how hæmoglobin and hæmin are equatable on an iron basis.

With a photo-electric colorimeter the concentration of hæmoglobin in any blood, determined in the above manner, is calculated as follows:

$$\frac{\text{Extinction of test}}{\text{Extinction of standard}} \times 14{\cdot}8 = \text{g. of hæmoglobin/100 ml.,}$$

or

$$\frac{\text{Extinction of test}}{\text{Extinction of standard}} \times 100 = \%\ \text{of Haldane (B.S.I.) normal}$$

For some purposes, such as the comparison of colour intensities of different standard solutions, it may useful to express results as extinction coefficients to some constituent of the hæmins which can be determined with a high degree of accuracy. As has suggested, iron is the constituent which best the degree of purity of the specimen and can be most accurately determined. Extinctions of standard so are divided by their iron contents to give the "extin per mg. of iron.": this is known as the "specific extinction coefficient relative to iron," for which the symbol E_S^{Fe} is used.

TABLE II—AGREEMENT OF CYAN-HÆMATIN STANDARDS VARIOUS HÆMINS

(Extinction coefficients for solutions of crystalline hæmins (about 32 mg.) in 1% KCN (1 litre), King photo-electric colorimeter, 1 cm. cell, Chance OGR1 green filter.)

Hæmin no.	Fe (%)	E_S^{Fe}
(16 BDH)	8·41	1·58
(17 GED)	8·26	1·64
(19 BDH)	8·13	1·66
(26 MG)	8·36	1·62
(28 AH)	8·00	1·63
(30 AH)	8·24	1·57
(31 horse)	6·67	1·62
(33 BDH)	8·30	1·63
(34 BDH)	8·32	1·58
(35 BDH)	8·41	1·59

Average = 1·61
Coefficient of variation = 1·87

The "extinction coefficient" is equally useful for expressing the results for hæmoglobin; and, since the cyan-hæmatins from hæmin and from hæmoglobin are equatable on an iron basis, the E_S^{Fe} for hæmin and for hæmoglobin should be equal.

RESULTS

Similarity of Colour of Cyan-hæmatins from Hæmin and from Blood

The cyan-hæmatin solutions, prepared as described above from several specimens of hæmin and from several bloods, were indistinguishable to the unaided eye. Their colour was of a bright burgundy quality, closely similar to that of the cyan-methæmoglobin. When read in a visual photometer with spectrum light filters, no dissimilarity was detected between the coloured solutions from hæmins and from bloods. With the Spekker absorptiometer and eight light filters covering the visible sp the absorptions of the two cyan-hæmatins were the within the limits of error of the instrument. De spectral absorption curves (see figure) were carried on a photo-electric spectrophotometer at the N

LE III—SPECIFIC EXTINCTION COEFFICIENTS OF CYAN-ÆMATIN SOLUTIONS PREPARED FROM HUMAN BLOODS

h specimen of blood transformed into cyan-hæmatin at a tion of 1 in 200. Same colorimetric measurement and instrut as tables I and II.)

o.	Male bloods		Female bloods	
	E_S^{Fe} (Fe from $TiCl_3$ method)	E_S^{Fe} (Fe calc. from O_2 capacity)	E_S^{Fe} (Fe from $TiCl_3$ method)	E_S^{Fe} (Fe calc. from O_2 capacity)
1	1·55	1·58	1·60	1·72
2	1·56	1·59	1·57	1·59
3	1·55	1·57	1·53	1·60
4	1·55	1·61	1·60	1·62
5	1·55	1·59	1·61	1·64
6	1·56	1·62	1·58	1·57
7	1·56	1·60	1·56	1·56
8	1·56	1·59	1·57	1·56
9	1·58	1·60	1·58	1·57
0	1·55	1·58	1·60	1·60
1	1·56	1·60	1·59	1·60
erage	1·56	1·59	1·59	1·61
ff. of riation	0·66	0·89	1·00	2·78

ysical Laboratory by Mr. R. Donaldson and Mr. R. B. son. They demonstrate the substantial similarity of e spectral characteristics of the cyan-hæmatins from min and from hæmoglobin. The lack of identity erred to in the introduction is, however, obvious. e cyan-hæmatin from blood has a less pronounced ak, and the whole curve appears to be slightly shifted the left. Whether this slight difference is due simply the presence of extraneous matter in the solutions ade from blood, as compared with the simpler solutions om crystalline hæmin, or is derived from some chemical ssimilarity between cyan-hæmatins prepared from the o different sources, is not yet clear. It is not a pH fect.

onstancy of Colour Production from Various Hæmins

In March, 1945, standard solutions were made from n different hæmins prepared by several persons, some them from a commercial source. These hæmins had l been analysed for iron by ourselves by the titanous-loride method; some of the analyses were checked the bichromate procedure, and others by a gravimetric ethod. The specimens (about 30 mg. each) were refully weighed and left to dissolve for two days before ing made to volume and read in the photo-electric lorimeter. The readings were all of an order to correond with extinctions of about 0·4—i.e., they were in e range of maximum accuracy of the instrument. ach determined extinction was factored by the content hæmin iron of the solution (from the iron percentage y analysis and the weight taken), and the resultant gure recorded. These extinction coefficients would of urse all be identical if all the hæmins were completely ure, and if all analytical procedures were free from ror. That the results approximate to this ideal is seen table I, where a coefficient of variation of only 2% as found for hæmins which differed in iron content as idely as 7·5% and 8·42% Fe. Since each result includes e cumulative errors due to the iron analysis, impurities the hæmin, and inaccuracies in measurement—ravimetric, volumetric, and colorimetric—it is remarkble that the figures agree so well. Those listed below re even better.

A second set of the standards was prepared in January, 946. Several of the specimens were the same as those sed in the first set; others were new. The results are ontained in table II, and the agreement is almost as ood as that usually obtained with multiple photometric neasurements of coloured solutions prepared from a ingle specimen

Permanence of Cyan-hæmatin Standards

The two sets of standard solutions (tables I and II) have been preserved at room temperature in diffuse daylight on a shelf of the laboratory. Their intensities of colour have been redetermined at intervals, and it is apparent that the cyan-hæmatin colour deteriorates slowly. During eighteen months the average extinction coefficient of the first ten standards fell from $E_S^{Fe}=1·59$ in March, 1945, to $E_S^{Fe}=1·47$ in November, 1946. The second set, which averaged $E_S^{Fe}=1·61$ in March, 1946, read 1·59 in June (coeff. of variation, 1·69) and 1·53 in November. It appears from this that a standard solution may be used for as long as eighteen months without introducing any serious error, provided the value of E is reduced by about $^1/_2$% per month. For work of the highest accuracy, fresh standard solutions should be prepared every three months.

Cyan-hæmatins from Blood

Three separate experiments have been carried out: one with a mixed lot of human and animal bloods; one with specimens from normal adult males; and one from normal adult females. The results are set out as extinction coefficients for the two experiments with adult male and female bloods; and as a comparison of hæmoglobin figures (g./100 ml. of blood), derived from the colorimetric method and from the titanous-chloride method, for the human and animal bloods. It should be noted that these two ways of expressing results come to one and the same thing: a titanous-chloride analysis for iron, an oxygen capacity, and a colorimetric cyan-hæmatin determination were carried out on each blood; and the determined values could be expressed either as extinction coefficients or as grammes of hæmoglobin by each method. The extinction coefficients given in table III show the closeness of the values obtained for blood with those for the hæmins in tables I and II, and the slight difference in the values for E_S^{Fe} calculated directly from the iron analyses and indirectly from the oxygen capacities (1 atom of iron taken to be the equivalent of 1 molecule of oxygen). The hæmoglobin figures in table IV demonstrate the excellent agreement between the figures obtained by the colorimetric method and those given by the "base-line" determinations with the titanous chloride.

DISCUSSION

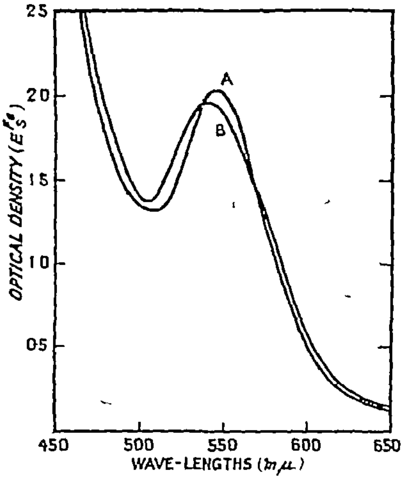
We believe this to be the most satisfactory hæmoglobin method we have so far used. It is easy and reasonably quick. The troublesome features of the Haldane carboxyhæmoglobin method, the alkaline hæmatin method, and

TABLE IV—AGREEMENT BETWEEN CYAN-HÆMATIN METHOD FOR HÆMOGLOBIN AND TITANOUS-CHLORIDE IRON RESULTS ON THE SAME BLOODS

No.	Results (g. of Hb/100 ml. of blood)	
	$TiCl_3$ method for iron	Cyan-hæmatin* method
1	18·2	18·1
2	15·9	15·5
3	13·1	13·4
4	14·0	13·9
5	15·2	15·1
6	13·3	13·1
7	15·9	15·6
8	16·0	16·1
9	13·1	12·9
10	12·6	12·3
11	12·0	11·9
12	13·4	13·0
13	13·0	12·6
14	13·4	13·1
15	13·1	12·6
	Coefficient of variation	= 2·0%

* Colours compared against a standard made from crystalline hæmin. Results calculated on the basis of 1 hæmin-Fe = 1 hæmoglobin-Fe.

Macro-method for Blood.—0·5 ml. of blood is accurately measured into a 100-ml. volumetric flask containing about 75 ml. of 0·1 *N* hydrochloric acid, with which it is well mixed. About 10 min. is allowed for the transformation of hæmoglobin into acid hæmatin, as shown by the solution turning a clear yellow with no trace of residual pink; 20 ml. of 5% sodium cyanide is added and water to the mark. The solution is mixed, and the intensity of the bright red colour of the cyan-hæmatin is measured by comparison with the standard solution.



Optical density of cyan-hæmatin solutions from hæmin (A) and from hæmoglobin (B), 1 cm. layer of solution containing 1 mg. hæmin or hæmoglobin iron per 100 ml.

Micro-method for Blood.—0·05 ml. of blood is mixed with 4·95 ml. of 0·1 *N* hydrochloric acid and left for 10 min. to complete the transformation to acid hæmatin; 5 ml. of 2% sodium cyanide is then added and the solution mixed. (Alternatively, 0·02 ml. blood, with 1·98 ml. 0·1 *N* hydrochloric acid, and 2 ml. 2% sodium cyanide may be used.) The sodium cyanide may conveniently be added from an automatic pipette obtainable from any scientific or medical supply house.

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(17 GED)	8·26	1·58
(18 EJK)	8·29	1 56
(19 BDH)	8·13	1·58
(23 MG)	8·20	1 64
(D & G)	7·60	1·59
(26 MG)	8 36	1·55
(28 AH)	8·00	1·60
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(30 AH)	8·42	1·57

Mean = 1 59
Standard deviation = 0 03
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For some purposes, such as the comparison of colour intensities of different standard solutions, it may be useful to express results as extinction coefficients relative to some constituent of the hæmins which can be determined with a high degree of accuracy. As has been suggested, iron is the constituent which best indicates the degree of purity of the specimen and can be most accurately determined. Extinctions of standard solutions are divided by their iron contents to give the "extinction per mg. of iron": this is known as the "specific extinction coefficient relative to iron," for which the symbol E^{Fe}_S is used.

TABLE II—AGREEMENT OF CYAN-HÆMATIN STANDARDS FROM VARIOUS HÆMINS

(Extinction coefficients for solutions of crystalline hæmins (about 32 mg.) in 1% KCN (1 litre), King photo-electric colorimeter, 1 cm. cell, Chance OGR1 green filter.)

Hæmin no.	Fe (%)	E^{Fe}_S
(16 BDH)	8·41	1 58
(17 GED)	8 26	1 64
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(26 MG)	8·36	1·62
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(31 horse)	6 67	1·62
(33 BDH)	8·30	1 63
(34 BDH)	8 32	1·55
(35 BDH)	8 41	1·59

Average = 1 61
Coefficient of variation = 1·87

The "extinction coefficient" is equally useful for expressing the results for hæmoglobin; and, since the cyan-hæmatins from hæmin and from hæmoglobin are equatable on an iron basis, the E^{Fe}_S for hæmin and for hæmoglobin should be equal.

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The cyan-hæmatin solutions, prepared as described above from several specimens of hæmin and from several bloods, were indistinguishable to the unaided eye. Their colour was of a bright burgundy quality, closely similar to that of the cyan-methæmoglobin. When read in a visual photometer with spectrum light filters, no dissimilarity was detected between the coloured solutions from hæmins and from bloods. With the Spekker absorptiometer and eight light filters covering the visible spectrum, the absorptions of the two cyan-hæmatins were the same within the limits of error of the instrument. Detailed spectral absorption curves (see figure) were carried out on a photo-electric spectrophotometer at the National

LE VI—ABSORPTIONS OF CYAN-HÆMATIN SOLUTIONS ERIVED FROM THREE CONCENTRATIONS OF HÆMOGLOBIN

Filter	Method of observation	Absorption (% of standard concentration, 740 mg./l.)		
		888 mg. Hb/l. (120 %)	740 mg. Hb/l. (100 %)	296 mg. Hb/l. (40 %)
m. Chance GR1 glass	Visual	119 6	100	40·3
	Photo-electric	119·5	100	40·4
rd Tricolour reen 404	Visual	119·7	100	40 3
	Photo-electric	119 0	100	40 9
rd Mercury reen 807	Visual	119 9	100	40·1
	Photo-electric	117·0	100	42·8
rd Spectrum reen 604	Visual	120 0	100	40·2
	Photo-electric	119·6	100	40·5
filter	Visual	117·8	100	42 4
	Photo-electric	115·5	100	46 5

nclusion

If both requirements are taken into consideration, ters suitable for photo-electric instruments are 4 mm. Chance OGR1 glass or Ilford Tricolour Green 404; visual observation Chance OGR1, Ilford Tricolour een 404, or Ilford Mercury Green 807 are satisfactory. ly in instruments of the Dubosq type can a filter be itted without introducing large errors in hæmoglobin timation.

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MEPACRINE ERUPTIONS

A CASE IN THE BRITISH ISLES

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IN view of the descriptions from both sides of the tlantic (see *Lancet* 1945) of a dermatosis arising, after e taking of mepacrine, in the Mediterranean and South-est Pacific areas, remarkable for its protean character, nd called "eczematous and pigmentary lichenoid ermatitis," "atypical lichen planus," and "tropical chenoid dermatitis," the report of a case arising in the ritish Isles is of interest.

Nisbet (1945) describes the condition as superficially esembling almost every known dermatosis but with the llowing characteristics: pigmented flat or hypertrophic chenoid lesions, persistent circumscribed erythemata, volvement of external ears and around eyes, extreme hronicity, decided tendency to secondary infection, eneralised exudative eczematisation or exfoliation, and eculiar pigmentary changes.

The three rough categories of patchy eczematoid, ypertrophic lichenoid, and general exfoliative types ay all arise in any one case at different phases.

The initial lesions appear anywhere, but especially on he backs of hands and feet, on the ears, or, in seborrhœic ubjects, in seborrhœic sites. Mucosæ and external enitalia are often affected; but, though the mucosal esions may be identical with those of lichen planus, he elementary papules of this disease are never present n the skin. Patients were in hospital for an average f about three months after evacuation from the tropics.

Schmitt et al. (1945), reporting 47 cases, noted mucosal involvement in about a third, and described the sequelæ as pigmentary dystrophy, cutaneous atrophy (reticulated or confluent), patchy alopecia, nail involvement, and sweat and sebaceous glandular inactivation. The incidence is regarded as extremely small among 'Quinacrine' takers. Sulzberger (1945) estimates the incidence as 2 per 1000 at most in areas where 'Atebrin' administration as a suppressive was most faithfully carried out, a surprisingly low incidence when the selective concentration of the drug in the skin and liver is taken into consideration.

The interval between starting to take the drug and the onset is 1–11 months, with an average of $3^1/_2$ months, with no apparent relationship to the degree of severity. The occurrence seems to depend on dosage, suggesting saturation and toxicity rather than idiosyncrasy. Improvement occurs 2–8 weeks after withdrawal. Relapse does not occur after one dose but only after 2 or more days' therapy, suggesting cumulative action. Cases were observed which had lasted 9–11 months.

The initial eruption is variable in type and may closely resemble fungous infection, heat rash, urticaria, pityriasis rosea, psoriasis, contact dermatitis, or scabies. The secondary eruption may resemble lichen planus, infectious eczematoid dermatitis, prurigo nodularis, mycosis fungoides, lepromatous leprosy, syphilis, lymphoblastoma, or acanthosis nigricans. The buccal lesions closely resemble lichen planus or leukoplakia. Bagby (1945) believes that factors are involved besides dietary deficiency and toxicity from quinacrine hydrochloride.

Peterkin and Hair (1946) point out that the primary lesion may appear on the site of a preceding dermatosis, and they noted a relapse in 5–9 days, following the readministration of mepacrine, in three persons in whom the eruption had almost subsided. They report intense pruritus, oral lesions, and frequent loss of weight and malaise, often followed by intense pigmentation, and the resemblance of the dermatosis to lupus erythematosus, psoriasis, seborrhœic dermatitis, vitamin-B deficiency, phrynoderma, fixed drug eruptions, and some of the conditions described by Schmitt et al. (1945).

Wilson (1946) considers vitamin deficiency (particularly of vitamin A), quinacrine hydrochloride, and allergy as ætiological factors. Bereston and Cheney (1946) found the time of recovery in mild and moderate cases to be shortened by large doses of vitamin-B complex. In more severe cases the earlier recovery was not noted.

CASE-RECORD

A company director, aged 61, had taken quinine for over 25 years as a malarial suppressive. On Jan. 1, 1946, he started taking mepacrine instead, the first course being three tablets of 0·1 g. t.d.s. for one day, two tablets t.d.s. for two days, one tablet t.d.s. for three days, followed by 0·1 g. daily for six weeks. After this he took three further courses at 6–8 week intervals of two tablets t.d.s. for two days, followed by reduction to one tablet daily.

In June, 1946, he began to complain of a "general inflammation" on one calf at a site at which he had previously experienced itching from sitting near the fire or taking a hot bath. The rash spread to both legs and forearms, and to a lesser extent to the trunk, and now developed into intensely itching red patches, soon becoming scaly. The condition was treated as psoriasis, without improvement. The tongue, lips, and buccal mucosa were not involved.

In October the scalp became scurfy, and he noted a purulent discharge from the right ear, which was slightly painful. Shortly afterwards the scalp became matted with discharge.

His general health had remained unimpaired; he had always been thin, but his appetite was unaffected, and his diet had consisted of little meat, milk, fat, or fruit, but many boiled puddings, potatoes, and green vegetables. There was no history of allergy or of skin disorder, and no family history of psoriasis. He had not been abroad for over twelve years.

On examination on Nov. 8 he was very thin, with the skin tinted a deep yellow. Conjunctivæ normal. Pustular the oxyhæmoglobin method—viz., respectively, the necessity of using pure CO or coal-gas, of heating, and of instability of colour—are absent. The necessary reagents are simple and easily obtained, the reactions leading to the colour production are carried out at room temperature, and the colour produced is stable for a long time.

It is perhaps unfortunate that the best methods for hæmoglobin determination depend on the production of cyanide derivatives. But there seems to be no doubt that this is so; and it is therefore useful to inquire if sodium cyanide is in fact as apt to constitute a danger in the hands of laboratory technical assistants as many physicians think it is. We believe that in the absence of any intention of self-poisoning there is no danger at all. The cyan-hæmatin method for hæmoglobin has been in use in this school for two years, and no suspicion of any trouble has occurred. Moreover, cyanide solutions are daily used for uric-acid determinations in biochemical laboratories all over the world. One of us has been associated with such laboratories for years, and has never encountered a case among his own technical staff, or heard of one elsewhere, of an operator wittingly or unwittingly getting cyanide into his mouth. It is well known that technicians often, some habitually, measure sodium-cyanide solution with pipettes, though most laboratories prefer to add it from a burette.

For hæmoglobinometry the NaCN solution was at first added from a burette, but it has been found to be more convenient and quicker to use one of the ordinary automatic self-filling pipettes, mounted on a stand, which are in routine use in most analytical laboratories.

The fact that an easily procurable solid crystalline substance, hæmin, can be used for a standard is a great advantage. The standard solution is simple to prepare and lasts a reasonable time. Cyan-hæmatin has recently been proposed by Drabkin (1945) as a standard solution for the cyan-methæmoglobin procedure, which is widely used in America; and it appears to have been satisfactory for this purpose. It is even more satisfactory for the present method, for which it forms a natural standard, having the advantage that the colours produced in standard and in test are comparable on a stoichiometric basis.

SUMMARY

A cyan-hæmatin procedure is described for the colorimetric determination of hæmoglobin. A solution of crystalline hæmin in cyanide is used as the standard.

The colours produced by hæmin and by hæmoglobin are comparable on a theoretical basis.

Several samples of hæmin and several bloods have given colours which are directly proportional to their iron contents.

The results of hæmoglobin estimations by the cyan-hæmatin method show a high degree of accuracy.

This procedure has been developed during the course of an extensive investigation of hæmoglobin methods undertaken as part of a programme of research carried out here, at Oxford, and at Cardiff, for the subcommittee on analytical methods of the Medical Research Council. The expenses incurred were partly defrayed by a grant from the Medical Research Council, to whom grateful acknowledgment is made. Our thanks are also due to Dr. R. G. Macfarlane, who supplied us with some of the bloods, and to Miss K. Glaser, Mr. W. Weeden, and Mr. A. F. Hoffler for valuable technical assistance.

Selection of Suitable Green Filters

(R. DONALDSON AND R. B. SISSON)

Two main considerations govern the choice of a suitable filter for matching the absorptions of these cyan-hæmatin solutions with slightly dissimilar spectral absorptions: (1) solutions of the same strength—i.e., having equivalent amounts of hæmin and hæmoglobin—shall have the same absorption and shall therefore match when viewed through the filter; and (2) the absorption must be proportional to iron concentration.

The fulfilment of the second requirement is only necessary for instruments where there is a [illegible] scale—e.g., in the usual type of photo-electric colorimeter or in grey wedge photometers. Where the thickness of the solution is varied, as in the Duboscq type of colorimeter, the filter need not meet the second requirement.

The ideal filter satisfying these requirements would transmit only monochromatic light of wave-length 535 mμ, the wave-length at which the two spectral curves intersect. Since all green filters transmit a wave-band of at least 50 mμ, both these requirements cannot be satisfied exactly. It is therefore necessary to select a type of filter which will give the best approximation.

The extended transmission band will not upset the first requirement provided the spectral curve of the filter is of such a shape that the higher transmission of the hæmoglobin cyan-hæmatin to the right of the filter peak is balanced by the higher transmission of the "hæmin" curve to the left of the peak. The extended transmission band also infringes to some extent the second requirement—i.e., the proportionality of the absorption-iron relation. This occurs even though the solutions obey Beer's law very closely. The narrower the transmission band of the filter, the better the proportionality; but there is the disadvantage that many green filters with narrow transmission bands have also a high transmission in the far red region of the spectrum, a characteristic which further upsets the proportionality relation

Results

A number of filters have been examined to see if they are suitable for the measurement of these cyan-hæmatin solutions. If the spectral transmission of the filter is known, the absorptions can be calculated by standard photometric methods. The necessary additional data are the spectral response curves for the average eye and for E.E.L. photo-cells typical of those used on photo-electric colorimeters.

Table v gives the results for solutions viewed through several filters and without a filter. The absorptions of cyan-hæmatin solutions from hæmin (28·8 mg) are expressed as percentages of the absorption of an equivalent amount of hæmoglobin (740 mg.). If the first requirement were exactly satisfied, the entry would be 100.

Table vi shows how these filters meet the second requirement. The spectral absorptions of cyan-hæmatin solutions from hæmoglobin (740 mg. ≡ 100%) of strengths 120%, 100%, and 40% were calculated with Beer's law. For these solutions the errors in proportionality were obtained. If the second requirement were exactly satisfied, the entries in columns 3 and 5 would be 120% and 40%.

TABLE V—ABSORPTIONS OF CYAN-HÆMATIN SOLUTIONS DERIVED FROM HÆMIN (28·8 mg./l.) EXPRESSED AS PERCENTAGES OF ABSORPTION OF AN EQUIVALENT AMOUNT OF HÆMOGLOBIN (740 mg./l.)

Filter	Method of observation	Absorption (%)
4 mm. Chance OGR1 glass	Visual Photo-electric	99·7 99·3
Ilford Tricolour Green 404	Visual Photo-electric	98·6 98·2
Ilford Mercury Green 807	Visual Photo-electric	98·4 98·1
Ilford Spectrum Green 604	Visual Photo-electric	95·6 95·5
No filter	Visual Photo-electric	98·0 96·5

e descending aorta, or an acute hæmorrhagic pancreatitis, considered. The phenomenally low B.P., however, ested an addisonian crisis or the Waterhouse-Friderichsen rome seen in fulminating septicæmic conditions, such as ingococcal bacteræmia.

uring the examination the patient coughed up brown cious blood-streaked sputum, and we tentatively diagnosed inating heliotrope influenza or Friedländer's pneumonia.

ment and Progress

lood for culture was taken and patient was given 1 c.cm. Pituitrin' and 100,000 units of intramuscular penicillin, wed by 100,000 units three hours later, and then 30,000 s three-hourly up to a total dosage of 1·5 mega units. sma drips, glucose-saline, pituitrin, and adrenaline ctions all failed to raise his B.P.

ext morning there was a striking improvement in the ient's appearance. His eyes had lost their cadaveric earance. Tongue moist and nearly clean; pulse-rate 112; temperature 99·4°F and respirations 26. He was tally alert and asked for food. Whatever the causal anism, we believed that penicillin was being effective, ugh his B.P. remained at 60/30. Blood-urea, which on nission was 75 mg. per 100 ml., had risen to 115 mg. the morning of the 25th, and there was anuria.

n the evening, in view of his lack of urinary output and sistently low B.P., 10 c.cm. of 1/1000 adrenaline hydro-oride was given in an hour by intravenous drip in 1 pint of ne. At first the patient became very distressed and breath-; but, when the flow was reduced to 90–100 drops a ute, the coughing ceased and the B.P. rose at once to 150/85. en the drip was reduced to 72–80 drops a minute, his B.P. ained constant at about 120/70 throughout the night, and passed 3 pints of urine.

he drip was reduced to 28 drops a minute during the night see whether his B.P. would remain at a reasonable level. It l at once, however, to 80/45, and a more rapid rate of flow pt the systolic pressure at 120 or above.

At 4 A.M. on the 26th patient had a severe rigor, and the ip was discontinued. Shortly before it was taken down, c.cm. of 1/1000 adrenaline had been injected into the men of the drip tube just above the cannula. There was response in the B.P., which had fallen to 55/20. It was nsidered that the patient had ceased to react to adrenaline.

On the 27th saline-adrenaline drips were continued through-t the day but it was found that on previous dosage the P. would not rise above 75/50. At 5 P.M., therefore, 15 c.cm. adrenaline was added to a pint of glucose-saline. The P. improved within the first ten minutes, and rose to 140/90, ing maintained at 120/60 by regulating the drip. It seemed ear that the adrenaline was losing its action, and later it came necessary to add 20 c.cm. of adrenaline to a pint of line and keep the drip at 60 drops a minute to maintain the stolic pressure at 120. His urinary output was good roughout the day.

Later this dosage of adrenaline failed to maintain his B.P., d 40 c.cm. of adrenaline had to be added to saline and en at 40 drops a minute to keep the systolic pressure at 120. At midnight he had again ceased to react to adrenaline and e B.P. had fallen to 75/55. His pulse-rate rose to 140, d respirations became deep and sighing. Throughout this ther drastic treatment we had feared an acute heart-failure, d drips were now discontinued. We believed the patient as either in extremis or undergoing a crisis. His B.P. fell ring the night to 55/30.

On the 28th there was much improvement in the patient's neral appearance and behaviour. He appeared well, his lse was better, and the pulse-rate fell to between 72 and 80, is temperature was now subnormal, his tongue moist and lean, and his respirations were 20. His urinary output was ll well maintained. During all this period oxygen and O₂ had been given, often continuously. His B.P. started to e very slowly and reached, at its best, 88/64. No further rips were given, and it was hoped patient's adrenal function ould slowly become re-established.

On the 29th his general improvement was maintained, and e was always hungry; and his systolic pressure remained n the region of between 75 and 88.

On the 30th progress was maintained. The systolic pressure eached just over 90 for a short period. He left hospital month after admission, with a B.P. of 130/75.

Up to the time of cessation of saline-adrenaline drips, 85 c.cm. of 1/1000 adrenaline hydrochloride was administered ntravenously over 51 hours in 15 pints of saline to maintain his B.P. and promote urinary output. This dosage works out at an average of 19 c.cm. per pint, or 5·6 c.cm. an hour.

X-ray Findings

Radiography on the morning after his admission showed a dense pneumonia of lobar type in the right upper lobe, and appearances in both lungs suggesting congestive heart-failure. This condition was probably infective rather than congestive.

Further Observations

The physical signs in the chest on the day after admission agreed with the X-ray findings, which showed consolidation of the upper right lobe. Further examination showed a rapid resolution of the pneumonic process.

The pulse during convalescence was at first very slow, beating at a steady 48 per min. Electrocardiography showed no abnormality besides bradycardia. Later it showed a normal rhythm with no impairment in conduction. At this time the pulse-rate was 70 per min., and remained steady afterwards.

The blood-urea began to fall with the rise in urinary output on the day after the first adrenaline drip, and soon fell from 115 to 25 mg. per 100 ml. and remained at this level.

Bacteriological examination of blood and sputum revealed no specific infecting organism.

Those with experience of toxic peripheral circulatory collapse as severe as it was in this patient must have been impressed by the inadequacy of the conventional methods of treatment. Some of us who have used extracts of suprarenal cortex and its equivalent have found them of little avail in similar cases.

The dosage of adrenaline used in this case—i.e., 285 c.cm. of 1/1000 adrenaline hydrochloride—appears colossal in comparison with that of common usage.

We want to thank Sister J. N. Gibson and her staff for their care and attention of this case in an already very heavy medical ward; Prof. T. J. Mackie and the staff of the bacteriological department, Edinburgh University, for checking the bacteriology; and Air Commodore F. N. B. Smartt, medical superintendent of the hospital, and the Department of Health for Scotland, for permission to publish these notes.

Preliminary Communication

INDUCTION OF BRONCHOGENIC CARCINOMAS IN MICE

THE increased incidence in recent years of lung cancer in man has stimulated research into the induction of pulmonary tumours in laboratory animals by means of carcinogenic hydrocarbons and other compounds, with the object of elucidating the ætiology of the disease. Pulmonary tumours in animals have been difficult to obtain, however, because the delicate lung tissue is unsuitable for direct injection of carcinogenic substances. Thus experimental lung tumours have hitherto been induced by administering a carcinogen at some remote site by painting it on the skin, by injecting it intravascularly, intraperitoneally, or intratracheally, or sometimes by including it in the diet.

The object of this communication is to describe a technique of inducing tumours by the direct application of carcinogenic compounds, sometimes in combination with synthetic hormones, to adult lung tissue growing as homologous grafts in host animals. The pathology of the induced bronchogenic carcinomas will also be described.

Technique

Small pieces of adult lung are isolated under a dissecting microscope and impregnated with a few crystals of 20: methylcholanthrene. On placing the carcinogen in direct contact with the tissue to be grafted, care is taken to wrap the tissue round the crystals so that they are shielded from contact with the tissues of the host. The grafts are implanted subcutaneously, with a Bashford transplanting needle, on each side of the belly of the host. As many as six subcutaneous primary grafts have been made in a single mouse. In all cases the graft folliculitis and much seropurulent exudate in temporal and occipital regions. Pinnæ crusted; scaly erythematous patch behind right ear; drum normal. A few follicular pustules on beard area. Some blepharitis on left side. A few comedones over sternum. On forearms, groins, and backs of legs were infiltrated erythematous plaques, centrally slightly scaly, superficially resembling psoriasis but without a psoriatic reaction on grattage and with non-greasy scales, tending to be partially detached at their periphery. Follicular somewhat hyperkeratotic papules on backs of hands. Nails, lips, buccal mucosa, and tongue normal.

On re-examination (Jan. 24) yellow colour of skin had almost disappeared. Scalp heavily crusted all over, and hairs matted together. There had been a patchy hair-fall. Ears swollen, erythematous, and covered with greasy scales. Fading but brownish pigmented erythematous disks on forearms; a brownish-yellow pigmented macule on back of right hand. Behind right knee was a lichenified plaque; and there were bluish-brown areas in right groin and on calves.

DISCUSSION

There seems to be little doubt that this is a case of eczematous and pigmentary lichenoid dermatitis following the taking of mepacrine. It may be said to have resembled at various stages psoriasis, keratosis follicularis, seborrhœic dermatitis, contact dermatitis, and patchy eczematisation; and a patchy alopecia appears to be developing beneath the heavy crusts on the scalp.

A therapeutic test with mepacrine was not carried out owing to the chronicity of the condition, which has already lasted seven months, and the patient's objection to a test which, if positive, would lead to an exacerbation.

Skin tests are reported by Sulzberger (1945) as usually negative, except in eczematous or exfoliating cases.

The onset about six months after starting to take mepacrine, and the use of "booster" courses, suggests cumulative action and saturation rather than idiosyncrasy. Owing to the rarity of the condition among mepacrine takers, it seems that in most persons the cumulative dose is higher than the prophylactic dose of 0·1 g. daily, though it is also possible from slow excretion that toxicity may arise at this level in some people.

The U.S. Army physicians (1945) state that cutaneous reactions have been more frequent in persons who have taken suppressive atebrin in larger doses than the recommended amount, 0·7 g. a week, and that, in clinical treatment of malarial attacks with atebrin, routine dosage should not exceed 2·8 g. in 7 days.

This patient took 3·1 g. in the first 7 days and, after continuing with 0·7 g. each week, on three further occasions raised the dosage to 1·7 g. or even 2·3 g. in 7 days.

He was emaciated at the time of onset, and his diet of little meat, milk, fat, or fruit, but many boiled puddings and potatoes suggests that there may have been a general relative deficiency of vitamins. Keratosis follicularis is regarded as a manifestation of deficiency of vitamin A and possibly of C, while seborrhœic dermatitis seems to have some relationship to deficiencies of the B group. The tendency to follicular involvement, resulting in an appearance closely resembling seborrhœic dermatitis, is comparable to the affection of the follicles in many cases of toxicity arising from organic arsenicals, gold, and the sulphonamides.

Treatment is unsatisfactory, but consists in withdrawal of the drug, an adequate diet with vitamin supplements, and the use of penicillin and other agents to combat secondary infection, during the time necessary for excretion of the drug. Nisbet (1945) used systemic penicillin in the generalised eczematous cases. It is essential to use only bland surface applications to avoid the risk of a superimposed dermatitis medicamentosa, but fractional doses of X rays may be necessary for the control of some of the more lichenised patches.

According to Schmitt et al. (1945), intravenous sodium thiosulphate appears to have no effect on resolution. The use of parenteral crude liver extract is advisable in view of the possible presence of hepatitis and as a prophylactic against, or treatment of, lesions su vitamin deficiency.

SUMMARY

A case of eczematous and pigmentary lic dermatitis is reported, which appears to be related to mepacrine administration and avitaminosis.

The probability of cumulative action of mep from high dosage, leading to toxic effect is apparent, and there is no evidence of idiosyncrasy.

Treatment includes withdrawal of the drug, bland applications, penicillin, and vitamins.

The incidence is very low with the recomme suppressive dosage of 0·1 g. daily, and this dose should not be exceeded, unless the patient is under supe

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MASSIVE DOSES OF ADRENALINE IN ACUTE TOXIC PERIPHERAL CIRCULATORY COLLAPSE

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IN the case described here very large doses of adrenaline were given in the treatment of acute toxic peripheral circulatory collapse. Though such treatment seems so simple, we have not been able to find any similar record. Perhaps this is because the method has been used before and found wanting.

At 6 P.M. on June 24, 1946, a German prisoner-of-war, aged 35, was admitted to the Law Junction Hospital with a letter from his camp medical officer saying that he had been taken ill at about 7 A.M. with intense abdominal pain and vomiting. Food poisoning had been diagnosed.

He was heavily built and thick-necked, with well-developed arms and chest. He appeared moribund, with lilac grey skin, dry brown tongue, and sordes-covered lips and teeth. His breath was foul, and his face, hands, wrists, ears, and feet were cyanosed. His skin blanched to the slightest touch, fingerprints being left many seconds after the examining hand had been removed. His general appearance recalled the profound collapse seen in bubonic or septicæmic plague.

His abdomen was tender in all parts: there was rigidity in the epigastrium, and he was exquisitely tender over the upper part of the left rectus, where guarding was pronounced. His heart sounds were inaudible. All over both lungs there were patches of tubular breathing which seemed at first to be most marked in the left upper lobe, but one of us thought that pneumonic sounds were most marked in the lower part of the right upper lobe. This opinion was later supported by radiography. His blood-pressure (B.P.) was 50/25, and his pulse almost imperceptible.

Reflexes in limbs and eyes were all present, if sluggish. Temperature 102°F, pulse-rate 112, and respirations White-cell count 11,700 per c.mm. (polymorphs 81%, many of them immature forms).

Diagnosis

Owing to the onset of his illness with vomiting and epigastric pain and his acute upper abdominal symptoms, an abdominal catastrophe, such as perforation, leaking, dissecting aneurysm

Among the series of pulmonary tumours in group II ccurring in strain-A mice, all were squamous-celled rcinomas except two which were malignant adeno-rcinomas.

All the tumours in the C3H mice, irrespective of whether e grafts had been treated with the carcinogen alone r plus stilbœstrol, were squamous-celled.

The primary tumours arising in grafts 12–15 weeks fter implantation in either strain consist of patches f normal collapsed lung alveoli with adjacent areas howing malignant changes well established. In a rimary squamous-celled carcinoma arising $12^1/_2$ weeks fter implantation in a strain-A mouse the squamous nd polygonal neoplastic cells have prickle borders and he surface cells are forming keratin pearls. Fig. 4 llustrates an adenocarcinoma of which some areas are ifferentiated to form gland-like structures, after con-aining an exudate of fibrin and leucocytes. There is onsiderable variation within the primary tumours, with n overall tendency to squamous metaplasia. In group II small hard subcutaneous nodules induced from lung rafts impregnated with the carcinogen and stilbœstrol vere palpable as early as 9 weeks after implantation. n their general histology they resemble the tumours nduced in both strains of mice with methylcholanthrene lone, except one tumour which was an undifferentiated arcinoma composed mainly of "oat cells." The emaining lung tumours were all squamous-celled arcinomas, except two which were adenocarcinomas. A brown induration of the lung tissue, similar to that seen in human cases of chronic and passive congestion, due to hæmosiderin, is present in some areas of the early grafts.

DISCUSSION

There are several advantages in this method of tumour induction which permit a closer study of carcinogenesis in the various tissues comprising an organ like the lung than is possible with other well-known techniques. The carcinogen is placed in direct contact with the living cells of the graft, without the use of a solvent, and therefore there is little or no foreign-body reaction, or residue of necrosis, which might mask or conceal areas where neoplastic changes first arise. Since the focus of activity of the carcinogen is within a graft and not, for instance, in some part of a large organ, the growth of the affected tissues may be more readily observed macroscopically and more easily removed for histological examination of the early stages. The neoplasms arise in subcutaneous grafts and are maintained by subcutaneous transplantation. A series of grafts established in one host can be regarded as growing under identical hormonal conditions. With other techniques the application of the carcinogen may involve changes in organs or tissues throughout the body and not necessarily only in the region where a tumour is induced. Effects of this kind may complicate the interpretation of the incidence of experimental tumours. Thus Dunlap and Warren [5] found that, in Swiss mice injected subcutaneously with carcinogenic hydrocarbons, the incidence of primary pulmonary tumours was higher in mice which had also developed tumours at the site of inoculation.

For reasons which are still obscure more difficulty has been experienced in obtaining malignant tumours from subcutaneous lung grafts impregnated with methylcholanthrene than with grafts of adult prostatic epithelium, which in strain-A mice may give a yield as high as 98% of malignant tumours.[1] Since the tumours which are obtained in lung grafts have been found to arise from bronchial epithelium, it is possible that some grafts fail to develop tumours because the amount of this epithelium in a particular graft is insufficient, or its location is unsuitable for direct contact with the carcinogen. Obviously in some individual grafts the bronchioles may be damaged in isolating the fragment, or there may be a partial failure of vascularisation.

The success obtained with grafts of prostatic epithelium from adult mice must be partly due to the use of a closely inbred strain of mice in which homologous grafting is much better tolerated than in mixed strains.[1] There is no obvious reason associated with the graft-host relationship why prostatic epithelium should flourish, whereas lung tissue implanted under similar conditions does not always survive. Without further experiments it is difficult to explain the increased tumour incidence in lung grafts of C3H mice impregnated with stilbœstrol in addition to the carcinogen. The œstrogen may stimulate proliferation of bronchial epithelial cells, which thereby become more susceptible to the action of the carcinogen, or the hormone may itself be mildly carcinogenic. Failing direct action of this kind, it is possible that œstrogen favours more rapid vascularisation of the graft, or in some way influences tumour formation by first becoming absorbed into the general circulation.

So far as I am aware, there is no evidence that bronchial epithelium, in animals treated with œstrogen over a long period, shows any pathological changes. Experiments are being undertaken to determine if stilbœstrol alone has any stimulating action on the bronchial epithelium in lung grafts.

The neoplastic influence of œstrogens is now well established for various organs and tissues, such as the mammary gland, lymphoid tissue, testis, bone, and adenohypophysis. What may be more significant in the present problem is the fact that non-specific cancer may arise from suitable dosage with sex hormones.[6,7] In other words, tissues which are not usually regarded as responding in some specific way to substances like œstrogens—and among these we must presumably include lung epithelium—do undergo neoplastic changes if œstrogen treatment is prolonged. Burrows [8] has found, moreover, that subcutaneous sarcoma induced by œstrogens cannot be due simply to mechanical injury produced by the injection or to the action of the solvents in which the œstrogen is administered. It seems significant in these experiments that no response to the carcinogen was obtained from the lung alveoli, and that, if an alveolar epithelium exists, it should remain entirely quiescent while the closely adjacent epithelium of the bronchioles proliferated in so striking and specific a manner. These observations support the view of those, such as Barnard and Day,[9] who contend that there is no epithelial lining to the lung alveoli. Further experiments with this technique should provide additional information on this problem.

SUMMARY

Bronchogenic carcinomas were induced in mice of strains A and C3H from subcutaneous grafts of adult lung tissue impregnated with 20 : methylcholanthrene.

In mice of strain C3H the tumour incidence was increased if the lung grafts were impregnated with stilbœstrol in addition to the carcinogen.

The pathology of the pulmonary tumours is described, and the action of œstrogens on the bronchial epithelium in lung grafts is discussed.

I wish to thank Prof. W. G. Barnard, of St. Thomas's Hospital medical school, and Dr. B. D. Pullinger, of the Imperial Cancer Research Fund, for their encouragement and helpful criticism.

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[6] McEuen, C. S. *Amer. J. Cancer*, 1938, 34, 184.

[7] Lacassagne, A. *C. R. Soc Biol. Paris*, 1939, 132, 222.

[8] Burrows, H. Biological Actions of Sex Hormones. London, p. 250.

[9] Barnard, W. G., Day, T. D. *J. Path. Bact.* 1937, 45, 67.

tissue was taken from mice aged 3 months belonging to the same strain as the hosts in which the grafts were to be implanted.

I have previously reported[1] the induction of transplantable glandular carcinomas of the prostate in mice by this technique, which is a modification of that used by Greene,[2] Rous and Smith,[3] and Rous,[4] with the important difference that adult, not embryonic, tissue was used for the grafts.

Results

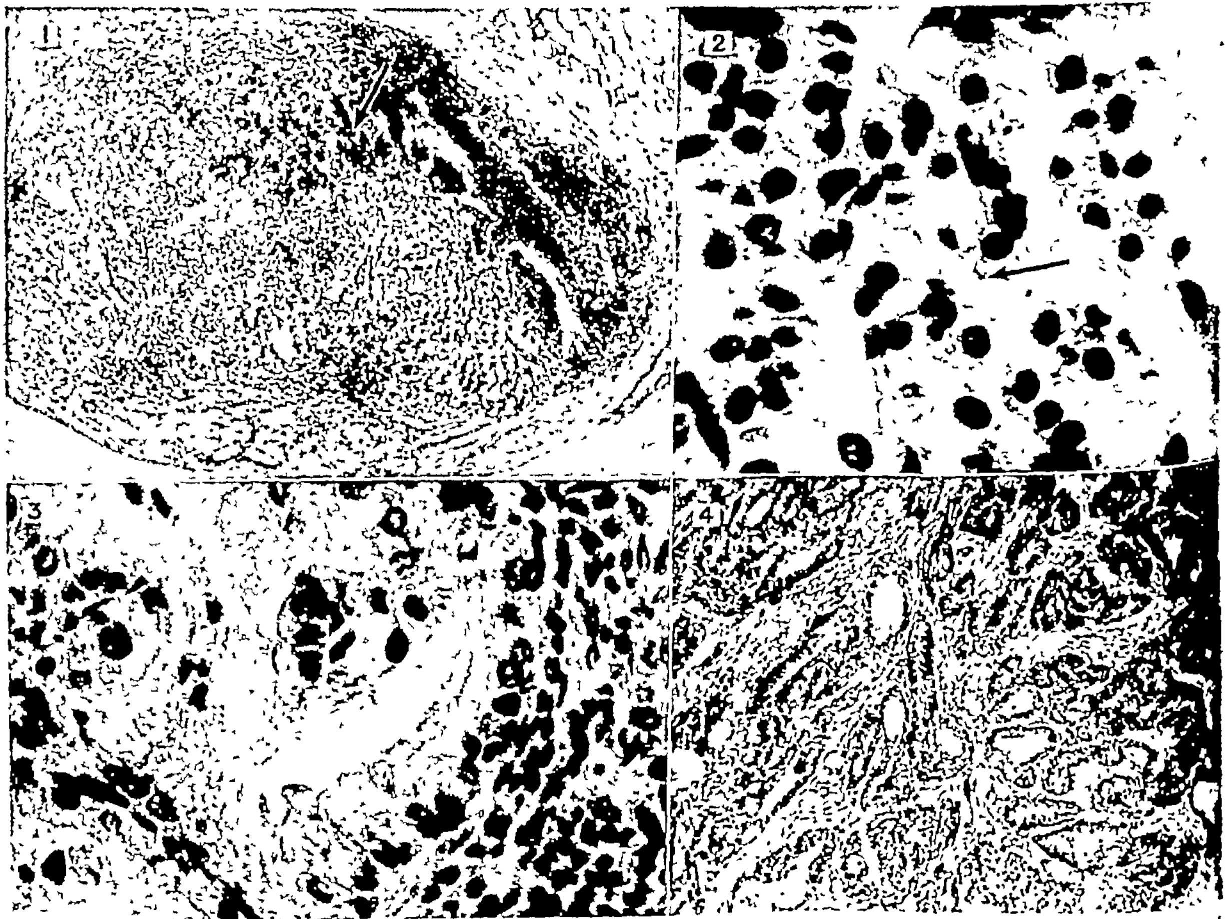
The host mice bearing lung grafts were divided into three groups. Group I were mice of strains A and C3H which received lung implants impregnated with methylcholanthrene and were killed after an interval of 6–8 weeks, before malignant tumours had developed. The grafts were fixed for histological examination of the early phases of carcinogenesis. The details of groups II and III are as follows:

Group	*Substances included with the graft*	*Strain*	*Total no. bearing grafts*	*No. which developed tumours*
II	methylcholanthrene	A	36	12
		C3H	36	5
III	methylcholanthrene and stilbœstrol	C3H	36	25

The pulmonary tumours were induced in both and female mice, the incidence being about equal two sexes. The malignancy of the tumours was cases proved by transplanting portions of the tumour into mice of the same strain. All the tra grow, and some of these tumours are now in the and fourth generations of transplantation. Grafts did not develop tumours had become necrotic, ably owing to failure of vascularisation.

Microscopic Structure of the Tumours

Examination of the primary grafts from revealed the early phases of tumour formation and that the tumours were derived from the epitheli of the bronchioles—i.e., they were bronchogenic t (fig. 1). Many of the primary grafts showed ad lying adjacent to patches of collapsed lung As might be expected, there was considerable v in these early stages of tumour formation. neoplastic cells, for instance, contained mucus; cytoplasm was foamy or distended with secretion, nuclei were large and deeply staining (fig. 2). primary adenomas appeared to lack secretory though they were arranged in alveolar-like m cells with similar darkly staining nuclei and cytoplasm. In some areas of the grafts the c epithelial cells had persisted, indicating that the implants had been maintained in a surprisingly condition (fig. 3).



Photomicrographs of sections of adult lung grafts, from strain-A mice, impregnated with 20 : methylcholanthrene and implanted subcutaneously into the belly of strain-A mice aged 3 months.

Fig. 1—Eight weeks after implantation ; arrow indicates adenoma lying adjacent to bronchial epithelium, from which the tumour arose ; patches of collapsed lung alveoli also evident ; whole implant surrounded by muscle. (× 78.)

Fig. 2—Adenoma from lung graft 8 weeks after implantation; cytoplasm of tumour cells is foamy, many being distended with secretion, as indicated by arrow; nuclei large and deeply staining. (× 550.)

Fig. 3—Section through bronchial epithelium of lung graft 7 ½ weeks after implantation ; ciliated epithelium persists, indicating healthy condition of graft. (× 375.)

Fig. 4—Primary lung adenocarcinoma which arose 12 ½ weeks after implantation ; this tumour grew on transpla into mice of the same strain. (× 87.)

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1. Horning, E. S. *Lancet*, 1946, ii, 829.
2. Greene, H. S. N. *Science*, 1945, 101, 644.
3. Rous, P., Smith, W. E. *J. exp. Med.* 1945, 81, 597.
4. Rous, P. See *Lancet*, 1947, i, 34.

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Reviews of Books

Essays on Human Evolution

Sir ARTHUR KEITH. London: Watts. 1946. Pp. 224. 15*s*.

IN these essays Sir Arthur Keith may not satisfy all his hungry critics, but his thesis is worked out in a logical manner. However controversial, the essays are stimulating, being a sincere effort to solve the riddle of human life and endeavour. Sir Arthur seems to make the duality of human thought and action the basis of much of his argument in reference to tribes and nations, though he passes rather lightly over its personal and individual implications. He divides this duality into two main elements—the ethical or moral code, and the cosmical code. The first is concerned only with the internal welfare and satisfaction of the tribe, and is pacific; the second with the external relations with other tribes and is often the origin of enmity, jealousy, and war. Tribalism, he contends, is nature's method of bringing about the evolution of man. But if this duality affects the tribe as a whole it also affects—even more, in the view of some thinkers—the outlook of the individual. MacNeile Dixon, for example, held that the whole universe displayed a dual personality: life for the individual was an endless dialogue consisting of meetings and partings, love and hate, hope and fear. "Look when you will," he said, "the contraries and antinomies confront you." They correspond with something in the universe itself, and foster, in the individual, the development of personality and character. To some disaster and disappointment means the renewal of hope; to others it means despair. Frustrations occur daily in the life of individuals even while the ethical code of the tribe and nation is in operation and maintained. According to Sir Arthur Keith, a nation cannot cease to be ambitious and competitive, for there is no cheap road to peace. When the cosmical code comes into action, with its enmity complex, the moral code is relegated to a secondary place, the security of the tribe or nation being placed first; in other words, war becomes necessary to preserve the tribe as an evolutionary unit. In this sense, he suggests, war serves a beneficent purpose. He opposes the views of T. S. Eliot and Elliot Smith that civilisation is responsible for all wars, for war in some form existed long before the dawn of civilisation. Civilisation has merely added many monstrous horrors, by-products of the scientific mind. It is only when we assume, he concludes, that evolution aims at the production of societies, not individuals, that we reach a satisfying explanation of man's dual mentality.

Spezielle Chirurgische Therapie für Studierende und Ärzte

Dr. MAX SAEGESSER, Privatdozent für Chirurgie, Berne. Berne: Hüber. 1946. Pp. 884. Sw. fr. 80.

THIS is virtually a manual of operative surgery and is written chiefly for inexperienced surgeons. It covers most of the field of general surgery, includes a full and detailed section on fractures, and omits all gynæcology and otorhinolaryngology. The chapter on brain surgery is confined to the complications of trauma and the injection treatment of trigeminal neuralgia, but that on the spinal cord describes the removal of tumours and the operation for lesions of the intervertebral disks, and in another place is given Dandy's intradural rhizotomy for spastic torticollis.

Dr. Saegesser's approach is essentially practical and he sets out to avoid academic issues as far as possible. Though he admits that there are many answers to every surgical problem, he maintains that there is only one really good answer, and accordingly he gives only one operation for each condition he describes. This has the great advantage of simplicity, and increases the value of the book for the junior surgeon who seeks straightforward authoritative guidance and who is not qualified to choose between several methods. Moreover, it ensures consistency throughout the book, for nearly all the operations described are those actually used by the author himself.

The standard of the book is high. The indications for operation are made clear and definite—indeed sometimes over-simplified—and though the author might be described as an interventionist he often gives wise words of caution. The descriptions of operative procedure are good and are illustrated by many excellent drawings. Postoperative treatment and complications are given in detail. Some defects, however, may be mentioned. The chapter on burns is far below the general level: it does not mention the dangers and disadvantages of tanning, or the indications for plasma transfusion or skin-grafting. In the section on the postoperative management of appendicitis, the surgeon is happily compared to a midwife who stands by and directs a normal process of spontaneous development; yet a régime is recommended in which measures to restore intestinal activity start as early as the day after operation. In gastric surgery entero-anastomosis and the Y-anastomosis of Rowe are both recommended without due warning of their danger.

Human Factors in Air Transport Design

ROSS A. MCFARLAND, PH.D. Division of Research, Graduate School of Business Administration, Harvard University. New York and London: McGraw-Hill Book Company Inc. 1946. Pp. 670. $6.

THIS reliable and readable book is based on observations made by Dr. McFarland as physiological adviser to certain firms in the aircraft industry and to various civilian air lines in the United States. He believes that the future of air transport depends on passenger comfort, crew efficiency, and operational safety; and his aim is to provide the aircraft designer and aeronautical engineer with existing information on human requirements. Since, however, he is inclined to assume that the reader knows the principles of physiology, the book will appeal more to the physiologist working in the field of aviation medicine than to the aircraft designer or engineer. In his enthusiasm, he tends to obscure essentials by introducing a mass of physical data more likely to confuse the reader than to clear the ground for him. This is evident when he is discussing the importance of a clear view from the cockpits of transport used on airports with heavy traffic or restricted landing areas. To support this sensible suggestion an "index of landing" is defined, based on six assumptions, the use of trigonometry, a study of the geometry of the cockpit, and the construction of an elaborate graph. A designer would be more likely to give the pilot a clear view if told about the experiments which show that a pilot becomes tired more quickly, and therefore more liable to cause an accident, if his field of vision is obstructed or reduced.

The problem of controlling noise in aircraft cabins is particularly well treated, and supported by an excellent and brief account of the physical characteristics of sound and the physiological and psychological effects which it produces. He emphasises the importance of a standard cockpit lay-out, so that the position, shape, and colour of all control levers will be similar in different types of aircraft. And pilots will agree with him that all the dials should be clearly visible on the instrument panel and their positions consistent in all types of aircraft. The first-class section on illuminating the cockpit contains an accurate account of the factors influencing dark adaptation. He recommends that the blood of air-crews should be periodically tested for carbon monoxide by the up-to-date Scholander-Roughton micro-gasometric method. The permissible standard of carbon-monoxide contamination in the aircraft, however, is expressed merely as 0·003%—not as a percentage of the total barometric pressure which ensures that the permissible concentration does not rise with altitude.

La digitale et les strophantines (*Paris: Masson.* 1946. Pp. 206).—This monograph, outlining in considerable detail Prof. D. Danielopolu's distinctive views on the action of the digitalis group of drugs, will be read with interest by many cardiologists and pharmacologists. For some 40 years he has been contributing a steady stream of articles on this particular subject, and his views, even though they have not been generally accepted in this country, are stimulating and constructive. He lays stress on the value of strophanthus, a drug that has never been sufficiently used in England.

THE LANCET

LONDON: SATURDAY, AUGUST 9, 1947

Food

This country is now confronted with food cuts ich will be generally unwelcome. If next year we d ourselves obliged to reduce the cost of our ports by several hundred million pounds there will further cuts which will make our present manner living look luxurious. Whatever happens, we nnot hope for any early return to the former abunnce of imported food, and major adjustments will obably be necessary if we are to maintain—let one improve on—present standards of nutrition. ie case for devoting more of our resources to the oduction of food at home has been plainly stated in ese columns,[1] and so has the argument that salvan will best be found by facing the facts and trying change the national food habits.[2] To face facts, wever, it is necessary to know them, and if the overnment have any wish to secure the support of e medical profession for their food policy they will ve to give us more of the data on which that policy based. The recent controversy on whether or not e national nutrition is deteriorating was made not ly useless but positively harmful by the Government's unwillingness to part with information which ey must certainly possess: and in the absence of this formation doctors in general, whose words on diet ive some weight with the public, continue to speak terms of prejudice and personal impressions The inistry of Food not only could give us recent figures r the amount of food moving into consumption, and ie average calorie consumption deducible therefrom, it could divulge the proportions taken up by the rious sections of consumers, such as expectant and ursing mothers, children, or invalids, and the nounts distributed as domestic rations, through nteens and restaurants, and as school meals. 'e could have full publication of the results of the rvey of family food purchases about which occaonal figures have from time to time been divulged Parliament. All this statistical information is ssential before a reasoned opinion on the national od position can be formed. But of greater interest the medical profession would be a statement on ie surveys which are known to have been undertaken f the diets which are today actually eaten by houseives, by adolescents, by industrial workers, and y other categories. A clinical assessment of nutrition annot be satisfactorily made when, as is the case this country, the level of food consumption is at ast sufficient to prevent deficiency symptoms. Short f such deficiency, however, there may be reduction physiological efficiency. Hence it is doubly mportant that the information available on the utrition of the population should be published. The verage weights of school-children of certain ages in iverpool and Glasgow are apparently ceasing to rise: hat changes are occurring in the weights of dults?

So long as the Ministry could be sure of continuing to supply food which in quantity and variety gave general satisfaction there was perhaps some reason to regard explanation as a waste of time. But when the fare it offers may no longer suffice for sound nutrition, it would certainly be well advised to take the medical profession into its confidence.

Differential Diagnosis of Jaundice

It is a pity that all attempts to clarify the pathology of icterus seem to involve some new system of classification. One tends to distrust systems, especially new ones, feeling them to be suitable only for examination purposes. Nevertheless any interpretation of a symptom must evolve from the complex to the simple—from investigation and discussion to system —and **With**'s summary of the pathogenesis of jaundice[1] is no exception.

His schema of three "ideal" forms of jaundice is based on recent work which has invalidated some of the earlier hypotheses. Thus the ability of the van den Bergh test to distinguish bilirubin which has been actively excreted by the liver cells is now doubted.[2] Jaundice due to over-production of bilirubin so great that the liver cannot handle it is almost certainly a myth; hæmolytic jaundice is associated with increase of circulating bilirubin, but it is the coincident damage to liver cells from anoxia and other causes which prevents adequate excretion. Obstructive jaundice does not seem to be entirely, or even principally, caused by the bursting of engorged bile capillaries and the overflow of bile into the lymph-spaces. **Shafiroff** et al.[3] controlled the intrabiliary pressure in dogs, and found that below 25 cm. of water no bilirubin appeared in the blood or the lymph from the thoracic duct; at 30 cm. of water half the dogs showed bilirubin in blood and lymph, but half of them in the lymph only; above 40 cm. of water pressure the blood and lymph of all dogs contained bilirubin. **With** assumes that rupture of bile passages at a pressure of 25–30 cm. of water is unlikely, that simple diffusion across the walls of bile capillaries is also very unlikely because of compression of the lymph-spaces of Desse, and that liver cells may in some circumstances secrete bilirubin actively into the lymph channels as well as into the bile channels. The same results might be found if damage to the bile canaliculi produced stretching and increased permeability, as suggested by **Watson**.[4] Actual rupture may, however, take place when high pressure and consequent necrosis have persisted for a long time. Again, jaundice due to hepatitis need not arise from retention and inability of damaged liver cells to excrete bilirubin. It is far more likely, **With** believes, that the necroses demonstrated by **Iversen** and **Roholm**,[5] in material from liver punctures, open bile spaces and allow bile to drain into the lymphatics. The "ideal" types he suggests as a basis for classification are (1) the type due to over-production of bilirubin, which cannot occur alone; (2) the type due to under-excretion from inability to extract bilirubin from the blood; and (3) that due to passage of bile into the lymph, either actively or passively, and so into the blood The

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1. *Lancet*, 1947, i, 340, 686; July 12, pp. 60 and 67.
2. Le Gros Clark, F. *Ibid*, 1947, i, 721.

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1. With, T. K. *Acta med. scand* 1947, 128, 25.
2. With, T. K. *Ibid*, 1944, 119, 201.
3. Shafiroff, B. G. P., Doubilet, H., Ruggiero, W. *Proc. Soc. exp. Biol., N.Y.* 1939, 42, 203
4. Watson, C. J. *New Engl. J. Med.* 1942, 227, 705.
5. Iversen, P., Roholm, K. *Acta med. scand.* 1939, 102, 1.

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LONDON: SATURDAY, AUGUST 9, 1947

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5. Iversen, P., Roholm, K. *Acta med. scand.* 1939, 102, 1.

novelty of his approach to the mechanics of bilirubin excretion, with its division of jaundice into production, retention, and lymphogenous types, lies in the introduction of the lymphogenous type, whose existence or non-existence (as he acknowledges) is susceptible of experimental proof. Combinations of these three types can be made to account theoretically for the sometimes contradictory findings in man. But, if faith in the van den Bergh reaction is to be undermined, something more than a new classification of jaundice is needed as a diagnostic aid; and this With does not provide. The only pointer which emerges from his hypothesis is that in lymphogenous jaundice the plasma bilirubin is always as high as 10–20 mg. per 100 ml.

Since so-called hæmolytic jaundice seldom causes difficulty, the important problem confronting the clinician is, as Schiff [6] observes, the distinction between obstructive jaundice and hepatitis, the surgical treatment for the one often being fatal in the other. This distinction is not made easier by the existence of a small group of cases of hepatitis, mainly arsenical in origin, which appear to have intrahepatic obstruction and in which biochemical tests show the results obtained with complete obstructive jaundice.[7] The attacks of jaundice, and many other symptoms of hepatitis, may closely resemble those of biliary obstruction. Despite the champions of the various function tests, it remains true that diagnosis can only be satisfactorily attempted if a full clinical picture of both obstructive jaundice and *hepatitis is present in the mind of the diagnostician*, and in this connexion the conclusions of Kelsall, Stewart, and Witts on another page of this issue are helpful. They draw attention to the great range of severity of the pathological process in hepatitis, showing that jaundice may or may not occur in the acute phase, and that a similar variability of symptoms, interspersed with complete remissions, is seen in the subacute and chronic stages. Reviewing 35 cases, they found that a history of alcoholism was never obtained, and that the majority of patients with insidious cirrhosis were women. Some patients with the chronic condition gave histories of initial infective or chemical hepatitis, but in half the cases the ætiology was obscure, and the investigators do not permit themselves to speculate whether these may not have been due to undiagnosed infective hepatitis or nutritional disturbances in the liver.

The picture of the cirrhotic patient is sufficiently easily recognised, as is the syndrome of the preceding acute hepatitis, fully described recently by Capps et al.[8] in a study of over 2000 cases. It is the intermediate subacute or early chronic stages of the process that cause difficulty, and here the clinical pictures described by Witts and his colleagues are of assistance. Any one, or all, of the signs and symptoms of cirrhosis may appear and subsequently disappear. Jaundice, intermittent and variable, together with persistent ill health and dyspepsia, may be the presenting picture, only clarified later by the sudden appearance of ascites, hæmorrhage from œsophageal varices, or pigmentation and nævi. Before any of the more dramatically obvious symptoms arise it is sometimes impossible clinically to differentiate the picture of chronic hepatitis from that of biliary obstruction. An attempt has been made by Giansiracusa and Althausen [9] to discover the data of value in distinguishing these conditions. They reviewed 166 selected cases of jaundice and found that age-incidence, bradycardia, fever, pain in the abdomen and back, malaise with digestive upsets, and pruritus were of little use as pointers to either condition, whereas ascites and palpable gall-bladder were almost diagnostic. In their series, twice as many men suffered from cirrhosis and from obstructive jaundice as women, and nine times as many men as women developed carcinoma.

The figures given by Schiff for Cincinnati General Hospital are of interest in suggesting the relative frequency of hepatitis and neoplastic and calculous obstructive jaundice.

	Hepatitis		Neoplasm		Calculus
Over 40 (245 patients)	38·0%	..	42·0%	..	14·0%
Under 40 (575 patients)	65·0%	..	21·0%	..	6·0%

It will be seen that the other types of jaundice make up only 4–8% of the total; they include congenital abnormalities of the biliary system, hæmolytic and other anæmic jaundices of children and adults, and the entity named by Meulengracht [10] chronic intermittent juvenile jaundice. With increased attention now being focused on the atypical syndromes of infective hepatitis, it is refreshing to find that there is a class of case which suffers from marked lassitude, digestive disturbances, and fleeting icterus but which is entirely benign. Careful reference to Meulengracht's description of the condition is recommended, however, before deciding in favour of this diagnosis.

Too much reliance must not be placed on biochemical tests in jaundice, and both Schiff and Higgins et al.[11] have emphasised their variability. In a full survey of the position the latter authors recommend testing the plasma bilirubin, alkaline phosphatase, and albumin and globulin in each case, this combination of tests giving a clearer diagnostic picture than any one test used alone. Schiff holds that laboratory tests are best performed collectively and repeatedly, since jaundice is a dynamic condition and the tests will vary with the stages of the pathological processes. It is evident that, despite the assistance given by a clearer picture of the mechanism of bile secretion in disease, by careful clinical descriptions of conditions producing jaundice, and by improved laboratory aids, all the knowledge, judgment, and intuition of the clinician are still required for the diagnosis of all but the most typical syndromes in which jaundice appears.

Beds

THE *case of the man of 74, with a fractured* skull, who was refused admission to one London hospital, *was discharged after 8 days in another, and* died 4 days later, has drawn public attention to the lack of hospital beds for acute cases. There is no doubt whatever that old people, who are likely to occupy a bed for a long time, are often turned away though their condition needs urgent treatment. Thus cases of acute intestinal obstruction in elderly people ve been refused for fear the cause should prove be cancer; and serious medical conditions are nmonly refused because they may run a long urse. The London Emergency Bed Service inform that of 247 applications made through them in the st week of this year, 44 were declined admission on unds of old age; and in the first week of June the ure was 19 out of 182.

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[6] Schiff, L. Differential Diagnosis of Jaundice, Chicago, 1946.
[7] Steigmann, F., Popper, H. *Gastroenterology*, 1943, 1, 645.
[8] Capps, R. B., Sborov, V. M., Barker, M. H. *J. Amer. med. Ass.* 1947, 134, 595.
[9] Giansiracusa, J. E., Althausen, T. L. *Ibid*, p. 589.
[10] Meulengracht, E. *Quart. J. Med.* 1947, 16, 83.
[11] Higgins, G., O'Brien, J. R. P., Stewart tts, L. J. *Brit. med. J.* 1944, i, 211.

The difficulty of the hospitals is clear: they have rcely enough nurses to staff their beds, and many ve closed some of their wards or beds for lack of ff. If they are to cope with the "acute" work, ey must keep active as many beds as possible, and ey dread the long "chronic" case which will put bed out of commission for weeks or even months. the old days voluntary hospitals could send such ses on to the county hospital when the acute stage as past; but now the county hospitals, crowded and derstaffed, are themselves refusing patients; which eans that if an old person with nowhere else to go admitted to an acute ward he may block a bed definitely. As Mr. R. E PEERS, secretary of the mergency Bed Service, explained to the general press st week, the hospitals have to decide who shall have e beds, and they generally prefer to give the bed the patient with the best chance of living. It is anifest that old people should have the right of dmission to hospital no less than younger ones, if ly in order that medical science can be brought to ear on their disabilities; yet unless great care is xercised by admission officers in avoiding long-stay ases the hospital fills up with them and gradually oses its power to help the acute sick. Unfortunately, he fact that this arrangement is very reasonable does othing to mitigate the hardship involved in cases uch as the one described; and discrimination between atients in this crude way ought not to go on. If e cannot quickly get staff for our hospitals, either y a great extension of an improved part-time nursing cheme or in other ways, we must study how to use eds more economically. Could we not for example o more to ensure that hospital care is given to those ho really need it but not to those who don't?

In all this talk of lack of beds we tend perhaps to orget that nearly everyone in this country goes to leep each night in a bed of his own, and that when e falls sick no bed seems better. The concentration f consultants and diagnostic equipment in hospitals ays us open indeed to the charge of depriving the atient who is ill (but not acutely ill) of the useful nfluence of familiar surroundings; and it is worth onsidering reports of an experiment at the Montefiore Hospital, New York, where they have been trying to xtend nursing and medical care into the home.[1] Iontefiore patients are classified as those who need the pecial facilities of hospital, and those who need nly active medical and nursing care. The medical equirements of this second group are examined, and heir family and home environment is assessed efore they are sent home. Full-time doctors and full-time social worker staff the department of ome care. Medical attention is available all round he clock, and visits are made as often as the patient's ondition demands. Consultants are to be had from ll the departments of the hospital. Nursing care is given, according to circumstances, by arrangement with the Visiting Nurse Service of New York. The social service worker calls regularly and helps the family in any way required; and, when necessary, help in the home is given by local or community services. Drugs, transport to and from hospital, laboratory studies, and hospital equipment and supplies are all at the service of the patient, and he is under the same doctor whether he is at home or in the wards. The cost to the hospital of this home service works out at about $3 a day, compared with $10 a day for an inpatient. Dr. E. M. BLUESTONE,[2] director of the hospital, thinks that every general hospital should have a "department of continued care" so that it need no longer send on "unfinished business" to the hospitals intended for long-term cases. These long-term cases, moreover, should be carefully divided into those that really need permanent institutional care, and those that can be looked after in their own homes.

In this country anyone attempting to reproduce the Montefiore Hospital scheme would come up against the difficulty that patients ill at home are treated by their own home doctor, who may have no connexion with the hospital. In the National Health Service, however, we could certainly develop domiciliary care of all kinds if we decide that the apparently irresistible flow of medical work into hospital ought to be checked or reversed. A large proportion of the diagnostic services of a hospital can in fact be readily taken to the home, and Dr. HARWOOD STEVENSON,[3] in his plea for the appointment of "home consultants" to work with the local practitioners, points out that the help of a mobile technician with a portable X-ray apparatus or electrocardiograph enables one to investigate the large majority of cases on the spot. Now more familiar, though no less cogent, is the argument that far more patients should be investigated in the outpatient department instead of being taken into hospital for the purpose.[4] We hope at least that the new regional hospital boards will recognise that there can be more than one approach to this crucial problem of beds. Provision of more hospital beds may be the obvious solution; but at a time when this is virtually impracticable we shall do well to concentrate on efficient use of those we have.

The Old Paradox

IN his foreword to the annual report of the Food and Agriculture Organisation of the United Nations, Sir JOHN BOYD ORR, the director-general, writes:

> "Meanwhile the paradox of the years between the wars shows signs of being repeated. The increase of agricultural production achieved by exporting countries in their efforts to relieve the world shortage may well lead to the sudden occurrence of unmarketable surpluses. . . . Unless measures are taken in advance to deal with these surpluses, they will again bring ruin and misery to millions of land workers and will endanger the stability of the whole economic system."

In this relatively wealthy country before the war we had access to any amount of food and could afford to buy it. But now that we are, temporarily, joining the ranks of that large majority who cannot afford to pay, we have additional reason to support ORR's demand, over many years, for effective action against starvation in the midst of plenty.

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[1] Cherkasky, M. *Modern Hospital*, May, 1947.

[2] Bluestone, E. M. *J. Amer. med. Ass.* 1947, 133, 1057.

[3] Stevenson, F. H. *Lancet*, 1947, i, 532.

[4] *Lancet*, 1943, ii, 545; Carling, E. R., Power, O. M. *Ibid*, p. 619; Lister, W. A. *Ibid*, 1945, ii, 757.

Annotations

EPIDEMIOLOGY OF POLIOMYELITIS

AT the Rocky Mountain Conference on Infantile Paralysis last December Dr. Albert B. Sabin examined *unexplained features in the epidemiology of poliomyelitis*, and suggested some preventive measures. His address appears in the *Journal of the American Medical Association* for June 28.

Nothing in the history of the disease, he said, is so baffling as its change during the past fifty or sixty years from a sporadic to an epidemic condition. Better diagnosis and reporting are the result rather than the cause of increased incidence; and the fact that there are parts of the world, regardless of latitude, in which epidemics are still unknown is additional evidence of the recent origin of epidemics. Another peculiar circumstance is that epidemics have occurred most often and with the greatest severity in the very countries where sanitation and hygiene are best. Why, he asked, should paralytic poliomyelitis, with rare exceptions, remain almost dormant during more than two-thirds of the year? And why is it that when epidemics first appeared in large urban centres about 80–90% of cases were in children under 5 years of age, whereas latterly as many or more children in the 5–9 age-group have been affected?

For an analysis of these questions one must, Sabin thought, have information about the natural history of the infection in man, about the reservoir of the virus in nature, about its immunological and invasive characteristics, and about the immune response of human beings to infection. The extensive studies of the past few years have indicated that the alimentary tract and the nervous system are predominantly attacked; the virus can be found in some portion of the tissues of the alimentary tract in almost all cases of human poliomyelitis; and examination of the distribution of the virus throughout the entire body indicates that it is in the alimentary tract as the result of primary localisation and multiplication. The virus has been found to persist in the stools in 70% of cases during the first two weeks, in 50% during the third and fourth weeks, in 27% during the fifth and sixth weeks, and in 13% during the seventh and eighth weeks. During infection the virus is to be found in the pharynx but not in the nasal secretion or saliva; rarely, and then only after blowing and coughing, the virus has been detected in cloth masks worn by infected children. There is, however, still a difference of opinion on whether droplets originating from the pharynx or dissemination from infected stools play the dominant part in spreading the disease; Sabin himself considers infected stools the most likely source.

The controversy over the possibility of infected stools spreading infection has been resolved by the demonstration that strains of virus of recent human origin can produce paralytic poliomyelitis by the oral route in chimpanzees and cynomolgus monkeys without invading the central nervous system by the olfactory pathway. The abundance of the virus in stools also raises the question of the possible rôle of flies and of drinking-water. The virus has in fact been demonstrated in flies; and, though these may not be the only factor determining the increased incidence of the disease in the summer months, Sabin holds that the special seasonal character of most outbreaks may reasonably be related to the greater dissemination of the virus by contaminated flies, superimposed on dissemination through ordinary human intercourse, which has been demonstrated throughout the year. Intimate human contact, while undeniably a factor in the year-round dissemination of the virus and in the so-called radial spread sometimes seen during outbreaks, does not by itself explain the recurrent summer epidemics. Unlike certain other infections of childhood, poliomyelitis assumes epidemic form during the very months when children are away from school.

The question has long been asked: Do more people acquire poliomyelitis during the summer and early *autumn months, or is there only a difference* in the ratio between the number exhibiting the paralytic and inapparent, non-paralytic forms of the disease? Perhaps the most reliable data, in Sabin's opinion, are provided by the periodic examinations made of the same sewer line in New York; the virus has been isolated from the sewage concurrently with small increases in the number of clinical cases in the neighbourhood, but at no other times. There is no convincing evidence that the large epidemics in the United States are related to water-supply.

Flies, and some monkeys, and possibly other unidentified animals may get the virus under natural conditions from human sources; but there *is* no reason to modify the original assumption that man is the only ultimate reservoir of the organism. Perhaps the most important immunological problem is that of multiple types of virus. There is certainly more than one type; but it is *not certain whether the known strains fall into two,* three, or some indefinite number of distinct immunological types. Between 1935 and 1939 a number of workers reported that there seemed to be no correlation between an attack of the disease, or the passing of an epidemic through a community, and the appearance of neutralising antibody, as *tested for the most part against* a single standard passage strain and occasionally also against some other more *recently isolated virus*; and F. M. Burnet concluded that "poliomyelitis antibody is not a result of exposure to or infection by the virus of epidemic poliomyelitis." If this is so, the concept that poliomyelitis virus is as widely disseminated in one part of the world as in another, without reference to the occurrence of epidemics, can no longer be accepted without reservations, because it is based chiefly on the results of a small number of neutralisation tests whose significance remains doubtful. In future studies, Sabin suggested, it might be wise to test the serum from each patient against the virus isolated from his own pharynx or stools and not to assume that a single virus is responsible for a single epidemic. Among American soldiers on foreign service outbreaks have occurred without any increase in the incidence of the disease among the local population; and during the past two years the incidence among troops in the Philippines has been at least ten times as high as in the Army within the United States itself. Observers who have lived some years in China testify to the relative rarity of the disease in the native population *as against* that in white people. One possible explanation is that in some foreign countries the virus is more widespread or is of a different immunological type to that encountered in the homeland. If the virus in these countries is so widespread that infection is acquired by almost everyone in infancy, then why is infection inapparent and accompanied so seldom by paralysis? Where epidemics have appeared for the first time, 90% of paralytic cases are found in children between 1 and 5 years of age; so if there is a period of grace it is probably in the first twelve months of life. Does it follow, then, that the disease becomes epidemic in any country where large numbers of children fail to acquire the poliomyelitis virus during that important phase? If, on the other hand, it is assumed that the major factor responsible for the epidemic appearance of paralysis is biologically irrelevant mutation of the virus to an invasive type, then the different behaviour of the infection in native populations and foreign troops is inexplicable. Moreover, if the first appearance of epidemics were due *to the introduction* of new immunological types, one would not expect to find 80–90% of paralytic cases among children under 5 years ıe following facts, Sabin thinks, should govern ic-health measures during an outbreak: (1) more s is being disseminated than at other times; (2) the s is present for a short time in the throat and more ı and for longer in the intestinal tract and stools of e apparently healthy people as well as of acutely lysed patients; (3) from these sources the virus may ransmitted by intimate contact, contaminated hands, fomites, but there is no evidence that droplets emitted ı the respiratory tract play a significant part, if any, lissemination; and (4) during an epidemic the h" flies can become contaminated with the virus, which can deposit in infective amounts on food, and umption of such contaminated food can produce disease. From this Sabin deduces these opinions:

Measures designed to minimise spread by droplet infection not warranted.

Measures designed to diminish the chances of transion by contact during intimate play of children, whether chool or out of school, are reasonable and warranted. he playgrounds and swimming-pools should be closed. ools may be opened or closed, depending on whether the dence of contact among children can best be enforced r out of school. Avoidance of strenuous physical exercise lso reasonable.

Measures to minimise contamination of food by flies warranted; but attempts at mass destruction of flies of doubtful value. Efforts should, however, be made revent flies having access to sewage-disposal plants and human sewage.

Patients with poliomyelitis may be admitted to the eral wards of hospitals, but should be treated with alled "*typhoid technique*" for at least four weeks from onset of systemic disturbance. Bed-sheets, towels, and er laundry during epidemics may be regarded as potentially taminated, and workers handling laundry may be advised arding the wearing of gloves and washing of hands.

. Isolation at home of patients with poliomyelitis may sonably be continued for four weeks from the onset of nptoms. The children of such households, and older mbers who are engaged in the handling of food in stores restaurants, or whose occupation may bring them into imate contact with older children, should remain at home at least two weeks.

All these measures, Sabin concludes, are advocated not h the idea that they will stop an epidemic but rather the belief that at least some may thus escape infection o might otherwise have become paralysed.

PHYSIOLOGY OF AIRCRAFT DESIGN

IN 1878 Paul Bert[1] published an account of his periments on the effects of altered barometric pressure animals and man. This remarkable book, written a student of Claude Bernard, laid the foundations of r knowledge of the effects of altitude on the aviator, though at that time aerial ascents had only been made balloon. Almost all of Paul Bert's findings have ice been confirmed, and the principles underlying the pply of oxygen to airmen are based on his work. 1939 Armstrong,[2] a surgeon in the United States my Air Corps, published his textbook of aviation edicine, describing the effects of flight on man, and mmarising the bulk of the work on the applied ysiology of the subject up to that time. McFarland,[3] so of the United States, has now written a book eviewed on another page) on human factors in rcraft design. The aim of those who design the odern air-liners is to provide their passengers with a andard of comfort comparable to that found in trains steamers. McFarland emphasises the increasingly portant part which physiology plays in aircraft design general, though the book deals only with the physiogical problems of civil aviation.

During the late war the claims of engine and airframe came first, and it was impossible for the physiologist to influence aircraft design appreciably, his task being merely to do all he could to increase the efficiency of the air-crew. The problem of oxygen-supply was a good example of this. The ideal solution was to enclose in a pressure cabin all those who flew at heights at which oxygen was needed; but production difficulties put this out of court. The result was the design and development of an oxygen system and face-mask for all fighter and bomber crews. The position has now changed, and the function of the physiologist is to give the aircraft designer information on the changes in ventilation, temperature, and pressure which man can tolerate with comfort, so that a satisfactory pressure-cabin can be built.

As long as men fly, the performance of the aircraft will, in the final analysis, be limited by human skill and endurance. To cater for the great speeds of today, aircraft designers must have an accurate knowledge of the limitations of the human body to the stresses of flight. *Man cannot be treated as a tiresome adjunct to be squeezed into the aircraft as an afterthought*: he is the essential unit round which the aircraft is built; and Dr. McFarland approaches his subject with that in the forefront of his mind.

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[1] Bert, P. La Pression Barometrique, Paris, 1878.
[2] Armstrong, H. Principles and Practice of Aviation Medicine, London, 1939.
[3] McFarland, Ross A. Human Factors in Air Transport Design, 1946.

SURGERY IN BRONCHIECTASIS

THE basic mechanism of bronchiectasis probably lies in bronchial obstruction, followed by infection. Once established the condition becomes permanent, though there is a transitory pseudo-bronchiectasis which may follow acute infections, notably virus pneumonia. The early stages of bronchial dilatation can only be satisfactorily recognised by radiography, for the clinical picture still described in many textbooks is that of an advanced stage of the disease. Conservative treatment, which includes postural drainage, breathing exercises, and chemotherapy, plays an important part in the control of symptoms but produces little or no alteration in the bronchographic picture in established cases. Though the anatomical picture may remain static for long periods, the condition is usually steadily progressive and consequently a strong case can be made for early surgical treatment. In an analysis of 50 consecutive surgical cases Adams and Ficarra[1] emphasise both the physical and emotional disability of the disease as an indication for surgery. The tragedy of the advanced case is fully recognised but the social disability arising from continual coughing and expectoration has not always been appreciated.

The prospects of successful surgical excision depend on the amount of lung involved. Dilatation localised to one or two lobes is most suitable for lobectomy, whereas diffuse, though less advanced, dilatation is not so favourable and a balance has to be struck so that the minimal amount of lung tissue is sacrificed. In the last five or six years there have been great advances in the technique; not only has dissection lobectomy become established[2] but segmental resections are being increasingly performed.[3] Age is an important factor in the selection of cases, for the results have not been nearly so satisfactory in patients of middle age or over as in younger people; so surgery should be embarked on in older people only if the indications are unusually strong. Long pre-operative preparation, both with posture and medication, and the services of an expert anæsthetist are essential. At operation the individual elements of the lobe or segment are secured, with particular attention to the closure of the bronchus. The mass ligature technique inevitably led to infection with formation of bronchial fistulæ, and the necessary drainage of the pleural space

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1. Adams, R., Ficarra, B. J. *J. Amer. med. Ass.* 1947, 134, 240.
2. Sellors, T. H., Thompson, V. C., Quist, G. *Lancet*, 1944, ii, 101.
3. Overholt, R. H., Langer, L. *Surg. Gynec. Obstet.* 1947, 84, 257.

greatly prolonged the convalescence period. The present method of dissection lobectomy leaving a closed chest, with potential infection controlled by penicillin, requires only three or four weeks in hospital, and with intensive breathing exercises and rehabilitation an early and efficient functional cure can be confidently expected in a high proportion of cases. Of the postoperative complications, atelectasis is usually more common[4] than Adams and Ficarra imply, and pleural infection occurs in some 10% of cases.

It cannot be said that excision is an ideal means of treating bronchiectasis, but until more successful conservative measures are devised it must remain the backbone of effective therapy, and its results in localised cases are gratifying both to patient and surgeon.

PHTHIOIC ACID AND TUBERCULOSIS

It is now nearly twenty years since R. J. Anderson, of Yale, isolated three different fatty fractions—an oil, a wax, and a phosphatide—from the tubercle bacillus. Sabin subsequently studied the effects of Anderson's three fractions in animal experiments, and she and her co-workers after lengthy investigations concluded that the optically active phthioic acid produced a tissue response of epithelioid cells and giant cells resembling the cellular reactions of tuberculosis. At that stage the research languished and little more was heard of it. In his presidential address to the Royal Society last November, Sir Robert Robinson[5] in stressing the important part played by microchemistry of recent years in the field of biochemistry cited among his examples new work on the waxy envelope of the tubercle bacillus. Investigations by N. Polgar have now shown that phthioic acid, which has a formula of $C_{26}H_{52}O_2$, is 3 : 13 : 19-trimethyltricosanoic acid, a straight chain of 23 carbon atoms with 3 methyl branches. Other members of this range of synthetic branched long-chain fatty acids have now been isolated, and some of them appear to be toxic. Sir Robert Robinson laid stress on the existence of methyl groups which block β-oxidation.

These extremely complicated biochemical researches are still in their infancy, but they appear now to have reached a stage at which the pathologist may usefully take up experimentation again at the point where Sabin and her associates left it about 1930. Ungar[6] has made some preliminary experiments with phthioic acid and synthetic analogues by injecting them intraperitoneally into guineapigs, having first ascertained their general toxicity to mice. Of the 14 synthetic analogues studied, 3 : 12 : 15-trimethyldocosanoic acid (no. 270 of the series) proved to be one of the most active. Broadly speaking the lesions produced in the guineapigs were granulomatous foci (chiefly in the omentum), consisting of epithelioid cells, monocytes, and giant cells of the foreign-body and Langhans types, and having central areas of necrosis. When injected intradermally no. 270 produced a local reaction of erythema and induration. A number of these fatty acids similarly injected into tuberculous guineapigs yielded no specific response, and they had no protective action when administered prophylactically before infection with a virulent human strain of tubercle bacillus.

The human tissue reactions to fatty acids and oils seem likely to open up a new chapter in human pathology. These substances are being used extensively as vehicles for the suspension of therapeutic substances. They are also being increasingly used in industry, and the worker is being exposed to their action in various ways. The superficial resemblance of some of the cellular reactions induced to the true tuberculous lesion naturally provokes speculation. How far this work will lead us in the field of chemotherapy of tuberculosis remains to be seen. The lesions induced in man can certainly be very confusing to the clinical pathologist.

ONE AND INDIVISIBLE

THE Master of Balliol has been speaking of a growing recognition that scientists belong to one fellowship. Science, he tells us, is beginning to be in the position of the medieval Church in that it is becoming an international community, commanding respect. These words take us back to Sir Henry Dale's treatment of the theme in his remarkable Pilgrim Trust lecture the freedom of science.[2] Before the war of 1914-18, said, such a community was a substantial reality, th its influence was already being weakened by na rivalries and resentments. After that war the effort re-create the feeling of confidence and common in among the scientists of different countries could claim steady advance till in 1933 aggressive natio began its open resurgence. In the circumstances of today nobody could question the particular duty of scientists to consider whether anything can be done rescue science, and therewith civilisation, from a danger which threatens both, and Dale holds that "nothing could so much conduce to that end as a renewal of the full and intimate confidence and community of interest among the scientists of all the world; of that informal brotherhood in science, ignoring all national and political frontiers and all differences of social philosophy, which effectively existed within the memory of so many of us." As a kind of Hippocratic Oath—a formal profession of faith and conduct—which every scientist, of whatever nation, might be asked to accept, it would be difficult, he thought, to improve on Benjamin Franklin's "Do you love truth for truth's sake, and will you endeavour impartially to find and receive it for yourself, and communicate it to others?" If men of science had abided by this rule they would have made it impossible for the world to misuse science as in these recent years.

> "Secrecy, as Franklin saw, is alien to the very spirit of *science, and it is the main infection*, I suggest to you, from which science sickens today. . . . The right and the duty to tell the truth which we discover, without regard to the interest of any person, prejudice, creed, political theory, or national policy has been the central item in the charter of our scientific freedom."

The warning is often heard that science is leading the world headlong to disaster and that only the so-called humanities can bring back the moral strength and the wisdom needed for peace and safety. In Dale's opinion this imputation must be firmly contested, since science has a contribution of its own to make to cultural and moral equipment—not less than that made by any body of knowledge, art, or educational discipline. "It is not without significance that, whereas history, literature, art, and even religion, all have national character and local attachments, science alone of man's major intellectual interests has no frontiers and no national varieties; that science, like peace, is one and indivisible."

MR. WILLIAM GILLIATT has been re-elected president of the Royal College of Obstetricians and Gynæcologists.

MR. J. M. K. HAWTON has been appointed a deputy secretary to the Ministry of Health following the appointment of Sir Arthur Rucker to urgent duties with the preparatory commission to the International Refugee Organisation.

ON July 4 it was announced that the Emergency Bed Service would receive calls from the South of England for patients requiring streptomycin treatment for tuberculous meningitis and miliary tuberculosis. During the month of July, 18 applications were made on behalf of patients with tuberculous meningitis and 5 for miliary tuberculosis. All but 6 were admitted.

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[4] Gray, I. R. *Thorax*, 1946, 1, 263.

[5] Robinson, R. *Nature, Lond.* 1946, 158, 815.

[6] Ungar, J. Paper read to the Pathological Society of Great Britain on Jan. 1, 1947.

[1] Lord Lindsay of Birker, addressing the Society of Chemical Industry. *Times*, July 31.

[2] Dale, H. H. *Proc. Amer. phil. Soc.* 1947, 91, 64. See also *Lancet*, 1946, ii, 645.

Special Articles

THE CARE OF BURNED PEOPLE

A PLEA FOR A NEW POLICY

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IE war has brought great changes in the outlook
ourned people. The 30% burn or scald is no longer
ntence of death: patients, even children, with a
burn or more may now recover. Deep burns
no longer become septic, and therefore do not need
nent re-dressing. With sepsis controlled and skin-
ting done early (sometimes on the first day), healing
uch more rapid, and most of the pain that was
ciated with burns in the past has gone; and with
e bad contractures which so often meant crippling
disfigurement for life.

this article I shall not present detailed evidence
support of the above statement, nor indicate all
e whose work has contributed to these changes, in
country and in America. We have produced some
he evidence from the M.R.C. unit [1–3]—and more
be forthcoming. It may suffice to mention here
or two facts from our own recent experience. In
Birmingham Accident Hospital, where separate
ds are set aside for burns and scalds (35 beds), and
e than 200 cases are treated as inpatients each year,
re have been, during the past twelve months,
y 2 instances of acute septic inflammation of a burn
of them a severe pyocyanea infection of both arms
hands, the other an almost trifling and transient
ptococcus infection which followed a grafting opera-
. In addition to this there have been three or
r intercurrent low-grade fevers—e.g., doubtful pneu-
nias in children which were not associated with any
nifest infection of their burns. We have not seen
irregular swinging temperatures that so commonly
ompanied a severe burn before the war, and the
eral condition of the patients has been remarkably
d. The death-rate among the 203 children, aged
2, treated during the last two years has been 3%,
compared with 32% among the 100 children of the
e age-group reported from the Toronto Children's
spital in 1923.[4] Among the 23 deaths from burns
scalds in our hospital during 1945 and 1946 there
s only 1 death from scalding in a child of the 0–12
-group (120 treated). Before the war such deaths
children accounted for over 30% of all the deaths
the Registrar-General's report.

It must, however, be freely admitted that these results
ve been obtained in exceptionally favourable circum-
nces. In addition to general supervision by Mr. W.
ssane, clinical director of the hospital, two whole-time
gical officers, a bacteriologist, a bacteriological tech-
ian, a biochemist, a secretary, and (besides the usual
rsing staff) a special nurse charged with the feeding
the severely burned cases have all been available
provide a 24-hour service capable of dealing with
sh cases without delay. No dressings have been done
the open wards, because of the risk of airborne infec-
n: all are carried out by a trained team in a special
essing-room with a dust-free and (almost) microbe-free
mosphere. More than 3000 dressings have been
rried out to date in this room. Very complete records
ggest that there has been no transfer of hæmolytic
reptococci, and only one of *Ps. pyocyanea*, from one patient to another during dressings. (For a report on added infections up till August, 1946, see Colebrook et al.[2])

Through the "shock" stage the care of the badly burned patients has been the immediate responsibility of the senior surgeon of the burns team, who will sometimes spend as much as 4–5 hours a day on a single case. And the skin-grafting operations have been performed by this same officer with the special skill born of almost daily practice. In addition, a plastic surgeon has been at hand, when required, to deal with the most difficult repair problems.

It will be admitted that these conditions are very different from those obtaining in most of our hospitals before the war (and presumably still obtaining in many), when the care of burns was usually the responsibility of a house-surgeon fully occupied with general surgical work, who often had had little or no previous experience of burns and usually dealt with only three or four of them during his term of office. Realising that the burns were almost sure to become septic, if severe, he was often only too glad to hand on his responsibility in large measure to the ward sister. The burns were admitted either to the ordinary surgical wards, which involved a considerable risk of cross-infections for the "clean" cases in these wards, or to a "septic block," which involved a greatly increased risk of infection for the burns themselves. All dressings were done in the open wards and almost all deep burns became infected. The frightful pain associated with their dressings is too well known to need emphasis.

It is abundantly clear now that these pre-war arrangements for burns did not give the patients the best chance. These distressing and difficult cases require a special set-up which all hospitals receiving only a few of them cannot be expected to provide.

RECOMMENDATIONS

Our experience in the burns unit leads me to conclude:

(1) That in all our larger towns and cities there should be centres in one or more general hospitals specially equipped and staffed to deal with these injuries; we should discontinue the practice of admitting them to all the hospitals.

(2) That all dressings of burns (and indeed also of all open wounds) should be carried out not in open wards but in specially ventilated dressing-rooms designed to avoid both airborne and contact infection. The ventilation plant can usually be fitted to existing buildings without great cost. In new buildings it would be a considerable economy to group all such dressing-stations and theatres centrally, to be served by a single ventilation system.

(3) That continuous and adequate bacteriological control is essential in running a burns centre, if infection is to be avoided and treatment effectively guided.

(4) That the teaching of students about burns should be done by the staff of such fully equipped burns centres who have experience of large numbers of these difficult cases.

(5) That it would be an economy of hospital beds in the cities, and also greatly to the advantage of the patients, particularly the children, if provision was made for their transfer to the near-by country for the later stages of healing. Such provision must allow for adequate treatment and medical supervision, as required—it must not be simply a convalescent home.

There can be no doubt that provision for burns and scalds on these lines would mean the saving of many lives (some 1200 people still die of these injuries each year in England and Wales); and an immense amount of suffering. The dressing of cases by a trained team in a dust-free atmosphere would also constitute another landmark in the progress of aseptic surgery.

With the planning and replanning of regional hospital facilities under the new Act surely the arrangements here suggested are worthy of immediate consideration?

Bourdillon, R. B., Colebrook, L. *Lancet*, 1942, i, 561, 601.
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PROGRESS IN MEDICINE

U.S. Army Symposium

THE latest developments in medicine and surgery were discussed in a three-day symposium held at the U.S. Army Medical Center, Washington, D.C., on June 3–5.

AMPUTATIONS AND PROSTHESES

Colonel AUGUST W. SPITTLER *said that artificial* hands that look like real hands and serve many of the same purposes are being developed by the army medical department. Hitherto the most useful artificial hand has been a steel hook; patients may become very skilful in its use but are always conscious of its appearance. With light plastic materials which look like flesh the problem of appearance now offers little difficulty. Activation of all the fingers and finger-joints has usually resulted in a unit too complex to be useful. Use of only the index and middle fingers to oppose the thumb appears to be the best combination, with the little and ring fingers for a stationary hook. Such a hand has been developed with multiple joints in the fingers in place of phalangeal segments; the index and little finger move towards the thumb in a converging motion. Most of the usual 30-lb. pull which can be produced by the shoulder shrug is delivered at the finger-tip. The ideal features of a hand—the capacity to hold an object 3¼ in. in diameter, resilient pads on the finger-tips, and positive closing control—are found in this hand. An artificial ankle has also been developed, with a spring mechanism which offers much of the advantage of a real ankle. Scores of suggestions for artificial limbs are being offered; but many are too complex.

PHYSIOLOGICAL EFFECTS OF WOUNDS

Dr. HENRY K. BEECHER described new principles in the treatment of the severely wounded, based on study of more than 1000 cases from the Cassino and Anzio battles early in 1944. Most severely wounded men do not suffer acute pain; three-quarters of those arriving at the most forward hospital, even though they had had no morphine for five hours or more, said they were not suffering enough to want anything done about it. On the other hand those with shock due to blood-loss nearly always complained of severe thirst. Patients with this condition were tided over, wherever possible, with plasma; but in Italy the plasma was found to be much less depleted than the red blood-cells—so much so that there must be some unknown reservoir of proteins in the body which is drawn upon in an emergency. It was shown that the quantity of blood and plasma needed for resuscitation can be reduced to about half of that called for by older and slower methods. At the same time delay in undertaking surgery because of shock can be cut by about two-thirds by whole-blood transfusions while the surgeon is at work. This economy of time and material will clearly be essential if military action ever takes place in inaccessible regions of the world, such as the Arctic or Antarctic. It will also be essential if large numbers of the population should ever be subjected to atomic radiation, with the consequent great blood-loss from serous surfaces.

TREATMENT OF LUNG ABSCESSES

Dr. BRIAN B. BLADES referred to the refinements in operative techniques, the improved anæsthesia, and the benefits of antibiotics which have made pulmonary resection a safe operation in the treatment of chronic pulmonary abscesses. The approximate mortality-rate in the surgical treatment of pulmonary abscess in 1942 was 15·2%. At the present time operative mortality for excisional surgery *in chronic pulmonary abscess* is about 5%; moreover, the number of satisfactory cures has increased from approximately 57% in 1942 to more than 80% at the present time.

During the late war the incidence of acute pulmonary abscesses in members of the Armed Forces was low. It is not surprising that abscesses secondary to wounds of the chest were uncommon, for it has long been known that the lung has tremendous resistance to infections introduced by foreign bodies. It is of interest, that so few cases of acute fulminating p abscess were found in the millions of men who the Forces. This rarity of the acute abscess replacement by a more chronic, indolent type of *ary suppuration may be explained by two* factor the army men have good dental care; dental abscessed teeth, and so forth do not exist, or are remedied. Thus one of the chief ætiological eliminated. Secondly sulphonamide derivatives on penicillin were almost universally used in all pulmonary disease.

Since patients were not extremely ill there tendency to delay surgical intervention; and where the infection responded to antibiotic surgical intervention was avoided. Where tissue tion was so gross as to require operative tre lesions were apt to be multiple, involving an or even the entire lung. Extirpation of the tissue in these cases gave excellent results. E very early cases where the abscesses were well scribed and drainage was instituted promptly, results were unsatisfactory because of the of multiple abscesses and destruction of parenchyma.

Data accumulated during the war, and su experience in civilian hospitals, indicate that for monary abscesses of all varieties excisional nearly always the treatment of choice. The for emergency drainage of a pulmonary abscess in very early stages has been largely obviated by the of penicillin and other antibiotics.

TREATMENT OF MALARIA

Dr. ALF S. ALVING said that plasmoquine, th cures benign tertian malaria, is much too toxic for the field. Hundreds of related compounds were in the war; finally that now known as pentaquine *found to be only about half as toxic and yet of* curative value than plasmoquine. Tests indicate pentaquine will reduce the relapse-rate in severely subjects from 98% to 16%, while in moderate inf the rate can be reduced to 4%; its effectiveness greatest when it is given with quinine. It however, not a drug for self-medication, and patient must be admitted to hospital; in very infections several courses may be necessary. valuable drugs were developed, in addition to (mepacrine); these are the American '*Chloroquin* and the British 'Paludrine.'

RESEARCH IN VIRUS DISEASES

Dr. JOSEPH E. SMADEL *described the isolation of* virus causing encephalomyocarditis. This virus a rapidly fatal disease, with a characteristic pattern mice, hamsters, cotton-rats, and monkeys; and a fatal fever in guineapigs and rabbits. In fatal case attacks the *heart-muscle and brain.* There was doubt whether encephalomyocarditis actually was disease of man, but it now appears that some of those the Pacific zone who had the so-called three-day f may have been suffering from encephalomyocard there was, however, *no involvement of the heart* brain, and the disease may have occurred only as complication of some other malady. The other new virus disease, which also does not appear serious is Fort Bragg fever. This is characterised by a fever and a rash, chiefly on the front of the leg The virus has been isolated; it appears to be extremely delicate organism, rapidly inactivated at low temperatures.

The discovery of a chemical substance effective against *viruses—especially the virus of influenza*—is one of major goals of present medical research. Some pro has been made in this direction; one drug which se to inhibit temporarily the growth of the influenza vi is closely related to mepacrine, but it appears to no practical value at present. Rockefeller Inst workers have lately reported that biological substan such as apple pectin and certain blood substances, an inhibitory effect on this virus.

THE PRISONS

k of staff has hit the prisons hard in recent years.
945 report of the commissioners and directors,[1]
has only just appeared, speaks of the handicap
s been to the progress of all schemes for the better
g, grouping, and educating of prisoners. Never-
, something was being done, and no doubt the
8 months have seen more rapid advances.

effects of staff shortage have been intensified by
ses in the numbers of prisoners. Thus the daily
ge population in 1945 was 14.708, the highest
since 1914–15, and the figure for 1946 was expected,
time when the report was prepared, to be some
).

most striking increase was in the number of committals
stal, where the daily average population for lads rose
1752 in 1942, to 2406 in 1945, and in the first nine
s of 1946 to over 3000. It is perhaps worth noting that
gure in the middle war years was lower than the figure
for 1938. Committals of girls show no such interim
they rose from 131 in 1938 to 234 in 1942, and 372 in
in the early months of 1946, however, there was a
wards the 1942 level.

e commissioners note that " so long as young persons
21 are sent to prison they will continue to make
est arrangements possible for their training, but
nothing they can do within the limitations of a
n can be regarded as satisfactory." This is frank
gh, and it is to the credit of the commissioners that
have not given in to the manifest difficulties of the
ion.

much physical training and evening education are given
rcumstances allow. Young lads with sentences of more
three months are segregated from the older convicts in
entres. They live in separate wings and work in separate
s, where a better class of industry is provided; they
iate at meals and in the evening, and the keynote of the
ing is liveliness. They are, the report says, given hard
interesting work, sharp but not repressive discipline.
girls are fewer and the physical limitations of their
ns greater, the same standard of training for girls is only
eved in Holloway.

n attempt to keep the younger men among the
lt prisoners away from the older ones has not proved
essful. The aim was to give special training to men
veen 21 and 26 (or in special cases up to 30) who were
eligible for the " star " class. This experiment had
e dropped during the war, and the commissioners
e decided not to continue it. It seems that young
of this age and character have a bad effect on one
ther, and they are " much better among older men
are not impressed by them and have a steadying
uence." Men are taken on agricultural working
ties, and during the year similar working parties were
nged for women, and proved successful. Women
e also been used by some of the London hospitals
lomestic workers. Star prisoners continue to do well:
7% of those released from Wakefield Prison training
tre are never reconvicted. The proportion of dis-
rged prisoners reconvicted after a first sentence is
ewise extremely low: of 126,191 serving first sentences
ween 1930 and 1942, 82% had not been reconvicted
to the end of 1944. Moreover, nearly half the
idivists from Dartmoor are satisfactory after an
erage of 2½ years of liberty.

At Durham an interesting educational experiment is being
ried out by the local education committee, which is treating
prison as an evening institute, and providing a full curri-
um of voluntary classes in subjects as widely varied as
ler-room practice, economics, technical drawing, and
dern problems, on the men's side, and mothercraft, house-
ld economy, cookery, music, and drawing, on the women's
le. This has proved so successful that it is now firmly
ablished and will be discussed more fully in the next report.

During the year under review the delays experienced
prison by boys waiting places in borstals were so great
at Dartmoor Prison had to be used temporarily as a borstal institution; and at the end of the year it was estimated that accommodation was needed for 1000 additional boys in training as well as a second reception and allocation centre. All these have been provided: a new reception centre for 150 and a new camp for 75 have been set up; three big country houses have been converted into borstals, and Feltham, which was used as a prison during the war, has become a borstal again. Whereas in 1945 some 600 boys were waiting anything up to five months for places in borstals, by December, 1946, only about 20 were waiting the next weekly escort to a reception centre for classification and allocation.

Agencies for the aftercare of prisoners continue to do good work.

The Discharged Prisoners' Aid Societies have been successful in finding employment for ex-prisoners, and the Central Association gives financial help to those who need it, and friendly guidance to ex-prisoners settling-down in ordinary life. During 1945 many men were released after serving court-martial sentences, and most of these were not criminals in any ordinary sense, their offences being against military discipline rather than against society. The association has made special efforts to help these. Of 1067 discharged prisoners dealt with by the association during 1945, 78 required no help, and 611 returned to the Services; help, maintenance, working clothes, or tools were given to 304, of whom 74 found their own employment and 230 had jobs found for them. Only 57 of those given maintenance and advice were unwilling to coöperate; 4 more were found to be unemployable, and 13 were certified by the prison authorities as needing institutional care.

Thanks to the help of the Fighting Services and Ministry of Labour, many thousands of discharged borstal boys were able to enter the Forces without carrying any stigma.

TRAINING IN CLINICAL-PATHOLOGY

" Clinical pathology includes the application of laboratory methods of all kinds—bacteriological, biochemical, hæmatological, and histological—to clinical problems. Part of the work of the clinical pathologist is concerned in diagnosis, but an increasingly large part related to the control of treatment of various disorders whose progress can be most accurately assessed by laboratory methods. A clinical pathologist is a consultant who can advise on the diagnosis and treatment of all such forms of illness as fall within his province, for example, infections, blood diseases, and metabolic abnormalities."

THE subcommittee appointed last January by the Association of Clinical Pathologists, to consider the training and qualifications of a consultant in this specialty, hold that in view of its scope, as outlined above, the consultant should have a sound clinical training as well as wide experience in laboratory methods, and higher qualifications in medicine.

The subcommittee, consisting of Dr. E. N. Allott (chairman), Dr. S. C. Dyke, Dr. R. W. Fairbrother, Dr. J. G. Greenfield, and Dr. W. H. McMenemey, have just issued their report. There is already, they say, a shortage of trained clinical pathologists, while the demand for them, under the National Health Service Act, is bound to grow. Entrants to this specialty, they suggest, should not be recognised as consultants until they have had five years (or four years if they hold a first-class or second-class honours degree in science, or a research degree, such as doctor of philosophy) of post-registration experience, and hold a higher medical qualification. Their training should be in three parts: one year of further clinical experience, one year in a university department, and two years in a department of clinical pathology. The remaining year should be spent in getting further knowledge and experience of any part of the subject in which the candidate is specially interested.

In the year of post-registration clinical training, six months would be spent as a house-physician in general medical wards, and a further six months in other clinical (not necessarily medical) appointments. An appointment as resident pathologist—though valuable experience—should not count as part of the *clinical* year. The year in a university department should be spent early in training, so as to influence the whole of the candidate's subsequent work. He should be encouraged to take a diploma in either bacteriology or clinical pathology, but the subcommittee do not feel such a diploma to be essential, or that the year must necessarily be spent in the department of pathology: scientific training in any department—the chemistry or physiology laboratories, or the laboratories of a professorial clinical unit—would be equally valuable.

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[1] Report of the Commissioners of Prisons and Directors of Convict Prisons for the Year 1945. Cmd. 7146. H.M. Stationery Office. Pp. 120. 2s.

The two years spent in the department of clinical pathology of a large general hospital, or a group laboratory serving several hospitals, should include periods of six months each in the study of hæmatology, bacteriology, chemistry, and morbid anatomy. The department should carry several senior pathologists: training in a one-pathologist laboratory is undesirable, and the subcommittee suggest that a special committee should be set up to approve laboratories as suitable places for training, and that only training in approved laboratories should be recognised. The candidate's higher medical qualification should be the degree of doctor of medicine, or membership of the Royal College of Physicians.

It is not possible to apply all the above criteria to all existing clinical pathologists, or even to some well advanced in their training, but the committee suggest that no-one should be recognised as a specialist in this field unless he has been registered five years and has had a minimum of four years' laboratory experience. They do not feel, however, that a register should be prepared for the specialty. Financial assistance in the form of scholarships and Government grants should, they think, be available to candidates, and a considerable number of senior appointments carrying an adequate salary should be created for the purpose of completing the training of future consultants.

Public Health

A HYGIENIC FORK

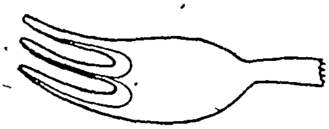
I. GORDON

M.D. Edin., M.R.C.P., D.P.H.

DEPUTY MEDICAL OFFICER OF HEALTH, ILFORD, ESSEX

THE average article of cutlery seems to have been expressly designed to make cleaning difficult by providing grooves and niches from which dirt cannot easily be removed. Witness the elaborate and unnecessary grooves on the knife at the junction of blade and handle and, above all, in the spaces between the prongs of the ordinary fork.

The shape of the fork does not seem to have varied for hundreds of years, and cleansing between the prongs, especially at their bases, has been made as difficult as possible by poor design. It is strange that so much fuss is made over the occasional cracked cup, when every fork is even more a trap for germs. To illustrate the problem a fork was examined at each of 100 consecutive visits to restaurants, mainly patronised by the middle class, in inner and outer London. Only 21 forks could be called macroscopically clean. Visible foreign matter, ranging from faint films of grease to lipstick, polishing powder, and pieces of vegetable, was seen in 79 between the prongs.



To design a fork that can easily be cleaned is simple. Some of the features of the fork described here will be familiar to all, but one feature, the bevelling, is, so far as I know, original. To decrease the area to be cleaned there should be three prongs instead of four, and they should be half their present length. To make cleaning easier the adjoining sides of each pair of prongs are bevelled (see figure) on their convex surfaces.

It is obvious that, if the back and front of this fork are rubbed with a cloth, there is no surface or crevice that is inaccessible, and all gross dirt can be removed. A fork so cleaned is not rendered sterile, and any however ill-designed, can be sterilised by suitable of heat and detergents; nevertheless, until the arrives, if ever it does, when sterilised utensils are rule in home and restaurant, there is no need for put up with gross dirt in our forks due to our archaic, and ineffective design.

I have to thank Mr. H. Bradley, of the public department, Ilford, for making me a trial fork to specifications.

The Ineducable Child

A child reported to the local authority under Mental Deficiency Acts as ineducable is autom deprived of the right to education in special school class; yet, as a correspondent points out (p 24 child who promised to be ineducable at the age may present a much more hopeful picture at the 5: indeed he may then, or earlier, be suitable for education. Under the old legislation he could been transferred at once from an institution for and imbeciles to a special school for the feeble- but the provisions of the Education Act, 1944, such easy transfer nowadays impossible. That Ministry of Education is aware of the difficulty ap from its circular (no. 146) on Educationally Subn Children. After examining a child, an "appro medical officer" advises the local education aut on the type of special educational treatment n or, if he considers the child ineducable, he ad that it should be reported under the Mental Defic Acts.

Yet even the best doctor, when dealing with the v young, cannot be certain whether a child is really in able; and to meet this difficulty the Ministry has viously asked that education authorities should "ex great care" about reporting children under the A Despite this, there have—almost inevitably—been of children mistakenly reported. The Minister of Ed tion and the Board of Control therefore suggest in the case of children between 2 and 5 local edu authorities should report only those whose "ineduca is obvious," and that others should be given a trial in ordinary or special school. Moreover, it would open to the local authority to deal with children the age of five who, although not reported, should in opinion be dealt with under the Mental Defic Acts." This seems to meet one of our correspondent difficulties, for it means that parents can be relie of a child who, without being of so low a grade as need "reporting," would yet benefit by a period a mental-deficiency institution. Provided that order made under the Mental Deficiency Acts discharged, such an "unreported" child can be t ferred, at the age of 5 or after, to the care of education authority.

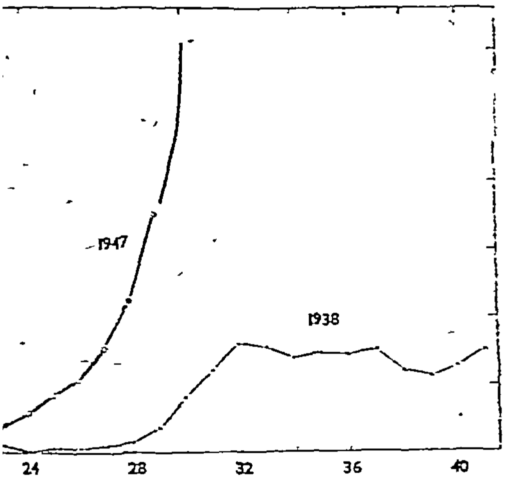
Poliomyelitis

Notifications of poliomyelitis in England and W during the week ended July 26 numbered 302 com with 177 in the previous week. As the accompan chart shows, the gradient in the curve of incidence become somewhat steeper, and there is nothing suggest that the peak has been reached. On the contra the number of new outbreaks brought to the notice the Ministry of Health during the past week suggest a further rise is to be expected.

Counties in which notifications reached double fi during the week ended July 26 were: London Durham 20, Essex 13, Lancashire 17, Middlesex Surrey 15, Warwickshire 20, and West Riding of Y shire 52. Removals to infectious-disease hospitals the London area have decreased slightly: in the se days up to July 28 they numbered 70, and in the se days up to August 4, 61. The incidence in Lewis the metropolitan borough so far most affected, ap to be abating.

Earlier reports suggested an unusual proportion cases with marked meningeal irritation at onset, but th the more usual and milder clinical types, in w paralysis appears without striking prodromata, are le found more commonly, and the steep gradient in ded July 26 may be an expression of late s and delayed notification.

ugh cases are widely scattered over England and the incidence is by no means even, and large f the country are not yet involved. The need npt diagnosis and notification of first cases in eas will be apparent. In localities where the is in the first or second generation particular n must be paid to close contacts, more especially develop a minor indisposition insufficient to their movements. At the start of an outbreak is is probably confined to the patient and his timate companions. The mechanism of direct s still uncertain; but of late years it has become ngly evident that spread is usually from person



son following fairly close contact with a previous f abortive or paralytic disease during a relatively period of infectivity which begins a few days any sign of illness. When infectivity appears to its height the virus is present in the oropharyngeal ions; it may also be present in the bowel at the time, but the most potent source of infection ost certainly the mouths of patients during the ralytic phase or during a subclinical attack.

POLIOENCEPHALITIS

tifications of polioencephalitis for the week ended 26 totalled 34. The figures for the first three weeks ly were 9, 16, and 16, compared with an average of 1–2 during the corresponding weeks in 1938–46. notifications of polioencephalitis began to increase s suggested by some that there might be a prevalence infection of the central nervous system other than nyelitis; but it is now certain that the bulk of ncephalitis notifications relate to infections with oliomyelitis virus. In past years the ratio between ions of poliomyelitis and polioencephalitis has not d much, usually being between 6 and 9 to 1; this s experience is not remarkably different.

Infectious Disease in England and Wales

WEEK ENDED JULY 26

ifications.—Smallpox, 0; scarlet fever, 987; ping-cough, 1924; diphtheria, 174; paratyphoid, typhoid, 8; measles (excluding rubella), 7644; monia (primary or influenzal), 311; cerebrospinal , 31; poliomyelitis, 302; polioencephalitis, 34; phalitis lethargica, 3; dysentery, 61; puerperal xia, 133; ophthalmia neonatorum, 55. No case of ra, plague, or typhus was notified during the week.

aths.—In 126 great towns there were no deaths from ic fever or scarlet fever, 2 (0) from diphtheria, from measles, 5 (2) from whooping-cough, 61 (4) from hœa and enteritis under two years, and 7 (0) from enza. The figures in parentheses are those for lon itself.

e number of stillbirths notified during the week 248 (corresponding to a rate of 26 per thousand on.

In England Now

A Running Commentary by Peripatetic Correspondents

FOR close on a quarter of a century, man and boy so to speak, I have been an F.R.C.P. Yet it was only last week that for the first time I had occasion to take a taxi to the College. "Where is that, sir?" asked the driver, although we were only a short half mile from Pall Mall East. "I've been a driver for twenty years," he continued, "but this is the first time I've been asked to go there. Of course, I've driven often enough to the College of Surgeons"

The somewhat gratuitous "of course" started the inevitable train of thought. Perchance, I reflected, the explanation is simply geographical. The R.C.S., ensconced in Lincoln's Inn Fields, is remote from tubes and bus routes, while we are more conveniently situated. But to be honest I admit this is mere casuistry. Only too obvious is the contrast between the practitioners of the two branches of the profession. We impecunious physicians are not in the taxi class.

* * *

The Princess, the Woodcutter's Son, and the Rhesus Monkey. (A tale told to an anxious parent who, on reaching the conclusion that her only daughter was Rh-negative, asked her doctor whether she should investigate the rhesus factor of any eventual suitor.)

ONCE upon a time there lived a king and queen who had but one child, a daughter, all the rest having been miscarriages. Such was the enlightened state of the times in which they lived that the court physicians were able to tell the queen that this was because she was Rh-negative and her husband, the king, was Rh-positive. They were of the opinion that this must have been a gift from a malevolent fairy at her christening, but with all their knowledge they could find no way of breaking the spell. On questioning her parents the queen learned that there had been present at her christening a queerly dressed old lady with a face like a monkey, who had been heard muttering something which might conceivably have been a spell. Instead of the usual "Hocus, pocus, magnum locus" ritual, it sounded like "Rhesus, squeeze us, taunt and tease us," and nobody could see any sense in that, so they thought that the old lady was mad and didn't like to cross her, even though she lingered an inordinately long time at the cradle and was messing about with needles and lengths of rubber tubing and flasks of red liquid, so that it would almost have seemed as if she were giving the child a blood-transfusion if it hadn't been such a ridiculous idea to think that she *would* in front of all those people. Everyone there was so well bred that they pretended not to notice, and when she'd finished the king gave her a glass of his second-best champagne as he thought she wouldn't know the difference, and after giving him a dirty look she went away.

The queen was a little upset at hearing the story, but, realising that there was no remedy for it, concentrated her care and affection on her daughter, the Princess Dewdrop, and persuaded the king that great care must be taken when the time came for the princess to be betrothed.

When the princess came of age, proclamations were issued and heralds went round inviting applications for her hand. Six handsome (according to themselves) princes turned up at the palace on the appointed morning and along with them came a lusty youth of great strength and beauty who was the third son of a humble woodcutter. His two elder brothers had jeered at him for setting out on such a quest but he was a good-tempered boy who always made a point of being polite to hideous old women and rescuing toads in distress, and he knew that such traits in the third sons of humble woodcutters invariably led them on to fortune. He therefore paid no attention to his brothers' gibes and went on his way with his heart full of hope.

Sure enough, he looked so beautiful, standing beside the six other suitors in his woodman's clothes, with the glow of health on his cheeks and the sun shining on his brown curls, that the princess fell in love with him at once. The six princes, in spite of their silken and velvet garments, were rather a pasty-faced lot, but the princess was a sensible girl and realised that there were many things to be taken into consideration when choosing a husband. So she remained silent while her father described the various tests and trials which the candidates must undergo to qualify for her hand.

For five days the suitors were busily engaged in slaying dragons, scaling glass mountains, rescuing damsels in distress, &c., &c. Each day one of the seven suitors was knocked out in the contest, until on the sixth day there only remained in the running the woodcutter's son, whose name was Hilarion, and the Prince of the Sunset Isles, who was quite the ugliest and most pasty-faced of the lot.

For the sixth and final test the candidates were ushered into the presence of the court physicians, the two chief of whom advanced toward the two young men carrying wide-bore needles and glass tubes. With these they took samples of blood for rhesus tests, without so much as a by-your-leave or even saying "Just a prick." The sight of his own blood dripping into a test-tube caused the Prince of the Sunset Isles to swoon away, and the downright impertinence of the whole proceeding so annoyed Hilarion that he let forth a long string of curses that he had picked up in the woods from angry squirrels who objected to having their favourite trees cut down. When it was explained that this was the most important test of all, which would decide without a doubt who would marry the princess, the Prince of the Sunset Isles ceased swooning because he thought it was a test to see whose blood was bluer, and he knew his was; and Hilarion stopped cursing because he thought it was a W.R. and he knew his was negative.

The princess's excitement when they brought her the results was somewhat dashed on discovering that the Prince of the Sunset Isles was group O, Rh-negative, whereas Hilarion was group A, Rh-positive, she herself being group B, Rh-negative. She was, as has already been pointed out, a sensible girl, so she married the Prince of the Sunset Isles, whom she hated, and they lived unhappily ever after; the prince turned out to be impotent, so no children blessed the union.

Hilarion went back to the woodcutter's cottage, where his brothers jeered at him more than ever. Goaded by their taunts, he was caught on the rebound and married in indecent haste one Maribel, the daughter of the village blacksmith. They lived happily ever after, even though Maribel was later found to be every bit as Rh-negative as the Princess Dewdrop. They had two daughters and a son whose life was saved by blood-transfusions, and the children lived as brilliant examples of the art of How to Be Happy Though Negative. Which only goes to show how wonderful science is.

* * *

You do meet some funny types with annoying habits in higher examinations. The chap next to me the other day waggled one foot steadily up and down, without stopping, throughout the whole twelve hours of written papers. I got to loathe the sight of that foot. If I'd had a gun I should have been very inclined to fire it. Another chewed and rustled paper incessantly, and yet another would keep asking to be "excused" every hour. Every time he got up he knocked my desk back and spoilt a page of writing, but he never apologised.

Examiners may have their trials, but so have candidates.

* * *

Here is an extract from a letter from an Arab who calls on doctors in Palestine on behalf of a drug firm:

"Last week I called on a French doctor who has adopted the Moslem faith. It was the most unconvenient visit I have ever made. His behaviour was so dreadful. When I showed him our new syphilis remedy he asked if it is painful, and I told him to try it and see. I meant to try it on one of his patients or more. Immediately he started to sterilise the water and prepare the syringe! I asked him, with astonishment, what does he want to do? and he asked me to take off my trousers and lie on the couch. He insisted on trying the remedy on me, to see if it is painful or not. He was behaving seriously! How to escape from this mad doctor, I was thinking deeply. Finally, after a long argument, he made me agree with him that it is painful, otherwise he has to try it on me."

Letters to the Editor

PROGNOSIS IN ERYTHROBLASTOSIS FŒT

SIR,—In connexion with your interesting anno of April 5, it may be of interest to your readers to of our experiences with exchange transfusion.

Our first experiments with the procedure were don 1944, and, while we succeeded in accomplishing a replacement of blood, the method was tedious difficult because coagulation hampered the withd of the infant's blood. In the absence of a satisf rationale for the procedure and in view of the tec difficulties, we abandoned the method tem When in 1946 we worked out a satisfactory rationale the use of exchange transfusion and devised a tec that was safe and simple to perform we began to the method as a routine for the treatment of e blastosis.

The rationale for the procedure depends on the f the union of the maternal Rh antibodies with the erythrocytes may produce either one or both of effects—hæmolysis or clumping. In cases when hæmolysis takes place, a hæmolytic anæmia results is readily combated by the simple transfusion of negative blood, and infants treated in this way completely and exhibit no sequelæ of the disease. intravascular clumping occurs, due either to agglut or to conglutination, the circulation to vital particularly the liver and the brain, is compromised the infant usually dies. The occasional child survives the early severe stages of the disease exhibits the sequelæ of severe cerebral and h damage. Obviously these infants will not be be by simple transfusion, since plugging of the vessels clumps of erythrocytes produces irreversible changes. For reasons explained in our publications the subject, intravascular clumping rarely takes in utero. It usually occurs after birth, and in fact to be initiated by the birth of the infant. At birth the infant's cells are merely coated by the mat antibodies and not yet clumped. Accordingly, if infant's blood is immediately withdrawn and re by inagglutinable Rh-negative cells, it should be to avoid the disease. The recent development of methods of detecting Rh sensitisation, and the perf of Rh-Hr typing, have made it possible to predict appearance of the disease in the unborn infant, and prepare blood ahead of time, so that the infant can treated within minutes after it has drawn its first b

With the aid of suitable safe quantities of he using the saphenous vein for infusion and the r artery for bleeding, a very satisfactory exchange fusion can be carried out in 75 minutes. Since the bl ing and the infusion are done simultaneously, some of infused blood will be lost in the bleeding process that an exchange of 100% is impossible. Calculatio shows that when an amount of blood equal to the bl volume of the infant is simultaneously infused removed, a 65% replacement is accomplished, with double this amount 85–90% of the blood exchanged. In our procedure we routinely use 500 c an amount equal to twice the blood volume of average infant. The immensity of the procedure is appreciated until it is pointed out that this amount equivalent to injecting and withdrawing 10,000 c. of blood in an adult. Parenthetically it might mentioned that other workers in attempting to ac plish the same result by somewhat different techniq find themselves so limited by the methods used that t are satisfied to terminate the procedure when as li as 200 c.cm. of blood have been exchanged.

Thus the two objections to the use of exchange t fusion—the absence of rationale and the difficulty of technique—have been removed. A third objection now been raised, as mentioned in your annotat This is that the infants who may be saved only sur for the worse fate of mental deficiency due to h damage. That this objection is not a valid one is sh by our personal experience with 19 cases of pr erythroblastosis fœtalis treated by exchange t fusion and studied with great care thereafter. Of th 19 infants only 2 died. Each had d a sibling stillborn. The surviving 17 children have all ered completely and are entirely normal in their ical and mental development. Certainly this d justifies the procedure for routine use. It is safe, tive, and so simple to carry out that any transnist who has once witnessed it or merely read a led description can perform it without difficulty.

ALEXANDER S. WIENER
oklyn, N.Y., U.S.A. IRVING B. WEXLER.

A RECORD LOW HÆMOGLOBIN?

R,—In their letter of June 7 Dr. Karani and Szekulesz reported the case of a patient with 12% ioglobin. Here lower figures than this are common. erty and illiteracy are the prime causes of the ailing undernourishment, and they also stand in way of patients seeking treatment at an early stage. uch varied conditions as sprue, tropical macrocytic mia, anæmia of pregnancy and lactation, deficiencies he vitamin-B group, ankylostomiasis, and chronic aria (in the last two the parasites aggravate the existing anæmia in an undernourished individual) meets with hæmoglobin levels of about 10%.

give below the history of one such case that came er my observation.

man, aged 38, consulted me early last June with a ory of weakness, dyspnœa on slight exertion, palpitation, ling and numbness of the lower extremities, poor appetite, ility to take spicy foods, and flatulence for the past six ths. He was extremely pale and emaciated; finger-nails tle and spoon-shaped; slight œdema of the dorsum of feet of the legs. Temp. 100°F. Tongue raw and fissured, illæ atrophied and smooth; stomatitis present. Liver spleen not palpable. Heart: hæmic murmur, best heard ulmonary area; bruit-de-diable over the jugulars. Pulse-e 114 per min.; blood-pressure 86/62 mm. Hg.

Blood: red cells 560,000 per c.mm.; Hb 11% (Sahli's le); white cells 4600 per c.mm. (polymorphs 64%, lymphoes 31%, eosinophils 4%, monocytes 1%). Motions: no found. Urine: nil abnormal.

No transfusion was possible in the out-of-the-way lage where the patient lives. He was put on a liver-n preparation, nicotinamide tablets (200 mg. a day), th digestive stimulants like 'Taka-Diastase' and nourish food. After a month he has improved symptomcally and objectively; he is able to take food and ves about more freely. On July 15 red cells totalled 00,000, and the hæmoglobin was 32%. The patient s been advised to follow the regimen for at least two nths more, but a month's medicine alone absorbs out three-quarters of his income, and naturally his nily suffers from undernourishment indirectly.

Kumbakonam, South India. R. VENKATARAMAN.

EFFECTS OF CANNABIS

SIR,—Adams[1] in 1942 described chemical, pharmacogical, and clinical experiments with marihuana, and ockings[2] has reported clinical work with cannabis eparations. We have recently had the opportunity administering 'Synhexyl,' a synthetic cannabis eparation, to ourselves and we thought it worth hile recording our personal experiences in view of is drug's possible application in psychiatry.

At first 20 mg. was taken and the sensations experienced ere pleasant but slight. One of us developed a slight ontal headache, but mostly there was a feeling of all being well with the world." Repetition of this dose roduced a sleepy feeling, and observers said that we oked tired and half drugged.

Later a further dose of 40 mg. was taken, and this roduced a marked effect: headache, apathy, increase pulse-rate, a tremendous increase in the sense of time d distance, marked analgesia, and some tendency to ugh foolishly. It was difficult to explain an intention r an action. Suddenly in the middle of a sentence a ord would be repeated again and again, until by a emendous effort the sentence was continued. For me time simple acts, such as putting a kettle on a gas ng and lighting the gas, were impossible for one of us; although what was needed was realised, concentration was too imperfect for the chain of actions to be completed.

Emotional apathy was pronounced, and in the face of another person's danger there was complete detachment—e.g., a small child running round a room holding a large jagged piece of glass in its mouth did not create a feeling of apprehension. There was a sense of muscular weakness, but there was no apparent diminution in muscular power. Movement was avoided because of the mental effort required.

After some hours a drowsy feeling set in, accompanied by a sense of drifting in space with the walls of the room receding and advancing. The effect of the drug did not wear off for about 36 hours; towards the end of this period there was some frequency of micturition.

CYRIL STANSFELD PARKER
Welwyn Garden City, Herts. FRED WRIGLEY.

TYPHOID-PARATYPHOID (Vi) VACCINE

SIR,—When I wrote my letter of March 29 I did not know of the exhaustive paper on the Preservation of Vi Antigen in T.A.B. vaccine by Surgeon Commander S. G. Rainsford published in the *Journal of Hygiene* (1942, 42, 297). Having now read it I regret my remark that "Rainsford tried higher concentrations and discarded the vaccine as unsuitable." The only explanation I can offer for the oversight is that the paper was published after the fall of Singapore in 1942, and during the occupation period I had no access to new medical literature. Even now we are unfortunately not in possession of the current and back issues of many journals, of which *Journal of Hygiene* is one.

Dept. of Bacteriology, College of Medicine, Singapore. N. K. SEN.

TAKE-UP OF VITAMIN SUPPLEMENTS

SIR,—The London Divisional Food Office area comprises 94 local authorities or food-office areas. I have noted for some time that the take-up figures of vitamin supplements for each area, which are periodically issued, remain fairly constant, and that from a cursory glance there appears to be, in general, a higher take-up in what might be termed the better-class areas which are also associated with lower infant-mortality rates.

By the kindness of the statistical branch of the Registrar-General's Office I have been furnished with infant-mortality rates for each of these districts for the year 1945, and the following table gives the mean percentages of the potential take-up of the issues of orange juice, cod-liver oil, and vitamin A and D tablets, grouped according to those areas where the infant-mortality rates for 1945 were under 30, 30–39, 40–49, and 50 and over:

VITAMIN SUPPLEMENTS: AVERAGE WEEKLY ISSUES AS PERCENTAGE OF POTENTIAL AND INFANT-MORTALITY RATES PER 1000 LIVE BIRTHS

Infant-mortality rates per 1000 live births 1945	No. of food-office areas	Mean % potential take-ups of—					
		Orange juice		Cod-liver oil		A & D tablets	
		Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Under 30 ..	13	57	12	35	10	59	9
30–39 ..	44	56	18	32	7	60	10
40–49 ..	26	46	10	30	5	51	10
50 and over	11	44	11	25	7	41	8

It will be noted that there is an inverse association between the degree of take-up and the infant-mortality rate. The above table, of course, represents the information from one region only, and the trend shown in this will require supporting evidence from the rest of the country. The proportionate take-up of Ministry of Food vitamin supplements cannot yet be regarded as a reliable indicator of child health or social circumstances! Neither does it prove that an increase in the take-up of

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1. Adams, R. *Bull. New York Acad. Med.* 1942, 18, 705.
2. Stockings, G. T. *Brit. med. J.* 1947, i, 918.

the supplements would of itself have an effect upon the infant-mortality rate, but it seems reasonable to assume that those social factors which affect the rate may also operate and affect the degree of take-up of the vitamin products. The low figures are all the more to be regretted since it would appear that the take-up is least *where the need is greatest, and since optimum feeding* of the expectant mother, including vitamin supplements, may have a favourable bearing on neonatal mortality at the very least. Special consideration of adverse local circumstances should therefore be given to those areas with low figures for distribution of vitamin supplements. Such factors may be psychological, educational, or connected with the location of or sessional times of the centres distributing vitamin supplements, and they should be carefully reviewed in the light of local circumstances by doctors, midwives, health visitors, and local food offices.

V. FREEMAN
Metropolitan Borough of Islington. Medical Officer of Health.

THE DENTAL HYGIENIST

SIR,—Your annotation of August 2 says that the New Zealand *dental assistants are permitted to practise* dentistry in the full sense of the word, the only condition being that they limit their activities to school-children and nominally work under supervision. This is rather misleading since they can only practise as civil servants; they only fill cavities not involving the pulp and only extract teeth with local anæsthesia. Teeth needing root-filling, crowning, &c., and difficult extractions or general anæsthetics are attended to by qualified dentists. Orthodontic and prosthetic treatment is also outside the nurse's sphere. Although many experienced nurses work without continuous supervision they are subject to frequent and irregular visits by the district principal dental officers who inspect their operative and educational work and demand a very high standard indeed.

You state that this is pure dilution and clearly *unacceptable in this country. It is difficult to see* why it is unacceptable here, when it has by its remarkable success earned the enthusiastic approval of the public and the dental profession in New Zealand. The Teviot Committee reported that, while they could not agree on the merits of such delegation, they agreed, except General Helliwell, that it should await the proof of a shortage of dentists to work a comprehensive dental scheme. The only reason they gave for this was that they wanted the coöperation of the profession. The arrears of dental work which, as you say, are so painfully conspicuous today, surely prove that something drastic of this sort is needed now. General Helliwell's minority report also expressed this view.

London, N.W.6. R. B. D. STOCKER.

VISITING THE SICK

SIR,—More visitors are needed today for public-assistance institutions and for long-stay patients in hospitals and infirmaries. Some of these people have no-one of their own to come and see them. Some of them are active enough to be able to go for a drive in a car, and car-owners could give great pleasure by taking one or two for a run with them when they are driving some distance. Shopping service, too, can be a great help to those who have pocket-money but are unable to reach the shops to spend it. Personal contacts made in this way can add a touch of colour to lives which are otherwise very colourless.

United Societies Club, S.W.7. OLIVE MATTHEWS.

LACTIC-ACID INJECTIONS OF JOINTS

SIR,—I read with interest the letter from Dr. Heald and Dr. Martin (July 19) on the results of treating arthritis by injections into the joints.

I have for the last year been carrying out this form of therapy at the Bermondsey borough-council health centre. In order to try to assess the severity of the arthritis and to judge which type of case is best suited for this treatment, in conjunction with the radiologist I have classified our cases of osteo-arthritis of the knee into three groups, as follows: (1) cases showing no X-ray changes of osteo-arthritis (though there may be early physical signs); (2) cases showing moderate sclerosis of the joint surfaces together with mild lipping; and (3) cases showing diminution of joint space, much lipping, or loose bodies. I have been injecting all three types but I have subdivided my cases into those in which injection tre is started after physiotherapy has failed to relieve and those where injection is given after X-ray ex but before any physiotherapy is given.

The number of cases treated by these standards i yet great, nor the duration of treatment long; during the year I have observed that in mod arthritis one injection followed by a fortnight of wave diathermy abolishes all pain, and the patient n a great improvement in the power of the joint.

In my earlier cases I used to inject into the knee 15 c.cm. of 1% acid *potassium-phosphate solutio* I found that this was accompanied by extreme pa the time of the injection and patients refused to h second injection. Now I anæsthetise the skin and syn membrane by a preliminary injection of 2% proc and to the 15 c.cm. of phosphate solution I add 5 c.c the 2% procaine, making an injection of 20 c.cm. I find that in this way no pain is caused at the ti injection or afterwards, and patients are quite willi have further injections; several have asked for a re In some cases a tremendous reaction has occurred. needed three aspirations of fluid and immobilisati plaster for a fortnight; but when the reaction had p off the man was discharged from my clinic extre pleased with his knee, regarding the reaction as p the treatment.

Only *occasionally have I given a second* injec and my impression is that one injection follow diathermy for a fortnight produces an improvement could be achieved only after three or four mont physiotherapy alone.

I have ascertained the pH values of the synovial in several joints which had fluid in them before injection; but I have found that after injecti has been difficult to get any further fluid in to establish its pH in the week or so after inje If the pH was altered at the time of the injection would expect it to be back at its old value within days and that the pain would return; but the lasts a long time.

The fact that injection in early cases gives the results suggests that the phosphate solution acts o synovial membrane or the fluid acidity; where relief was obtained in cases showing eburnation sclerosis one might consider that it acted on the raw areas by relief of friction or local thrombosis. A moment the mechanism of relief can only be conject

G. O. TIPPE
London, W.1.

THE "INEDUCABLE CHILD"

SIR,—The new Education Act has been in oper for three years. It still contains, however, at leas striking defect which should be remedied at the ea possible opportunity. In *section 116 of the* Act listed those children who are exempted from educat provision by the education authority, and this includes all children who have been found incapab receiving education at school. The education auth may so ascertain a child at the age of two.

Even in the most skilled hands intelligence test fallible in children over the age of five; with you children they are little better than a gamble introduce into law relating to children of the age o such a static concept as that of permanent ineduca *was entirely* unwarrantable *either on scientific* or hu tarian grounds. The practical effect has been medical officers charged with the task of ascertain are often unwilling to issue a certificate of ineduca although quite clearly the child under consider may be in need of institutional care and unmanag at home. *If the law* were altered so as to exclude normal educational provision *only* those who are *time* considered ineducable, it would then caus misgivings to the ascertaining officer: he would that the child's prospects were not permanently imp

The effect on children who have already been with under the Act at an early age is serious. A con able number between the ages of two and five have been certified as ineducable since the Act came into f in one institution alone a review showed that o dozen children, on reaching the a five, ha *intelligence* quotient of over 50% *be reg* as educable in a school for ubn lren. Before the introduction of the Act these lren would have automatically been sent to a special ol of this type, but now they are considered per- ently ineducable.

literal interpretation of the Act may thus be used n excuse by the education authority not to face the of providing additional school facilities (residential otherwise) for such children. Moreover, many mothers be saddled with young unmanageable children who it benefit from a period of residence in a special tution, but who are unable to do so because no onsible doctor will sign a document permanently iving them, at the age of two, of the right to any 1 of education.

Mary Cray, Kent. BRIAN H. KIRMAN.

* This subject is discussed in our Public Health mn.—ED. L.

RED SQUILL

R,—Your annotation on How to Poison Rats ne 21) states that "red squill is of unreliable quality, n ineffective, and extremely inhumane." This gests that you are unaware of the existence of & O. (1943) no. 680—the Infestation Order, 1943— ch makes it illegal for any company or person to sell squill raticides unless they are licensed by, or receive norisation from, the Infestation Division of the istry of Food. The division requires that the red ll used for rodent control shall be biologically tested conform to a definite standard specification.

our statement, if accepted, would be damaging to reputation of a product which has given good service raticide.

dustrial Pest Control Association,
166, Piccadilly, London, W.1.

ANGUS F. MCINTOSH
President.

RECORDS

IR,—Dr. Donnison's letter of August 2 raises the ole question of the fuller recognition and use of listics in the field of medicine. Nowhere is this more portant than in regard to the social and preventive ects of tuberculosis. For this reason, the keeping of urate statistical records should be part of the day-to- routine of every tuberculosis dispensary or chest clinic.

was particularly interested in Dr. Donnison's perience with the "Cope-Chat" Paramount Sorting stem because I introduced this method here last year l already find it invaluable in various ways. Firstly, quarterly return to the Ministry of Health is easily, urately, and quickly completed. Secondly, the rces of cases referred to the tuberculosis officer are dily analysed (i.e., private doctors, mass radiography, itacts, hospitals, &c.) and it is easy to assess which up are providing the most satisfactory "yield" of es. Thirdly, other variables (e.g., sex, age, occupa- n, stage of disease) can be readily correlated, and one n see more clearly which anti-tuberculosis measures uld be further extended, and which do not repay the ort expended on them.

Now, although I find the Cope-Chat system perfectly isfactory for sorting the index cards dealing with berculosis in a county borough with a population of 0,000, the system has two important limitations. rstly, it is not very easy to sort a pack of more than 0 cards at one time, and secondly the sorted cards re then to be hand-counted. Therefore, if one is ting up a statistical system to handle tens of thousands cases, or more, it may become more economical to e one of the more complicated statistical machines, me of which, besides sorting and counting the cards tomatically, also incorporate a device to eliminate ror in punching the index cards.

Last year the Tuberculosis Association approached e Joint Tuberculosis Council with a view to setting up bureau of statistics to deal with tuberculosis problems, any of which are susceptible of solution by proper atistical investigation. It is to be hoped that the new gional organisations will set up statistical bureaux to ake available much valuable information for the logical id economical development and coördination of hospital d administrative schemes in the future. quite apart om the value such records would offer for research.

W. H. TATTERSALL
Tuberculosis Officer, County Borough of Reading.

Parliament

ON THE FLOOR OF THE HOUSE

THE end of this part of the session will come as a welcome relief. Nor has it been only fatigue. Gossip suggests that the morbidity-rate among M.P.'s has been fairly high. The acceleration in the conduct of Parliamentary business is illustrated by the passage of the S.R.O. (statutory rule and order) dealing with superannuation and pension arrangements for the National Health Service. When a comparable scheme for the Civil Service was introduced into the House a number of years ago it took six months to get it through. The present S.R.O., which is more complicated, took only two hours—and that after 10 P.M. of an ordinary working day of Parliament.

There were disappointments last week about Mr. Marshall's proposal for immediate aid to Europe and about the Anglo-Soviet trade talks in Moscow. The United States Congress has adjourned without anything definite being achieved, and any U.S. plan must now wait for January next. The Anglo-Soviet talks were successful on most points except the method of repayment by Russia, and it is possible that the arrangements will be satisfactorily concluded during the summer. Meanwhile the Dutch-Indonesian flare-up, threatening an area of vast food-supply, is an example of the reasons why world food conditions do not improve more rapidly.

The Regular Army of the future will have to be larger than was contemplated, and it is hoped to recruit a considerable number of short-service medical officers in the immediate future. The question of the relation of these medical officers to the National Health Service is one of great importance. If an arrangement for "interchangeability" as regards pension and superannuation schemes can be arranged, the path of recruitment will be smoothed.

The dollar loan this country obtained from the U.S.A. and Canada will be virtually expended by November. Clearly we cannot put ourselves in the power of the United States and must depend on our own resources more than ever before. The need for cuts in imports, including everything except basically necessary foods, and the need for increasing our own food-production, is as great now as it was in 1940. The American loan has given us breathing-space, and we have reached an unprecedentedly high level of exports. But still more is needed and still more will be obtained.

MEDICUS, M.P.

End of the Temporary Register

The purpose of the Medical Practitioners and Pharmacists Bill, introduced in the House of Commons last Monday by the Minister of Health, is to dispose finally of the war-time problems associated with the registration of doctors possessing only qualifications obtained abroad. The Bill also deals with the question of pharmacists with foreign or Colonial qualifications.

Under the Bill the General Medical Council is empowered to grant permanent registration to three classes of doctors holding Colonial or foreign qualifications:

1. Doctors whose temporary registration under Defence Regulation 32B or under the Polish Resettlement Act will come to an end on Dec. 31, 1947. These doctors, notwithstanding the expiration of these regulations, are in any case to remain temporarily registered for 6 months from the passing of the new Act, during which time they may apply for permanent registration. Permanent registration will be conditional on the General Medical Council being satisfied that the doctor has rendered satisfactory service in a medical capacity during the period of temporary registration.

2. Doctors who have served in a medical capacity in any of the British Armed Forces (including the Dominion Forces, Indian Forces, and Burma Forces), and who are resident in the United Kingdom. Here, too, the applicant must provide evidence of satisfactory service; and he must apply within 12 months of the passing of the Act.

3. Doctors who have been permitted to enter the United Kingdom through circumstances attributable to war,

> *Permanent registration will here depend on the candidate holding some recognised Colonial or foreign diploma, or a qualification of the Polish School of Medicine at the University of Edinburgh; on his being of good character; and on his having been selected for employment in a hospital or other institution or service approved by the Minister of Health or the Secretary of State for Scotland. He must apply within 12 months of the passing of the Act; and for 6–18 months registration will be provisional only.*

Any doctor whose application for registration is rejected may appeal to the Privy Council.

For pharmacists the Bill formulates a general change in the law; the powers of the Pharmaceutical Society to make by-laws for the registration of Colonial pharmacists are extended to include those with foreign qualifications. The society is to decide what examination, if any, should be taken by the applicant.

FROM THE PRESS GALLERY

Housing

In the House of Commons on July 28 Mr. D. O. WALKER-SMITH described the Minister of Health's *record on housing as a ghastly failure.* Where were the new houses? There were under 90,000 by the end of May, instead of the Coalition target of 220,000. Generally speaking, local authorities and the building industry were doing their best, but their best was conditional on the planning and policy of the Minister. The supply of building materials was clogged by complex priority licensing schemes and by the subordination of the industry to bureaucratic requirements. Costs were rising and the situation was completely out of hand. The Minister should force Government departments and large local authorities to disgorge their big reserves of materials. He should also press for an incentive scheme of payment by results in the building industry.

Lady MEGAN LLOYD GEORGE said that the limited resources ought not to be dissipated by starting new houses all over the country; there should be concentration on getting as many houses as possible ready for occupation before the winter. The need for rural houses was critical if we were to increase food-production. Something like 100,000 new permanent workers were needed on the land. Where were they to live?

Mr. A. BEVAN said the main aims of the Government's housing policy were to build as many permanent houses as quickly as possible, and to see that houses were built for those in greatest need. The fact that they had provided in less than two years more than 250,000 houses, in addition to war-damage repairs, was not due to any administrative superiority that this Government possessed over that of 1918, but to the superiority of the Socialist principle over the Tory principle. During the last two years the Government had denied the building industry the right to build luxury buildings while the people needed houses. Account must be taken of the temporary housing programme, because in many cases it used up as much labour and materials as permanent houses. There had been complaints about the four-to-one ratio, but if the Government had to accept a constriction in the overall housing possibilities, houses built for sale would be almost entirely excluded. The houses now being built, said Mr. Bevan, were one-fourth to one-third bigger and better than pre-war houses, and better equipped. However, the output of building labour was not as high as the country was entitled to expect, and *from now on there would be no inhibitions, implicit* or explicit, on any system of incentives or payment by results in the building industry. The Government expected the building industry to set a new tempo in production. They were not satisfied with the progress in housing; *who could be?* But he resisted the suggestion that it was necessary to reduce the programme. To do so would be gravely to debilitate the national pulse. If the Government had not been able to accomplish all they would have liked, nevertheless they had done a very good job. We were making more progress with housing than any other nation in the world.

Mr. R. S. HUDSON estimated the immediate shortage of houses in this country at 2 million. He charged the *Government with endeavouring to mislead the* by suggesting that the problem was very much than it really was. Mr. Bevan had failed because the dissipation of effort, the slow rate of const and the piling up of excessive costs.

A motion to reduce the Ministry of Health vote £5 was negatived by 258 votes to 111.

Scottish Hospital Board Areas

On July 29 Mr. W. McN. SNADDEN moved that National Health Service (Scotland) (Determination Areas of Regional Hospital Boards) Order, 1947, annulled. Objecting to certain areas defined, he that for years the natural flow of patients from Perthshire had been to Stirling: in 1946 512 were admitted to Stirling Royal Infirmary, but 4 were admitted to the Royal Infirmary for the and city of Perth. Natural flow had been ignored the order, and serious obstacles would be placed in way of efficient hospital administration, not to speak the discontent that would arise.

Sir J. GRAHAM KERR pointed out that under the *arrangements of the General Medical Council* medical student, after passing his qualifying ex tion, would have to spend a year in a resident ap ment at a hospital. To carry out its duties effic each medical school must have a district incl enough hospitals to allow its graduates to put in the year of residence. Further, every medical sc must have at its command sufficient clinical material Yet under this order the population and hospitals were unequally divided between the two approximately equal medical schools of Glasgow and Edinburgh. Glasgow, he was told, was allocated a population of nearly 3 million and Edinburgh a population a little over 1 million. That was not only grossly unfair but would be a tremendous blow to the Edinburgh school, one of greatest in the world.

Mr. J. WESTWOOD, Secretary of State for Scotland, said that if experience showed that the administration could be improved by a change there would be no hesita tion in making a new order. The main consideration had been the convenience of patients. The boundaries were not to be regarded as barriers which patient or medical practitioner could cross, and students from one university could be taught in a hos associated with another university. The Act req that so far as practicable each area should be such hospital and specialist services could be provided convenient association with a university which had school of medicine. The Northern region, which had university within its boundaries, was to be associ principally with Aberdeen University, and with Edin burgh and Glasgow Universities as well, in view of local associations.

It had been represented that the Outer Hebrides should be included in the Western region on the ground that patients and medical practitioners, especially in the southern group of the Outer Isles, had always looked to Glasgow for hospital and specialist services. That position was fully recognised when the boundaries were fixed, but it was nevertheless decided to allocate the Outer Isles to the Northern region to a splitting the areas of the two local health authorities—the counties of Inverness and Ross and Cromarty. Looking to the future, it was felt that the development of the specialist and hospital services in the Northern region, together with the development of improved air communications between t islands and Inverness, would tend to influence the direction of the flow of patients; but the convenience of patients was the prime factor, and there would be no interference with freedom of choice of hospitals, patients, or medical profession alike. So far as the provision of consultant service was concerned there would be collaboration between the regional boards.

Mr. SNADDEN said he did not feel quite happy about t Secretary of State's explanation, but in view of assurance that he would reconsider the whole set if the regional allocation was found to be impractical he would withdraw his motion.

QUESTION TIME

Wheat-extraction and Poliomyelitis

ALPH GLYN asked the Lord President of the Council he had consulted the Medical Research Council effect that the extraction of vitamins from the bread ainable throughout the country had had on the increase ngitis and, infantile paralysis; and if immediate ould be taken to reduce the extraction and to ensure bread content should be the same as in 1939–40.—

MORRISON replied: I am advised that the vitamin of the bread obtainable in this country since 1942 ct, much greater than in 1939-40, since a higher pro- of the nutrient materials in the grain is retained in r. There is no evidence of any relationship between d the incidence of meningitis and infantile paralysis, is a fact that the death-rates from cerebrospinal itis and from infantile paralysis in England and vere much lower in 1945 than in 1940.

. GLYN: If the quality of the vitamins in the bread r than it was pre-war, is the right hon. gentleman that there has been a great deal of misconception out the country? If the increase in mortality as a f this unfortunate epidemic is in no way due to lack nins in the bread, it would be a consolation if he would answer in a way which is perhaps more easily under- y those concerned.

MORRISON: I am scientifically assured that there is nexion between this particular disease and the subject question.

Obituary

WILLIAM EVERETT

M.B. EDIN., F.R.C.S.

liam Everett, senior surgeon to the Royal Hamp- County Hospital, was one of the outstanding nalities of Winchester, and his loss will be felt sections of the community. He had borne with fortitude a number of painful illnesses, and was of the possibilities of the condition from which fered; but he retained so cheerful an aspect that eath, on June 15, had the added shock of surprise ose who did not know the state of affairs.

native of Edinburgh, Everett was a senior medical nt at its university when war broke out in 1914. ld not wait to complete his medical qualification, within a few days had volunteered to serve in the of the R.A.M.C. Shortly afterwards he embarked rance, and he remained in the Army until 1916. at year he was recalled to complete his medical s at Edinburgh, and such was his ability and try that he was able to sit for his final examination e same time as his contemporaries who had not absent on military service. Qualifying in 1917, ined the Royal Navy as a temporary surgeon nant and was posted to a Q "mystery" ship in the erranean. After a period of considerable hazard as transferred to the Naval Hospital in Bermuda, he was in charge of the surgical division and department. On his way to Bermuda he was ed in New York, and was "captured" by the icans to take part in their War Loan campaign. speeches were successful in raising large sums of y for the war. On demobilisation he returned to burgh, where he gained the university prize for ology, and he took his F.R.C.S. in 1919. After work- as senior resident at the Bradford Infirmary, he ied in 1924 the younger daughter of Robert Houston, dinburgh, and moved to Barry, where he had been inted resident surgeon at the Barry Accident pital. He remained there four years, and after a in consulting practice in Cardiff went in 1929 to chester, where he presently joined the honorary of the Royal Hampshire County Hospital.

diagnosis Everett showed care and judgment. an operator his profound knowledge of anatomy, bined with sensitive and dexterous hands, enabled to undertake intricate and delicate operations with ess. He was satisfied with none but the highest dards in his work, and he had an imaginative sym- y for his patients—as indeed for everyone who [illegible] was very fond of children and was particularly successful in gaining their confidence and affection: his artistic abilities were seen not only in his professional work but also in the gay little pictures with which he decorated—using a cake of soap—the windows of rooms occupied by his younger patients. He also had considerable gifts as a lecturer and teacher and was a fluent public speaker. As a colleague he was loyal, staunch, and considerate, and was ever-ready to respond to appeals for help and advice.

In his early days at Winchester he was a keen golfer with a scratch handicap. Another hobby was provided by his garden: he loved flowers, and was very successful in cultivating them. As a raconteur of stories—especially in Scots and Welsh—he was unsurpassed, and he was a most delightful companion. To anyone privileged to enjoy his happy hospitality, it was apparent how much his home life meant to him and in what affection he held his wife and children.

C. J. P.

BEAUMONT HARRY COMERFORD

M.D. DURH.

Dr. Beaumont Comerford died on July 15 after a brief illness. He was born in London in 1864, the youngest son of Lieut.-Colonel Comerford, and was educated at Sherborne School, where he was captain of games and winner of the half-mile, mile, and steeple-chase. From there he went to St. George's Hospital, whence he qualified in 1887. He was house-surgeon and resident obstetric assistant at St. George's, and resident medical officer to the Chelsea Hospital for Women, and was afterwards for many years in practice in Belgravia. He took his M.D. at Durham in 1904, and also the D.P.H. in the same year. He had been honorary medical officer to the National Children's Adoption Association, and to the Imperial Nurses' Club; also medical adviser to the Girl Guides Association. During the 1914–18 war he returned to his old hospital to do duty as out-patient surgeon, to relieve younger members of the staff on war service; he was appointed an honorary governor of the hospital in recognition of his work. In 1905 he married Miss Elizabeth Frances Shaw Woodgate, who survives him, with their son, R. B. Comerford, who has followed his father in the medical profession.

Births, Marriages, and Deaths

BIRTHS

BELL TAWSE.—On July 30, the wife of Dr. A. J. S. Bell Tawse—a *daughter*.

BUZZARD.—On July 28, at Oxford, the wife of Dr. E. M. Buzzard—a daughter.

DOWLER.—On July 31, at Gloucester, the wife of Dr. H. G. Dowler—a son.

FRANKS.—On July 28, in London, the wife of Dr. L. M. Franks—a son.

HAMILTON.—On July 30, in London, the wife of Dr. H. C. Hamilton—a daughter.

KEATINGE.—On July 29, at Beaconsfield, the wife of Major Alan Keatinge, M.C., R.A.M.C.—a daughter.

MACKAY.—On July 30, at Aylesbury, the wife of Dr. E. V. Mackay—a son.

MACLEOD.—On June 28, at Headford, co. Kerry, the wife of Captain A. I. MacLeod, R.A.M.C.—a son.

ROBERTSON.—On August 1, at Southborough, Kent, the wife of Dr. John Robertson—a daughter.

WADE.—On July 31, the wife of Mr. Hilary Wade, M.C., F.R.C.S.—twin sons.

WELLS.—On August 1, the wife of Dr. Christopher Wells, M.B.E.—a son.

WETHERED.—On July 31, at Clifton, the wife of Dr. R. R. Wethered—a daughter.

MARRIAGES

DRAFFIN—MACARTHUR.—On July 26, in London, David Charlton Hornby Draffin, M.B., to Elizabeth Brown Dickson MacArthur.

IRVINE—WALTER.—On July 30, at Guernsey, Robin Eliot Irvine, M.B., captain, R.A.M.C., to Florence Margaret Walter.

MACBAIN—BENNETTE.—On July 19, in London, Gillies MacBain, *D.S.C.*, *L.M.S.S.A.*, to Margaret Bennette.

MACKINNON—FRUIN.—On July 31, at Worcester, John Alexander Mackinnon, L.R.C.P.I., to Lilian Constance Fruin.

PEEL—MELLISH.—On July 26, John H. Peel, F.R.C.S., to Freda Margaret Mellish.

RICE—AUSTIN SMITH.—On July 26, at Woolwich, H. M. Rice, M.B., major, R.A.M.C., to Cheryl Joan Austin Smith.

DEATHS

COOKE.—On July 29, at Shalford, Guildford, Cyril John Chesterfield Cooke, M.R.C.S., D.M.R.E.

FREYER.—On July 29, Samuel Forster Freyer, C.M.G., M.D. R.U.I., lieut.-colonel, R.A.M.C. (retired), aged 88.

Notes and News

SOUTH AFRICAN HEALTH FOUNDATION

In South Africa 25 babies out of every 100 die in their first year, as compared with 3 in New Zealand, 5 in Great Britain, and 7 in Italy. More than half the coloured population live below the poverty line, and, according to a 1942 report, three-fifths of the coloured children are badly nourished or diseased; while their infant mortality is more than 300 per 1000 live births. The Union also has many poor white families; a nutritional survey made six years ago showed that about a third of the European children in the country were malnourished, and one out of every four of them drank no milk at all.

A plan to establish, as a war memorial, a National Health Foundation to combat these ills originated with the South African soldiers during the war, and has been warmly accepted by the whole Union. The Springboks themselves raised some £25,000 from the contributions of South African men and women serving in and with the Forces; and it is hoped that an appeal launched last year to the whole Union will raise the fund to £5 million.

The initial programme is to establish People's Centres for the promotion of health and social well-being, and community living. These centres will encourage better feeding by instruction, food clubs, communal cooking, and help in vegetable-growing. Mothercraft and child welfare will also be taught, and recreation and education are to be arranged for adolescents. A second project is to provide bursaries and grants to men and women of all races to train as health workers. Finally the foundation hopes to arrange a national health campaign, which will provide lectures, films, and travelling exhibitions, besides publishing articles in the press, leaflets, and other educational material.

The foundation is intended to benefit all sufferers, irrespective of race, colour, or creed, but it aims specially at building up the health and improving the living conditions of the non-Europeans, whose needs are greatest.

SOCIETY OF MEDICAL OFFICERS OF HEALTH

The annual meeting of the county-borough group of this society was held in York from July 18 to 21, under the presidency of Dr. W. S. Walton. Dr. J. J. Buchan, Dr. J. Johnstone Jervis, and Dr. Arthur Massey were elected honorary members of the group. Among the addresses was one by Prof. J. C. Spence on the Conduct of Investigations in the Field of Medicine and Social Medicine, in which he suggested that when the new service was in full operation the medical officer of health should have more time and opportunity for research. He urged that the M.O.H. should be inspired by the conception that he was the real community doctor, ready to advise in any field, whether hospitals, education, housing, or even roads. The question must always be asked—is this for the welfare of the citizen? The M.O.H. was responsible for finding the answer; and to provide it he should be prepared to organise, even if he did not himself carry out, the necessary social surveys or sociological research.

EGYPTIAN MEDICINE

In a lecture given in London on July 29 under the ægis of the Egyptian Education Bureau, Prof. Naguib Mahfouz Pasha ably compressed into the compass of an hour the history of medicine in Egypt from the fourth millenium B.C. to the present day. Egyptian medicine had its origin in magic, but the practice of mummification gave an impetus to dissection and anatomy, which led on to physiology and pathology, at a much earlier date than in neighbouring countries, with the result that the Greeks of the third century acquired their medical science from Egypt. Hospitals were established at a very early date in Egypt; patients were bathed and clothed in hospital garb on admission and kept in hospital till cured, if possible; the test of cure was the ability to eat without discomfort a loaf of bread and a chicken. After a rapid review of the changes and vicissitudes of Egyptian medicine, which reached its nadir about a hundred years ago, Professor Mahfouz described the origin and establishment of the school of midwifery (the first students were Sudanese slaves and, on qualifying, were married off to bachelor doctors) and the multiplication of modern universities, which in ten years' time should be able to provide enough doctors for the requirements of the Egyptian people.

BREAST-FEEDING

In an 8-page pamphlet intended for mothers, the N Association of Maternity and Child Welfare Centres and the Prevention of Infant Mortality set out the reasons breast-feeding and the principles on which it should managed. The advice is sound, well arranged, and gives plain and sensible language. Only one small point calls criticism: to dust the breasts with boracic powder, is often gritty and tends to cake when moistened, inadvisable—a good talcum would surely be more appro The pamphlets cost 2*d*. each or 12*s*. 6*d*. per 100, from association at 5, Tavistock Place, W.C.1.

RETROSPECTIVE DEMOGRAPHY

The many admirers of Mr. Ransom Pickard's v and thoroughness know that he does not do things by and that when he set out to estimate the popul Exeter in former days he would neglect no source of inf tion. The result of his researches among baptismal burial registers and tax lists is embodied in a compact interesting little book,[1] which will commend itself students of demography. The grim tale of havoc by epidemics—of plague in earlier times and of typhus, typhoid, and influenza in the post-restoration —is recorded and tabulated in the second part of the to which graphs are appended.

SOCIAL SERVICE IN LONDON

There are now 26 local councils of social service in London area, 4 of which were started during the past In their annual report[2] the London Council of Social Service note that they have also helped at the birth of 20 new com munity associations, and are now in touch with 120 such associations, with a membership of 40,000 Londoners. The also supervise 72 of the 94 citizens' advice bureaux in the region, and are arranging training courses for staff for the bureaux and officers of information centres. The old people's welfare department of the council brought into touch with one another all the voluntary agencies maintaining homes for the old; and, as a result of their meeting, the London Federa tion of Homes for the Aged has been set up, to encourage consultation between the various bodies, and to foster a in standards in the homes. A conference for matrons of such homes is planned. Five local old people's welfare com mittees have themselves established homes, and others are planning to do so.

MILK FOR INVALIDS

The Minister of Food has arranged for patients who have hitherto been receiving household milk-powder on m grounds to be supplied instead with machine-skimmed sweetened condensed milk in quantities with equivalent f value. Application should be made to the local food office

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University of Oxford

Dr. Sheila T. E. Callender has been appointed to the readership in medicine for seven years from Oct. 1 next.

Dr. Callender took her medical training at St. Andrews Univers where after graduating B.SC. she qualified M.B. in 1938. She held appointments as house-physician and gynæcological and obstetric resident at the Royal Infirmary, Dundee, where she became demonstrator in pathology and later junior assistant clinical pathologist; she was also medical officer to the Blood Trans Service for the East of Scotland. Dr. Callender has spent the four years in Oxford, where she has been house-physician at Radcliffe Infirmary and graduate assistant in the Nuffield depart ment of clinical medicine. In 1944 she graduated M.D. and became a M.R.C.P. She has made a special study of disorders of the blood

At a congregation on July 27 the following degrees conferred:

D.M.—A. R. Norton (in absence).

M.Ch.—E. E. T. Taylor.

B.M.—R. A. Griffiths, C. B. Wynn-Parry, R. A. Cham Christopher Pallis, G. E. Honey, C. C. Kennedy, H. M. I R. H. Balme, Raymond Seidelin, J. H. B. Yule, James Sl Isabel H. Burn, Jean Dutton (all in absence); and B. V. McEn Robert Harvard-Davis, M. S. Kay, R. A. M. Oliver, J. M. Wor A. L. Turnbull, L. J. Cawley, A. G. Parks, Robert Alhadeff, M. L. Lee, Mary P. S. Dalton, Unity R. Allen, Olive P. Frodsham, Je Robertson, Sulammith Wolff.

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[1] Population and Epidemics of Exeter in Pre-census By Ransom Pickard, M.S., F.R.C.S. Exeter: James To 1947. Pp. 83.

[2] Report for the year 1946–47. Lon [illegible] l of Social 7, Bayley Street, Bedford Squar

al College of Physicians of London

a comitia held on July 31, with Lord Moran, the presi-
, in the chair, the following fellows were elected officers
he ensuing year:

nsors: Dr. George Graham, Dr. Eric Bellingham Smith, Dr.
am Johnson, Sir Adolphe Abrahams. *Treasurer:* Prof.
G. Barnard. *Registrar:* Dr. H. E. A. Boldero. *Harveian*
rian and *assistant registrar:* Dr. W. D. W. Brooks. *Members*
le library committee: Sir Archibald Gray, Dr. Macdonald
hley, Dr. John Bishop Harman, Prof. James Mackintosh.
nce committee: Dr. Maurice Campbell, Dr. J. St.C.
gton, Dr. G. B. Mitchell-Heggs.

e following were elected examiners:

emistry: Mr. Alexander Lawson, Mr. John Lowndes. *Physics:*
Sidney Russ, Mr. Stanley Rowlands. *Materia medica and*
macology: Dr. E. C. Warner, Prof. E. J. Wayne, Dr. H. L.
lott, Dr. W. G. Oakley, Dr. V. J. Woolley. *Physiology:*
Samson Wright, Prof. W. R. Spurrell. *Anatomy:* Prof. Thomas
l. *Pathology:* Prof. R. J. V. Pulvertaft, Dr. Archibald Gilpin, Prof.
D. Newcomb, Dr. Kenneth Robson. *Medical anatomy and*
ciples and practice of medicine: Dr. George Hall, Dr. Geoffrey
me, Dr. Reginald Hilton, Dr. Leslie Cole, Dr. James Living-
e. Dr. K. Shirley Smith, Dr. C. B. Levick, Dr. Maurice Shaw,
Thomas Hunt, Dr. J. O. Hawksley, Dr. F. P. Lee Lander, Dr.
lam Brockbank. *Midwifery and diseases peculiar to women:*
D. H. Macleod, Mr. H. L. Shepherd, Mr. R. A. Brews, Mr.
Stacey, Mr. G. F. Gibberd. *Public health:* part I, Prof.
es Mackintosh, Prof. M. E. Delafield; part II, Dr. J. Greenwood
on. *Tropical medicine:* section A, Major-General Sir Alexander
am; section B, Dr. George Macdonald. *Ophthalmic medicine*
surgery: Dr. S. P. Meadows. *Psychological medicine:* part I,
W. D. Nicol; part II, Prof. P. C. P. Cloake, Prof. Aubrey Lewis.
ngology and otology: Mr. M. L. Formby. *Medical radiology:*
W. V. Mayneord (physics), Dr. E. Rohan Williams (radiology),
B. W. Windeyer (radiotherapy). *Anæsthetics:* Mr. Ashley
, Dr. M. D. Nosworthy. *Child health:* Dr. K. H. Tallerman,
A. G. Watkins. *Physical medicine:* part I, Mr. L. H. Clarke,
H. A. Dunlop; part II, Sir Robert Stanton Woods, Dr. W. S. C.
man. *Industrial health:* part I, Dr. J. A. Charles; part II,
R. E. Lane. *Murchison scholarship,* 1948: Dr. J. B. Harman,
G.-D. Hadley.

he Murchison scholarship, held this year in Edinburgh,
awarded to Miss Constance C. Forsyth, M.B. The award
he Baly medal was made to Prof. B. A. Houssay, of Buenos
s, for services to physiology by his researches on endocrine
trol of carbohydrate metabolism. The Bisset Hawkins
lal was awarded to Dr. C. H. Andrewes, F.R.S., for his
arches in typhus and influenza.

he following lecturers for 1948 were appointed:

r. F. M. R. Walshe (Harveian orator), Dr. J. A. Charles (Brad-
w lecturer), Dr. J. F. Nattrass (Lumleian), Dr. C. M. Fletcher
ulstonian), Dr. J. F. Wilkinson (Oliver-Sharpey), Dr. R. Coope
chell), Dr. J. W. Trevan (Abrahams).

ord Moran was elected representative of the college on
National Consultative Committee for the United Kingdom
the Food and Agriculture Organisation of the United
ions.

he following having satisfied the censors' board were
ted to membership:

W. Abrahams, M.D. Melb., A. G. V. Aldridge, M.D. Camb.,
H. Allan, M.B. Sheff., D. J. Arkle, B.M. Oxfd, Kurt Aterman,
Prague, H. W. Balme, M.B. Camb., G. M. K. Baloch, M.D.
jab, J. A. Bassett, M.R.C.S., O. D. Beresford, M.B. Wales, Arnold
m, M.D. Lond., W. J. H. Butterfield, B.M. Oxfd, J. R. Chatterjee,
Calcutta, Hugh Conway, M.B. Glasg., J. A. Cosh, M.B. Camb.,
A. Craig, M.B. Lond., E. G. A. Crawshaw, M.B. Camb., D. M.
glas, M.B. Lond., A. Y. Ekdawi, M.B. Cairo, J. R. Ellis, M.B.
ib., Elliott Emanuel, B.M. Oxfd, Michael Feiwel, M.B. Camb.,
M. Foreman, M.B. N.Z., J. H. Goonewardene, M.B. Lond., N. S.
don, M.D. Edin., Ludwig Guttmann, M.D. Freiburg, J. B. Hannah,
Lpool, W. J. Hay, M.B. Camb., K. W. G. G. Heathfield, M.D.
d., C. L. Hewer, M.B. Lond., A. J. Hird, M.B. Glasg., J. A.
son, M.D. Manc., W. H. Hood, M.D. Belf., Margaret E. Hughes,
Lond., D. B. Irwin, M.B. Lond., D. I. Jenkins, M.B. Wales,
A. Jones, M.B. Lond., F. E. Joules, M.D. Lond., R. E. Kelly,
Lond., J. D. Kidd, M.B. Camb., G. L. Leathart, M.B. Camb.,
L. Ledingham, M.R.C.S., K. N. Lloyd, M.B. Lond., J. S. Logan,
Belf., T. P. Loke, M.B. Lond., P. M. McAllen, M.B. Lond.,
G. MacArthur, M.B. Aberd., S. L. Malhotra, M.B. Punjab,
E. Marmion, M.B. Camb., J. A. Milne, M.B. Glasg., Robert
tgomery, M.B. Glasg., G. A. Neligan, B.M. Oxfd, J. H. Paterson,
Lond., Alexander Poteliakhoff, M.B. Lond., J. D. L. Reinhold,
Oxfd, Margaret L. Reinhold, M.B. Witwatersrand, A. H. T.
b-Smith, M.D. Lond., R. W. Rowan, M.B. Lond., J. E. Royds,
St. And., W. F. Scott, M.B. Witwatersrand, G. B. Shaw, M.B.
g., B. H. Smith, M.B. Aberd., Thomas Stapleton, B.M. Oxfd,
S. Stevens, M.B. Camb., Cecil Symons, M.B. Lond., Margaret L.
lor, M.B. Lond., H. E. Thomas, M.B. Lond., P. H. Tooley, M.D.
d., S. C. Truelove, M.D. Camb., H. R. E. Wallis, M.B. Camb.,
H. Walters, M.B. Lond., Malcolm Watt, M.B. N.Z., H. F. West,
Lond., O. B. I. Willey, B.M. Oxfd, M. W. W. Wood, M.B. Camb.

icences to practise were conferred upon 137 candidates
men and 28 women) who have passed the final examina-
in medicine, surgery, and midwifery of the Conjoint
rd and have complied with the by-laws of the college.
following are the names of the successful candidates:

R. V. Argles, D. A. L. Ashforth, R. W. Attwood, J. M. Barritt,
et B. Bell, J. H. Blackman, E. I. Boxer, D. G. Boyle, G. P. Bradfield, J. P. P. Bradshaw, H. R. Bridgford, T. C. L. Brown, C. M. Browse, Klaus-Ludwig Bucky, Pauline P. Budd, G. H. Bulow, Mario Caturani, K. L. Cleminson, J. M. Clubb, R. O. N. G. Colley, K. J. Covell, K. A. Cowan, W. R. Daniel, A. I. Darling, O. J. O. Davey, A. C. Davies, Leslie Dawson, Jacqueline Domenet, Ada Dudack, M. L. Dyson, Pamela M. Farmer, Loveday Ann Farquharson, Vivian Feldman, T. J. Felix, W. J. Gall, J. H. Garson, Norman Garwood, J. M. Gate, C. E. R. Gee, Edward Gellatly, J. V. Gibson, Joy K. Goodacre, J. D. Greatrex, J. K. G. Grieves, R. H. Griffith, Maxwell Grinstein, Angela W. Hall-Smith, Brian Hardie, Geoffrey Harris, S. J. Harris, Cyril Havard, T. G. Heron, Stella C. Hill, Derek Hobson, J. A. G. Holt, A. P. K. Homayouni, V. E. Ireland, Helen A. Jaques, Barbara Jones, D. G. Jones, A. H. Kasasian, M. R. R. Khan, D. B. Leaming, Josef Lederer, William Lees, Ruth M. Licence, Joyce J. P. Lomas, Terence McCaffry, R. I. MacInnes, J. D. Mackichan, J. A. Mahoney, A. E. B. Matthews, M. D. Mehta, F. W. Millard, L. O. Miller, A. L. Mintz, Barbara A. Moore, C. T. Morgan, Dorothy A. Morgan, A. H. Morris, Meinir Morris, H. J. Moss, G. N. Mulliner, D. J. Oakland, Hugh Owen, Susan H. Palmer, R. T. Parr, R. F. Pearson, A. R. Penn, R. S. Pine, R. C. S. Pointon, Peter Pratt, John Prestt, Violet M. J. Procter, P. K. Pybus, D. M. Rahilly, Pauline Readman, E. R. Reid, Sybil L. Reis, Joan Rendall, David Rider, S. M. Rivlin, J. C. Rushton, A. J. Ruzicka, P. W. Seargeant, P. G. Seear, John Southgate, Sheila J. Spencer, Harold Spira, A. H. Stern, J. D. Stevens, D. B. Stott, Rosa Sutton, P. B. Taylor, J. R. Theobalds, J. M. Thomas, J. M. Titmas, Olive I. Todd, Ruth W. Towler, J. S. Turner, M. H. Turner, O. R. B. Vincent, I. M. Walter, N. D. J. de S. Wijesekera, W. M. Wilkinson, K. P. Williams, L. B. Williams, Sheila G. Wills, Gerald Wiseman, C. H. Wood, Yvette Woodford-Williams, G. R. V. Worrall, Pamela N. Wright, Frank Wynn, R. E. V. B. Young, D. M. Reader, P. G. Treharne.

The under-mentioned diplomas were also conferred conjointly with the Royal College of Surgeons to the following candidates:

Anæsthetics.—D. V. Bateman, O. H. Belam, C. H. Boyd, W. H. F. Boyd, P. R. Bromage, E. K. Brownrigg, Roger Bryce-Smith, J. E. Bulow, Dennis Canter, A. A. Cilliers, R. B. Clayton, F. E. Clynick, S. W. Coffin, E. R. Coleman, P. B. Conroy, C. J. Corcoran, Giovanni Curà, R. M. de Gregory, A. B. Eastwood, I. C. W. English, J. U. Forbes, Andrew Fraser, Eileen M. Gibson, L. J. Goggin, John Gordon, A. H. Grace, P. W. S. Gray, Harry Grenville, J. H. G. Halliday, J. K. Harper, A. W. Hind, A. C. Holms, H. R. Hudd, Gough Hughes, R. M. S. Keir, James Lapraik, C. H. Levick, J. K. Lewis, Mary E. Lloyd, R. E. Loder, J. M. MacCormack, R. M. Mackenzie, R. L. McMillan, S. A. Mason, J. G. Matheson, E. T. Moerch, P. H. Moore, W. B. Neff, G. S. Ostlere, W. J. Patterson, Joseph Psaila, H. J. Richardson, Hilda Roberts, J. D. Robertson, F. R. Russell, C. F. Scurr, N. C. Smiedt, Eugene Thomas, T. C. Thorne, C. E. Tudor, Ambrosine B. Vaughan, Patricia E. Wallace, Mary Watson, H. L. J. Wilson, G. P. Williams, T. M. Williams, T. N. P. Wilton, E. H. Winterbottom, Luise Wislicki, R. B. Wright.

Laryngology and otology.—James Ackerley, J. N. Appleton, L. F. Day, P. F. King, J. A. Langille, J. M. Marquard, Peggy K. L. Orton, O. O. Ring, R. V. Tracy-Forster, K. L. Wilson.

Child health.—Sunilkumar Ray.

Medical radiotherapy.—P. E. S. Palmer.

Psychological medicine.—E. H. Cranswick, J. A. Crawford, P. B. de Maré, J. J. Fleminger, E. H. Hare, A. B. Hegarty, R. F. Hobson, J. G. Howells, Wallace Ironside, John Johnston, G. N. Jones, V. L. Kahan, Julian Katz, L. G. Kiloh, A. B. Kinnier Wilson, C. O. Lack, A. F. McLean, Morris Markowe, D. A. R. Pond, K. C. Royes, Peter Sainsbury, A. B. Sclare, Salo Tischler, P. M. Turquet, A. H. Williams.

Public health.—Averell S. Darling, D. C. Davidson, H. M. Davies, W. J. Elwood, B. L. Frank, R. M. Galvan, G. I. Harding, J. H. Hudson, R. W. Kind, Evelyn M. Lee, N. C. Lendon, Joseph Lister, Daniel MacLeod, R. J. Niven, R. N. Onyemelukwe, J. H. Rayner, C. A. Royde, Benjamin Schwartz, R. W. Scott, Muhammad Shamsuddin, O. H. Shaw, Rahum Shoulman, K. N. Srivastava, W. F. Tierney, K. O. A. Vickery, J. R. D. Williams, H. D. Wilson.

Industrial health.—W. E. Broughton, Caroline J. Brown, Alan Butterworth, J. V. Manning, H. B. Melzer, Niaz-ud-Din, Dorothy Williams.

Medical radiodiagnosis.—J. D. Addison, T. E. Broadbent, A. C. Glendinning, H. J. R. Henderson, R. L. T. Hill, B. N. Klukvin, D. G. C. Macdonald, D. R. Morris, D. H. Nelson, R. L. Quilliam, A. C. Rogers, G. A. Stevenson, R. S. Thorpe, F. R. Turner, C. H. Wood.

Royal College of Surgeons of Edinburgh

At a meeting of the college on July 29, with Mr. J. M. Graham, the president, in the chair, the following were admitted fellows:

J. H. Annan, Paul Baer, C. A. Bathfield, Ben Bellon, Meyer Berkowitz, A. L. Black, Gavin Boyd, W. S. Braidwood, K. O. Burrow, L. S. Cooke, Mary D. Daley, R. H. Dawson, W. H. Ekin, H. S. Gild, A. I. Goodman, I. G. Graber, G. K. Graham, K. E. Guest, R. H. Hannah, D. S. L. Henderson, P. S. Hollings, R. G. Hughes, Jeremiah Hurley, James Hutchison, J. S. F. Hutchison, J. W. S. Irwin, R. E. Isaac, John Joyce, D. J. Jussawalla, J. P. Kelly, H. F. Lowenthal, Philippa M. Ludlam, Brendan McCarthy, Iain McLennan, Stephen Madden, K. L. Marks, F. J. C. Matthews, D. M. Milne, D. G. Morris, F. P. Morris, M. J. D. Noble, John Orr, Frank Paulson, R. E. Pow, T. M. Prossor, Eric Rea, H. O. Rose, J. M. Ross, J. Y. W. Russell, C. G. Saraiya, J. B. Scott, L. B. Scott, Thomas Sergeant, J. M. Shaw, R. T. Simcox, R. V. P. Sinha, W. P. Small, R. J. S. Smith, Thomas Smith, V. G. Springett, Mannie Stein, W. H. Stephenson, Zakaria Taher, S. F. Thomas, J. C. Walker, John Watson, A. G. D. Whyte, J. J. Williams, R. I. Wilson.

Society of Apothecaries of London

A course of 20 postgraduate lectures on modern therapeutics will be delivered in the society's hall at 5 P.M. during October and November. Dates are to be announced shortly.

Royal College of Surgeons of England

A meeting of the council was held on July 31, with Sir Alfred Webb-Johnson, the president, in the chair. It was decided that candidates for the final F.R.C.S. examination must have served a period of postgraduate surgical training of 12 months in posts approved by the college: 6 months of this period must have been occupied in residence in a hospital recognised for the purpose.

Diplomas of membership were granted to the candidates named under the Royal College of Physicians, with the exception of Hugh Owen, to whom membership had been granted previously.

Diplomas were granted, jointly with the Royal College of Physicians, to the candidates named under the Royal College of Physicians.

Royal College of Obstetricians and Gynæcologists

At a meeting of the council on July 26 Mr. W. Gilliatt was re-elected president. The following officers were also re-elected: vice-presidents, Sir William Fletcher Shaw and Mr. J. M. Wyatt; hon. treasurer, Mr. A. A. Gemmell; hon. librarian, Mr. F. W. Roques; hon. curator to the museum, Mr. Aleck Bourne. Mr. H. G. E. Arthure was elected hon. secretary.

The following candidates were elected to membership of the college:

S. J. Aptekar, H. B. Bagshaw, G. H. Bancroft-Livingston, Solomon Bender, Isabella R. Bishop, J. T. S. Brown, Gwendoline E. Cockrem, J. M. Corston, G. A. Craig, K. J. R. Cuthbert, R. W. Danziger, B. C. Dastur, Josephine A. Davidson, N. E. C. de la Hunt, W. P. G. Dickson, I. A. Donaldson, Sara M. Field-Richards, T. B. FitzGerald, J. B. Fleming, I. T. Fraser, A. M. Giles, A. M. Graham, E. F. B. Hamilton, Lois E. Hurter, D. W. James, Eileen I. Jamieson, R. J. M. Jamieson, D. H. Lees, Max Lipsitz, G. I. Louisson, William Love, Joan E. W. Mackie, C. J. MacKinlay, J. T. Mair, Parvati Malkani, W. G. Mills, P. R. Mitchell, Mary L. Neville, E. R. Ormerod, H. G. Page, S. S. Parlee, Nancy Perry, E. E. Philipp, J. G. Pritchard, E. E. Rawlings, Elizabeth M. Rose, Dorothy M. Satur, D. A. F. Shaw, D. J. N. Smith, James Walker, Ada S. Wong.

Milk for Children

In an administrative memorandum (no. 238) issued by the Ministry of Education the permitted quantity of school milk for children attending grant-aided nursery-schools will, from August 1, be two-thirds of a pint per day. From the same date one pint of milk daily at 1½d. per pint will be available from the registered suppliers for children between the ages of 5 and 16 who are unable to attend school by reason of mental or physical disability. Forms of application (WF.42) are obtainable by parents or guardians at local food offices.

British Council for the Welfare of Spastics

With the support of the Ministry of Education and of other Government departments the British Council for the Welfare of Spastics has been constituted to act as a central advisory and coördinating body for all activities in England and Wales directed to the education, training, treatment, and well-being of sufferers from cerebral palsy. In an administrative memorandum (no. 239) the Minister of Education urges local education authorities to contribute to the cost of the council's activities, and he undertakes to recognise for grant expenditure by authorities on the basis of contributions up to 10*s*. for every 1000 pupils between the ages of 2 and 18.

Cancer Campaign in U.S.A.

With the passage by Congress of legislation more than tripling appropriations for research and control of cancer, and bringing next year's budget of the National Cancer Institute in Bethesda, Maryland, to $14 million, the United States Public Health Service announces plans that will place cancer in the forefront of the government's medical research and control programme. On the institute's budget $4 million is allocated to efforts to increase the effective use of present methods of diagnosing and treating cancer. It is estimated that while a quarter of cancer patients are cured today another quarter could be cured if they had early treatment.

R.A.M.C. Prize

The consultants to the Army in the late war have presented a sum of money to the R.A.M.C., in order to found a Consultants' Prize. The first award will be made in 1948, and will be of the value of 25 guineas. The prize is to be given for an essay of not more than 10,000 words based on the author's personal experience of a professional subject between 1939 and 1946. Entries should be submitted through the usual channels so as to reach the hon. secretary, R.A.M.C. Prize Funds Committee, R.A.M. College, Millbank, London, S.W.1, by August 1, 1948.

Reablement in L.C.C. Hospitals

At a meeting last week the London County Co accepted a recommendation by its hospitals and me services committee that a physician for physiotherapy be appointed at a salary of £1000 a year.

Free Training for Physiotherapy Teachers

The Ministry of Health announces (circular 113/4 further scheme for assisting physiotherapists who w become teachers. Tuition fees will be paid and a main allowance granted to the candidates selected, who will t four-month course in London between December and

Ministry of Education

The medical branch of this Ministry is now to be kno the "special services" branch. The branch deals wi school meals service, the school health service, and special tional treatment for handicapped pupils. Communi should be addressed to 15, Chesham Place, London, S.W

Protective Covering for Food

Chemists of the United States department of agri have developed a new edible protective covering for meat other food products. Inexpensively made from citru or apple pomane, it forms an airtight covering fo dipped into a solution. The film covering is dissolved the food is boiled and may be eaten when it is fried or

Mobile Surgical Unit for Birmingham

A mobile surgical unit, presented by the Austin Company Ltd., is to start work in Birmingham on Augus It will be based on the Accident Hospital and will serve area within a 12-mile radius of the city. Equipped wit operating-theatre, it will transport surgeon, anæsthetist, nurse to the site of serious accidents where immediate surgical treatment is required.

Dr. R. C. S. Dow has been appointed honorary surge dentist to the King in Scotland.

Medicine in the Colliery.—Referring to our paragr of July 26 (p. 158) on the establishment of medical treat centres in the coal-mining industry, the Butterley Co. informs us that at least two companies in the East Mid had established medical services long before 1945, when the Ministry of Fuel and Power began to set up treatment ce Ten nurses are working at collieries formerly controlled these companies.

Appointments

Anderson, Geraldine, M.R.C.S.: pathologist, Bedford C Hospital.

Cronin, J., F.R.C.S.: asst. surgeon, orthopædic, fracture, traumatic department, Prince of Wales's General Ho London.

Grahame, E. W., M.D. Glasg., F.R.C.S.E.: medical superintende General Hospital, Middlesbrough.

Heller, G. K., M.D. Prague: asst. M.O., Friern Hospital, N Southgate.

Millen, R. M., M.D. Glasg., M.R.C.O.G.: obstetrician, Chase F Hospital.

Morrissey, W. J., M.B. N.U.I.: asst. school M.O. and asst M West Bromwich.

Pickard, Cecil, M.B. Leeds: radiologist, St. James's Ho Leeds.

Sharp, H. S., M.B. Camb., F.R.C.S.: ear, nose, and throat su Putney Hospital.

Simmons, H. T., M.D. Manc., F.R.C.S.: asst. surgeon, Man Royal Infirmary.

West, L. R., M.B. Adelaide, M.R.C.P.: chest physician, Sully Tu culosis Hospital, Cardiff.

Maudsley Hospital, London:
- Anderson, E. W., M.D. Edin., F.R.C.P., D.P.M.: physician
- Davies, D. L., B.M. Oxfd, D.P.M.: senior registrar.
- Warren, Wilfrid, M.B. Camb., D.P.M.: senior registrar.

Northampton General Hospital:
- Bryan, W. E., M.R.C.S.: morbid anatomist.
- Gosset, I. H., B.M. Oxfd: consultant pædiatrician.
- Welsh, Abigail, M.B. Dubl.: consultant anæsthetist.

Hull Royal Infirmary:
- Eddie, T. S., M.B. Melb., M.R.C.P.: physician.
- Stewart, T. M. J., M.D. Edin., D.C.H.: asst. physician.

Colonial Service:
- Anderson, T. F., O.B.E., M.D. Camb., D.T.M. & H.: senior med officer-in-charge, British Somaliland.
- Carothers, J. C. D., M.B. Lond., D.P.M.: specialist psychi Kenya.
- Ferguson, S. C., L.R.C.P.I.: M.O., Nigeria.
- Grattan, E. O'D. C., M.B. Camb., F.R.C.S., D.T.M. & H.: Kenya.
- Hernet, Edmund, M.D. Poznan: district M.O., Windward Is
- Hudd, H. R., M.B. Wales: M.O., Tanganyika.
- Thomson, I. G., M.B. Aberd.: M.O., Nigeria.
- Webb, E. J. E., M.B. Lond.: M.O., Zanzibar.
- Wright, F. J., M.D. Camb., M.R.C.P., D.T.M. & H.: me specialist, Kenya.

CRAMP AND SALT BALANCE IN ORDINARY LIFE

Sir ARTHUR J. HALL
M.D. Camb., F.R.C.P.
RITUS PROFESSOR OF MEDICINE IN THE UNIVERSITY OF SHEFFIELD

AMP, though a common source of pain which at times interfere seriously with sleep or even with health, hitherto received little attention in medical literature, in many standard textbooks of medicine is not even tioned.

a personal inquiry about its frequency in 200 nal persons, aged 15–80, with equal numbers of either it was found that 56% had suffered from cramp and had not. The percentage of those who had not had np was rather higher in women than in men. Of e aged 50 or more 70% had had cramp and 30% not, the percentage of those who had had cramp g rather higher in women than in men, because of association with pregnancy.

hese few figures seem to show that in this climate rly three-quarters of the population have cramp at e time in their lives. The degree of cramp varied ely; 6 persons had only had one fulminant attack, ally following violent exertion; in 15 it was frequent troublesome; in most it was not more than a minor sance.

FORMS OF CRAMP LINKED WITH SALT IMBALANCE

ertain forms of cramp are known to be associated h a disturbance of salt balance: Rogers (1909) wed that cholera could be successfully treated with ines, whereupon the cramp disappeared; Moss 24) and others showed that there was a direct contion between miners' cramp and their loss of salt by eating; and McCance (1936) found experimentally at one of the effects of completely withholding salt m the diet is a painless cramp, which disappears when t is given again. Cramp did not develop in one person o could not be made experimentally salt-free.

In these three very different conditions the common tor is salt depletion, whether by diarrhœa in cholera, ofuse sweating in the miner, or complete cessation salt intake, besides increased sweating in McCance's periments. Since diarrhœa, excessive sweating, and insufficient intake of salt may arise in ordinary life, salt balance may be upset, leading to cramp.

At first sight the cramp seen in these three special aditions seems to differ so much from cramp in ordinary that they cannot be the same. In cholera muscles various parts of the body are affected at short intervals, d the pain is very severe; in the miner cramp is usually afined to the muscles of the legs and abdomen, the ack is single and soon passes off when the miner is ried out of the hot seam, and the pain is very severe; McCance's experiments, as in cholera, the distribution wide, for cramp may affect any muscle when put into tion, but it differs in the complete absence of pain. e muscles affected merely go stiff, and the cramp sses off when they are gently rubbed.

Each of these types of cramp, however, is seen in dinary life: 6 of the 200 cases investigated had had dden intense or fulminant attacks as crippling, for e time being, as those in the miner; and painless amp, closely resembling that described by McCance, not uncommon in persons who also get the painful m in the legs at night in bed. The following are amples of each kind.

vere or fulminant

Case 1.—A male, aged 20, had, towards the end of a strenus football match, sudden intensely severe cramp in both legs; he fell to the ground and had to be carried off the field. He had never had cramp before and has not had it since.

Case 2.—A male, aged 25, had, after a 38-mile bicycle ride, while sitting at tea, a sudden severe cramp in both legs. The pain brought him to the floor. No cramp in any form either before or since.

Painless form

Case 3.—A male, aged 60, for many years had occasional cramp in bed at night. Often, after any extra use of the arms in the day he has painless cramp in the fingers in the evening, when holding a book, playing a violin, holding cards, &c. The hand or a single finger merely goes stiff, and is relieved by being pulled straight.

Case 4.—A male, aged 55, who often has painful cramp in legs in bed at night, has painless cramp in fingers in the evening after gardening in the afternoon.

It is unnecessary to give details of the rest of the seven persons in which this painless type occurred; in women it often follows much knitting or sewing. In some it comes on writing.* A road-sweeper, who has painful cramp in the legs when in bed, stated that, after an extra-hard day's wheeling and brushing, his fingers go stiff in the evening, when he is sitting quietly at home. It is painless, and he just pulls them straight. These cramps in the hands usually come in the later part of the day, following their extra use. There is no reason to think that they differ in kind or in origin from the painful form which, at other times, affects these persons in the legs. Even in these larger muscles the amount of pain varies considerably in different attacks.

RELATION OF SALT TO ORDINARY CRAMP

If, then, these cramps are akin to those which have been shown to be related to salt imbalance, the question arises whether it is a disturbance of salt balance or some other factor that plays a part in the cramp of ordinary life. As yet there is no evidence in the great majority of "cramp-positives" either of a shortage in their salt-intake or of excessive loss of it by excretion. In the 200 persons mentioned above, the 73 who had cramp took a normal, or more than normal, amount of salt with their meals, whereas 5 who never took any salt on their plates had never had cramp in their lives.

Thus, though the question of salt balance does not seem to enter into most cases of cramp in ordinary life, in some instances it seems to do so, and in a few it certainly does. Sometimes it appears to be a sudden deficiency due to loss by sweating either because of a spell of hot weather, or excessive exertion, or both. This may be the explanation of the 5 fulminant cases, among the 200 persons mentioned above, in whom a single severe attack, comparable to that seen in miners, followed strenuous muscular activity. A striking example of this is recorded by Gregson (1944):

> After a week of very hot weather a youth, aged 17, who had never had cramp before, began to have violent recurrent cramp in the arms and legs. It was completely stopped by giving him salt and water. He had been sweating profusely and, what is of special interest, "he never takes salt with his food because he dislikes it."

In a recent letter Dr. Gregson states that, since this attack, the youth, on Dr. Gregson's advice, has taken salt regularly, and that for at least two years after the attack, when Dr. Gregson last saw him, there had been no recurrence of cramp.

In these instances it seems that it was the temporary salt-loss by the skin which played the predominant part. In the following three cases, however, it was the diminished intake which was entirely or largely the cause of the cramp.

Case 5.—On May 31, 1938, I was asked by Dr. A. H. Dunkerley, of Westerham, to see with him an elderly widow, about 75, who, twelve years before, had had acute epidemic encephalitis followed by parkinsonism. For the last two years she had been on "high atropine" treatment with great benefit and, though a semi-invalid, could get about a little every day.

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* This is different from so-called writer's cramp, which would be better called an occupational neurosis.

During the last six weeks or so a new symptom had arisen *in the form of violent cramp at the back of the knees and* thighs. It came on every night as soon as she was put to bed, about 6.30 P.M., and was relieved by rubbing, only to recur in a few minutes. This might go on for five or six hours. She had never had cramp in her life before this.

She had had no severe diarrhœa; she was probably sweating less than normal, since she was taking very large doses *of atropine daily; she was not doing violent muscular work;* there was thus nothing to suggest a disturbance of salt balance by excessive loss, and there only remained the possibility that her intake of salt might be deficient.

It then transpired that for ten years, on the advice of a specialist, she had been having a "salt-free" diet. No salt was put into her food in cooking, and she took none on her plate.

This had been a great deprivation to her when first begun, as she had always been very fond of salt and taken more than most people at her meals. In time it had become such a part of the household régime, that even Dr. Dunkerley, who had attended her for the last three or four years, had never heard of it.

We agreed that, before making any other change in treatment, she should begin taking salt with and in her food again. Within a week the attacks of cramp ceased entirely, and in January, 1940—i.e., twenty months later—Dr. Dunkerley writes: "She has never been better, has put on a stone in weight, and has not had any further attacks of cramp."

A later note stated that cramp never recurred up to the end of her life, two or three years later.

It is not often in the practice of clinical medicine that the conditions approach so nearly to those of an experiment. The patient was always under the close observation of a devoted daughter, who gave up the whole of her time to looking after her. The daily routine was always the same. Meals were all taken at home, and the preparation of the salt-free diet had been for ten years a daily duty. The surprising thing is that the patient had maintained her salt balance for so long; possibly the regular intake of atropine, with consequent reduction of normal sweating, may have played some small part in diminishing the loss of salt through the skin.

In the following two cases, although the effect of supplying salt in the diet was less complete than in the previous instance, yet sufficient relief followed to make it clear that the cramp was in some way associated with a disturbance of the salt balance.

Case 6.—A man, aged 45, seen on March 27, 1940, had first had cramp 17 years earlier after sprinting to catch a tram. It was in the left thigh and extremely painful.

Since then it had been a more or less constant source of trouble, chiefly in the left leg, when in bed, and occasionally in the forearm, when using tools in the daytime. From time to time it had been so frequent, and so severe, as to interfere seriously with his life as an active business man.

At one time he had been advised to try a sea trip to the Canaries, from which he had got considerable relief for some months.

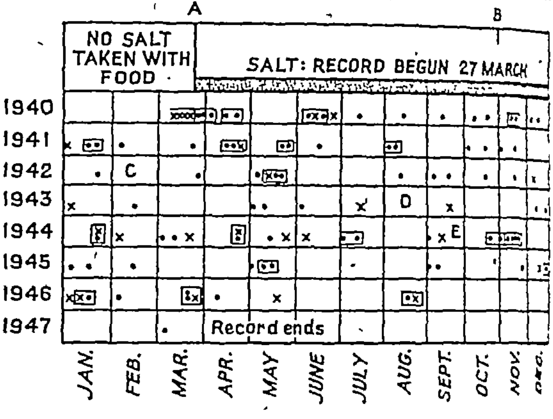
About 1935, however, it had again become so bad that, after consulting several physicians without relief, he underwent manipulation of the left leg, the part usually affected. For this he was in a nursing-home for three weeks. It was evidently a severe wrenching, done under anæsthesia, and for some time afterwards he could only walk with difficulty.

This also was followed by relief from the cramp for a considerable time. Latterly, however, cramp had returned, and had now again become so frequent and so painful that he dreaded going to bed at night.

Except for this he was in sound health and carrying on full active work. Asked about his diet he said he never took salt, because he hated the stuff, and that at home "they were not allowed to put any into his food."

I prescribed capsules containing sodium chloride gr. $7\frac{1}{2}$, of which he was to take two thrice daily. He was not aware of their contents.

On May 9 the report came that, for the first week after beginning the capsules, there had been two or three twinges of cramp in bed at night, but for the last three weeks he had not had any attack of cramp.



Cramp chart (case 6): A, sodium chloride gr. 90 daily in capsules; B, salt daily in and with food; C, sodium bicarbonate gr. 10 at night; D, bicarbonate left off about this time; E, bicarbonate renewed, and taken regularly till end of record. A cross indicates a severe attack of cramp; a dot a mild one.

At the time of his first visit, he promised to record in his diary the dates and hours of all his attacks. This he has done faithfully for the last seven years and has reported the dates to me at regular intervals during that time (see accompanying figure).

He was soon told the nature of his capsules and advised to have salt put in his food and to take it with his meals.

The chart, prepared from his seven-year record, shows that the cramp has not disappeared entirely, but that it comes only at intervals, sometimes of several weeks, and that it is then usually only very mild, though, as the chart shows, *more severe attacks do occur at rare intervals.* In May, 1942, he said "I have nearly forgotten the whole thing."

In January, 1942, as it seemed possible that his own idea of taking salt might be insufficient, he was given sodium bicarbonate gr. 10 in tablets to take at bedtime. He did this regularly for a few weeks and then gave *it up* of his own accord.

All went on much the same until 1944, when the attacks began to be rather more frequent and more severe. He was therefore advised to take the bicarbonate capsules again, and to continue to do so regularly. He has done this since September, 1944, and, as is seen from the chart, the attacks have *diminished* both in number and severity, until during the twelve months from April, 1946, to April, 1947, there were only five, two of which occurred within four days of one another, followed by a free interval of six months.

The chart (see figure) *shows that* the cramp tends, when it does occur, to do so either on successive days or at intervals of from 2 or 3 days to a week or so. Strümpell (1923), himself a sufferer from cramp, mentioned this feature in his own case. Cramp might be absent for months and would then occur repeatedly for several days. These cramp periods are very similar to the "units of epileptic activity" described by Griffith and Fox (1938). In a paper on epilepsy by me (Hall, *1939) there is a chart in which these units* are shown very clearly. Its similarity to the accompanying *chart of cramp* is rather striking.

The temporary relief from cramp which followed manipulation may be *attributed to the fact* that for some time afterwards it made him so lame as to put out of action that particular combination of leg muscles, whose previous over-use during the day had been followed by cramp in the night. Whatever amount of his improvement may have been due to the manipulation, it cannot be overlooked that, during the three weeks that he was laid up in a nursing-home and during his previous sea trip to the Canaries some years before, all his meals *would be cooked with the usual* amount of salt. In a man so dependent on a sufficient intake of salt, these periods away from home *probably played an* important part in reducing the amount of cramp.

Case 7.—A man, aged about 65, actively occupied and in l vigorous health seen on April 29, 1945.

For the last four or five years he had had troublesome amp in the legs at night, and (what annoyed him more) came in painless form in his fingers when writing, so that had had to type his private correspondence. He had ver had cramp in his life before this.

On inquiry it was found that he never took salt on his plate, he disliked it. He was advised to begin taking it th all his meals, but, as it seemed that he might not do so gularly or sufficiently, he was also ordered two tablets of dium bicarbonate gr. 5 to take every night.

r February, 1947—i.e., nearly two years later—he reported at, since he had begun treatment, there had been no further amp in the fingers when writing. He had put away his pewriter and wrote all his correspondence as before.

Cramp in the legs at night had only occurred at long tervals. The first time was on July 11, 1945, and again, ur days later, on July 15,† three months after beginning eatment, next on Jan. 16, 1946, while getting into bed. nce then there had been practically none. He had given taking the bicarbonate after a time, and now took salt ith his meals regularly.

The reason for giving bicarbonate of soda in the two tter cases was that it seemed doubtful whether either the men would take enough salt with his meals, seeing at both of them disliked it and had not been in the bit of taking it on their plates. The value of combining with sodium chloride in the treatment of dogs from hich the suprarenal glands have been removed was lvocated by Harrop et al. (1935), and one cannot nore the fact that from time to time sufferers from iopathic cramp on whom reliance can be fully placed ve found relief from its use.

SUMMARY

Cramp occurs in three special conditions in which it is nown to be due to salt depletion.

In the large majority of those who suffer from cramp in dinary life there is, as yet, no evidence of a disturbance salt balance.

In a very small minority there is definite evidence of ich disturbance, either by diminished intake, increased utput, or both together, as shown in the present cases.

The very severe and the painless types of cramp seen the three special conditions are met with from time to me in the cramp of ordinary life.

Whatever may be the therapeutic value of a "salt-ee" diet, it is not without risk of causing cramp if rried beyond a certain degree.

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† Note the short interval.

"... The public has become far more aware of science, and ientists of the public, thanks largely to the drama ... of he atom bomb. But this awareness, on the public side, is some ways even worse than indifference, for the people hink of science more and more as a sort of black magic, hreatening their traditions continually and likely to blow hem up momentarily. Even at best, science to them is the reator of comfort-improving gadgets or of miracle drugs, ever an objective attitude and a rational attack on problems. ot it is the attitude and method of science which can save ociety, even more surely than some products of science can lestroy it. It is also true that in the past decade many scienists have accepted and struggled to perform their obligations o the greater community of which scientists are part. ... But, y and large, the scientists and technologists remain somnoently unaware of the world beyond their equations, spectronoters, microscopes, or oscillographs. ... Scientists need a roader educational base before ascending their towers of pecialisation."—R. W. GERARD, *Science*, July 11, p. 23.

HUMAN-MILK BANK IN A MATERNITY HOSPITAL *

JOYCE WRIGHT
D.M. Oxfd

ELSIE M. C. EDWARDS
S.R.N., S.C.M., R.S.C.N.

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THE organisation of a human-milk bank in an American maternity hospital was described in 1944 by Ripley.[1] Excess milk from mothers in the lying-in wards was collected, pooled, and boiled for ten minutes. After cooling, its original volume was restored with sterile distilled water. The milk was then poured in 3-oz. amounts into sterile bottles which, after capping, were stored in a freezing-cabinet at −10°C. When required for infant feeding, the milk was thawed and boiled again.

A human-milk bank was started in June, 1944, in a twenty-bed ward of the Obstetric Hospital, Huntley Street. Most of the patients in the ward were primigravidæ, but multiparæ with complications were also admitted. The stay in hospital was ten days for a normal patient. From November, 1944, to April, 1945, a frozen human-milk bank was run for experimental purposes in the laboratory.

THE WARD MILK-BANK

The human milk was collected by the method described by Wright.[2]

Heat Treatment and Storage of Milk.—The apparatus required is as follows:

Ice-cream freezing-cabinet regulated to −12°C.
Enamel saucepan with lid.
Four-ounce and eight-ounce Soxhlet feeding-bottles of heat-resistant glass.
Dressing drum (or biscuit tin).
Adhesive tape ½ in. wide.
'Cellophane' squares for capping bottles.

The feeding-bottles were plugged with cotton-wool, wrapped in plain lint, and placed, together with the cellophane squares, in the dressing drum or tin, which, together with its contents, was sterilised in the operating-theatre autoclave.

Milk obtained from the mothers was immediately pooled and taken to the ward kitchen, where it was brought to the boil in the lidded saucepan. It was allowed to cool slightly and was then poured into the sterile feeding-bottles; in filling the bottles allowance was made for expansion of the milk during freezing. The bottles were replugged and capped with the cellophane squares, and adhesive tape was bound tightly round the neck of each bottle to keep the cap in place. Date of collection, quantity of milk, and donors' names were recorded in a book against a serial number, which was also written on the adhesive band on the bottle. The bottles of milk were then placed in the freezing-cabinet for storage.

Infant Feeding with Stored Milk

When required for use, a bottle of frozen milk was taken from the freezing-cabinet, and the milk was thawed by placing the bottle in cold water, which was gradually warmed with hot water from the tap. The milk was then brought to the boil in a lidded saucepan. It was poured into sterile feeding-bottles, and a boiled rubber teat was placed with boiled forceps over the open end of each bottle. The milk was adjusted to body temperature, the necessary vitamins were added, and the milk was then used for infant feeding.

Amounts and Distribution of Stored Milk

Human milk from the ward bank was successful in the feeding of premature infants in the Obstetric Hospital, and of infants with gastro-enteritis, pyloric stenosis, and nutritional disorders in the children's wards of University College Hospital.

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* A report to a special committee appointed by the Medical Research Council to advise on problems relating to the conservation of human milk.

[1] Ripley, W. *J. med. Soc. N.J.* 1944, 41, 43.
[2] Wright, J. *Lancet*, July 26, p. 121.

In the twelve months from June, 1944, to June, 1945, human milk stored in the ward bank was distributed as follows:

	fl. oz.
Premature and other infants in the Obstetric Hospital	462
Sick infants in the children's wards	380
Infants under care of district midwives . ..	36
Laboratory tests	16
Total	894

This amount was additional to that used from day to day for infant feeding. The quantities preserved do not represent supply and demand during normal times, because for ten months of this period London was under air attack, and for part of the time the hospital was evacuated.

Bacteriological Findings

The bacteriological examination of samples from the ward milk-bank was limited by the shortage of human milk resulting from war-time difficulties. For testing surplus milk which could be spared for the purpose, 'Yeastrel'-milk-agar pour-plates were made in duplicate, each with 1 ml. of milk, and incubated aerobically for three days at 37°C. Eight milk samples from the ward bank were tested; three colonies of aerobic spore-bearing bacilli grew from one, and one colony of *Sarcina lutea* from another. The remaining plates were sterile. Pour-plates, similarly prepared but anaerobically incubated, from four banked milks were sterile.

THE LABORATORY MILK-BANK

An experimental human-milk bank was set up in the laboratory in November, 1944. Pooled milks for the bank were obtained from the Obstetric Hospital and from two other maternity hospitals.

Heat Treatment and Storage of Milk

Milk samples from the Obstetric Hospital were dealt with in the laboratory within an hour of collection; those obtained from other hospitals were subject to two or three hours' delay. A portion of each batch of pooled raw milk was set aside for bacteriological examination. The remainder was brought to the boil in a saucepan and then poured in equal amounts into each of three sterile bottles. These were then closed with sterile bungs or screw caps, capped with sterile cellophane, and placed, when cool, in the freezing-cabinet at −12°C. Eleven pooled milk samples were banked.

Bacteriological Investigation of Raw Milk

Each of the eleven raw-milk samples was planted on two blood-agar plates, one of which was incubated aerobically and the other anaerobically for two days at 37°C. Subcultures and tests for bacterial identification were then made.

The following bacterial flora was found:

Unpigmented micrococcus (11 samples); yellow micrococcus (4); golden micrococcus (2); sarcina (1); *Staph. aureus* (coagulase-positive) (7); alpha- and non-hæmolytic streptococcus (8); *Bact. coli* (2); *Bact. alcaligenes* (4); *Bact. aerogenes* (4); aerobic spore-bearing bacillus (1); diphtheroid bacillus (3); monilia (1); flavobacterium (1).

Sterility Testing of Boiled and Stored Milk

Sterility tests of each milk sample were made immediately after boiling and subsequently at the 4th, 8th, and 12th weeks of storage at −12°C; 1 ml. of each sample was pipetted with sterile precautions into each of six petri dishes. Pour-plates were then made with yeastrel-milk-agar; three plates of each batch were incubated aerobically and three anaerobically for three days at 37°C.

From one sample tested immediately after boiling three colonies of micrococci grew; all plates from the remaining samples were sterile. Eighteen bacterial colonies developed from the total of 198 ml. of milk tested at monthly intervals during storage. The count of the stored milk was therefore less than one colony developing per 10 ml. Seven of the eighteen colonies were aerobic spore-bearing bacilli, an organism which might be expected to survive boiling; one was a mould; and the remaining ten were micrococci. Sterility testing was carried out in a large laboratory; it is therefore possible that some of the colonies resulted from aerial contamination of the plates.

Flavour of Boiled and Stored Milk

Each milk sample was tasted immediately after boiling, and subsequently at the 4th, 8th, and 12th weeks of storage at −12°C. Immediately after boiling, all the samples had the normal flavour of fresh breast-milk, except one which tasted "soapy" throughout the test. Six of the milks tasted slightly rancid at the 12th week of storage in the freezer, and one as early as the 8th week, but deterioration in flavour was so slight as to be hardly detectable.

DISCUSSION

A frozen human-milk bank in a maternity ward is a useful method of preserving surplus breast-milk for times when the demand for its use in infant feeding is greater than its supply by the lying-in mothers. It is particularly useful in a general hospital with both maternity and children's wards. Apart from the initial cost of an ice-cream freezing-cabinet, expense is negligible. Milk, after boiling, retains a very low bacterial content during storage at −12°C; it keeps a good flavour for eight weeks of storage, with only an almost undetectable deterioration between that time and the 12th week.

One or two safeguards need to be mentioned. The human-milk bank should be in the sole care of the ward sister, who should understand thoroughly the correct procedures for the collection and storage of milk. There is a risk of bacterial growth and production of enterotoxin in raw milk kept at room temperature; human milk should, therefore, be heated *immediately* after collection.

SUMMARY

The establishment of a frozen human-milk bank in a maternity ward and of an experimental milk-bank in a laboratory is described.

Human milk for the ward bank was obtained from the mothers in one twenty-bed ward. It was collected by a clean ward technique, pooled, boiled, and stored in an ice-cream freezing-cabinet at −12°C.

In twelve months 894 fluid oz. of milk was stored in the bank and successfully used for feeding premature and other infants in the maternity hospital and sick infants in the children's ward of the general hospital. The investigation was made during a period of enemy activity and hospital evacuation; normally, much larger quantities of milk would be available for preservation.

Human milk for the laboratory bank was obtained from the Obstetric Hospital and from two other maternity hospitals. It was heated and stored in a similar manner to the milk in the ward bank.

The sterility and flavour of the milk in the laboratory bank were tested immediately after boiling and at the 4th, 8th, and 12th weeks of storage. There was a very slight deterioration of flavour between the 8th and the 12th weeks of storage.

The frozen milk bank proved a useful method of preserving human milk for infant feeding.

We wish to thank Prof. F. J. Browne for his interest in the work, and Messrs. J. Lyons and Co., Ltd., for the loan of three ice-cream freezing-cabinets. We are particularly indebted to Mr. Arnold Walker; investigations on the conservation of human milk were made at his suggestion and resulted from his original work on this subject.

NIGN PNEUMONIA IN WEST AFRICAN SOLDIERS

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HIS paper is based on observations made on 172 West ican soldiers suffering from pneumonia in a military pital in Sierra Leone between August, 1944, and il, 1945.

lany writers have drawn attention to the high incice of respiratory infection, particularly pneumonia, ong African natives. On the whole the type of pneunia described among civilian Africans is more serious n that described among military personnel. Raper 44) records a serious type among East African troops East Africa, but MacNaught and Murray-Lyon (1943) Simpson (1944) comment on the benign form ountered among West African troops in West Africa. he most striking feature of the present series was that ost every case was relatively mild; mortality was ligible, convalescence very rapid, and complications remely rare.

enign forms of pneumonia, comparable to the *nes frustes* of other diseases, have been recognised for ny years: Woillez gave his classical description in 2. Lately much has been written on benign pneunia-like conditions under such names as soldiers' umonia, pneumonitis, focal pneumonia, and primary pical pneumonia. It is improbable that all these ignations cover the same entity, but gradually the m primary atypical pneumonia has been accepted and regarded as at least a syndrome, probably of virus gin. It seemed possible that many cases of this series ght prove on investigation to belong to this group.

The scope of investigation was limited by the fact that subjects were picked young men who had been sed as fit for military service and were living under d conditions with an adequate diet. The conclusions refore do not necessarily apply to African natives in eral.

ASSESSMENT OF CLINICAL TYPE

The term "pneumonia" has been used in the broadest se to include all cases of inflammation of the substance the lung in which there was clinical or radiological dence of an alveolar exudate. The main approach s clinical, and cases were primarily classified on purely ical grounds into four main groups—classical, pical, abortive, and bronchopneumonic. The various oratory and radiological findings were afterwards related with this clinical classification by a series of les from which extracts are included. Inevitably it s difficult to classify some of the borderline cases, and principal clinical features adopted as standards were follows:

lassical Group.—An acute chest picture. Sudden onset, h temperature, productive cough, often signs of consolidan, usually a fall of temperature by crisis and response to cific chemotherapy.

typical Group.—Gradual onset, general malaise, headache, derate fever, and paroxysmal cough, often unproductive. e chest signs are few, signs of consolidation are rare, the nperature usually falls by lysis, there is no response to cific chemotherapy, and complete resolution and recovery y be slow.

bortive Cases.—Acute onset with a clinical picture suggest a classical pneumonia but with a minimum of physical ns in the chest. Within about 24 hours the temperature ls to normal; abnormal physical signs, if any, rapidly appear; and the patient makes a complete and rapid overy.

The *bronchopneumonias* conform on the whole to standard tbook descriptions.

The proportion of clinical types was:

Classical	69%	Broncho-pneumonia ..	5%
Atypical	11%	Others	5·5%
Abortive	9·5%		

The proportion regarded as atypical is small when compared with recent findings in England and America. Turner (1945) and Fleming et al. (1945) have commented on the few cases of primary atypical pneumonia encountered in the tropics, and suggest that it may be a disease of temperate climates. One case in ten was of an abortive type—a proportion higher than is usually encountered in Europeans either at home or abroad.

The period under review covered the maximum and minimum temperatures and humidities, but the incidence of pneumonia was fairly uniform. The hospital records for the preceding twelve months showed a similar distribution.

There was one death in the series, a case in which a hæmolytic anæmia, associated with well-marked sickling of the red cells, developed. Complications arose in 11 other cases: 3 had simple jaundice, 1 jaundice with a transient hemiplegia, 4 migratory pneumonia, and 1 a small sterile effusion, and the 2 others relapsed. No case of empyema occurred.

SYMPTOMS AND SIGNS

Most soldiers were recruited from the bush and could give little account of their symptoms. The West African often says simply that he is not well, or that he has "the fever," and he is apt to attribute his illness to constipation. The commonest symptoms were cough and diffuse pain in the chest: localised pain was rare and was usually associated with pleuritic rubs:

Chest pain and cough	153	Chest pain alone ..	1
Chest pain and cough and headache ..	5	Cough alone ..	6
Chest pain and headache	1	Cough and headache	2

In no case was a rigor observed. It is interesting to compare Simpson's (1944) finding that his patients rarely complained of cough.

There were signs of consolidation in the first twenty-four hours in 66 cases, and signs of late consolidation in 38; 68 did not present signs of consolidation at any time, most of these being abortive and atypical cases. In 23 cases there were signs of diffuse bronchiolitis; pleural rubs were noted in 22, and labial herpes in 12. Pleural rub and herpes were both associated mainly with a classical type of pneumonia, though 2 cases classified clinically as atypical presented both these physical signs.

BACTERIOLOGY OF SPUTUM

Pneumococci could nearly always be found among the teeming organisms of the ordinary bedside sputum pots, where bacteria flourish in a tropical climate. Patients were therefore instructed to cough and expectorate directly into a small sterilised tin, the contents of which were taken away immediately for examination and culture. By adopting this method the number recorded as having no sputum was doubtless too high; but the positive findings were more accurate, and a large proportion of pure cultures was obtained.

In 59 cases pathogenic bacteria were found in the sputum; in 47 cases there was pus only; and the remaining 66 had either no sputum (40) or saliva only (26). In 53 a pure culture of one organism was found:

Pneumococci	28	*Micrococcus catarrhalis* ..	1
Streptococcus viridans ..	20	Friedländer's bacillus ..	1
Hæmophilus influenzæ	3		

In 6 cases there were two organisms.

Pneumococci with *H. influenzæ* ..	3
Strep. viridans with *H. influenzæ* ..	2
Pneumococci with *Strep. viridans* ..	1

Of the cases in which bacteria were found 77% were of classical type. No organism was found in any case

TABLE I—WHITE-CELL COUNT AND CLINICAL TYPE

Type	White cells per c.mm.				
	Less than 5000	5000–10,000	10,000–15,000	15,000–25,000	Over 25,000
Classical	0	18	41	37	7
Atypical	3	12	2	0	0
Abortive	0	6	4	3	1
Bronchopneumonic	0	3	3	3	0
Others	0	2	5	2	0
Totals ..	3	41	55	45	8

classified clinically as atypical, although 28% had pus in the sputum. In the cases due to infection with *Strep. viridans* the clinical picture was very similar to that produced by pneumococcal infection, though rusty purulent sputum was less common.

OTHER FINDINGS

White-cell counts were carried out on 152 cases (table I).

Radiography revealed lobar involvement in 163 cases:

One lobe	89·5 %
More than one lobe	3·7 %
Negative findings	6·7 %

The types of lobar involvement are shown in table II.

The classification "segmental" was reserved for those cases, described by Graham Hodgson and others, where there is a fan-shaped opacity with its base at the periphery and its apex towards the hilum. The term "partial" was applied to cases where part only of a lobe is involved but which do not conform to any regular pattern such as central or segmental.

Of the classical cases in this table, about a third of those with involvement of a whole lobe were very mild, as were about half of those with a partial involvement, whereas 21 out of 25 of those with segmental involvement had a very benign clinical picture.

TABLE II—DISTRIBUTION OF LESIONS

Type of lobar involvement	Clinical type		
	Classical	Atypical	Abortive
Lobar	38	2	0
Partial lobar	33	7	5
Central	1	5	4
Segmental	25	5	2

Urinary Chlorides

Only about half the atypical cases had reduced urinary chlorides compared with seven-eighths of those of classical type (table III).

TABLE III—URINARY CHLORIDES

Clinical type	*Urinary chlorides*	
	Reduced	*Not reduced*
Classical	77	11
Atypical	6	5
Abortive	8	3

Blood-culture (32 cases) was undertaken before chemotherapy was begun, and blood-agar plates were used in preference to broth to enable the colonies to be counted.

Two positive results only were obtained, a pneumococcus (18 colonies per c.cm.) being isolated in one case, and a *Strep. viridans* (100 colonies per c.cm.) in the other. In the first case the moderate bacteræmia was not associated with a serious form of the disease: there was a rapid response to chemotherapy, and the patient returned to duty in 13 days.

In the second case a profuse growth of an α-hæmolytic long-chained streptococcus was associated with a classical picture, but response to chemotherapy was unsatisfactory, resolution was slow, and the patient was discharged after 38 days in hospital.

The absence of positive blood-cultures in this series is in keeping with the general mild character of the disease.

Cold agglutinins were estimated in 23 cases, but in one only—*clinically an atypical pneumonia*—was there a positive diagnostic titre.

Paul-Bunnell test (sheep's cells) was carried out in 11 cases and was negative. This test was negative in the one case where cold agglutinins were demonstrated. More recently Adams et al. (1946) have demonstrated the presence of heterophil antibodies (horse cells) in a series of cases of primary atypical pneumonia in Italy.

In all cases *blood films* were examined for malarial parasites, but they were found in only 1. During the period of investigation some hundreds of patients were admitted with malarial parasites in the blood, but only this case had any abnormal pulmonary signs. The degree of premunition in the African soldier appears to be such that a primary malarial pneumonia does not occur. Similarly, 138 patients with ascariasis were admitted, but none developed pulmonary infiltrations.

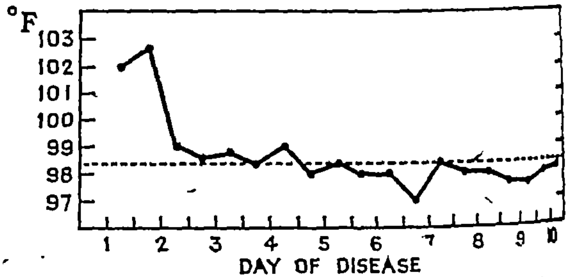


Fig. 1—Temperature chart showing early natural crisis without chemotherapy. Consolidation of whole of right upper lobe.

THERAPY AND RESPONSE

In cases receiving chemotherapy the previous routine of the hospital was followed and sulphapyridine was the standard preparation used, an initial dose of 2 g. being followed by doses of 1 g. four-hourly by day and night. The total amount given was usually 15–20 g. In English practice rather higher initial doses are often administered to produce a higher concentration of the drug in the blood, though Dick (1945) stated that in pneumococcal lobar pneumonia "there appears to be no reason for exceeding the recognised dosage of 2 g. initially, followed by 1 g. four-hourly."

Specific therapy was withheld in some cases in order to follow the natural course of the disease. As this was not considered justifiable in the more serious cases, there was inevitably some selection. The effect of this is reduced by including in table IV only cases with an initial acute chest picture and/or a temperature of over 102°F on admission:

TABLE IV—TERMINATION OF FEVER IN TREATED AND UNTREATED CASES

	Total	*Temperature fell by crisis*	*Temperature fell by lysis*
Cases receiving specific therapy ..	71	52 (74%)	19
Cases with no specific therapy ..	28	16 (57%)	12

All crises occurred within 48 hours in the treated cases, but were later in 5 of the untreated. The average duration of pyrexia in cases resolving by crisis was lower in the treated (33 hours) than in the untreated (56 hours). These figures were calculated from the time of admission es seen within a few hours of the onset of illness, re more accurate for purposes of comparison than solute records of the duration of pyrexia, which, ver, may be regarded as short by European stan-. They suggest that chemotherapy shortened the ial period in cases which resolved by crisis (see 1 and 2).

tton (1939) in Uganda and Anderson and Dowdes-1939) in Kenya found that civilian natives responded to doses of sulphapyridine similar to those used present series. Agranat (1941) concluded that in African natives response was satisfactory with r smaller doses.

LENGTH OF STAY IN HOSPITAL

nvalescence was extremely short in most cases 3), and with few exceptions patients were fit to n to duty without going to a convalescent wing. v relates length of stay to type of pneumonia. proportion of patients staying in hospital more than ys was much higher in cases of atypical pneumonia in cases of classical pneumonia.

TABLE V—LENGTH OF STAY IN HOSPITAL

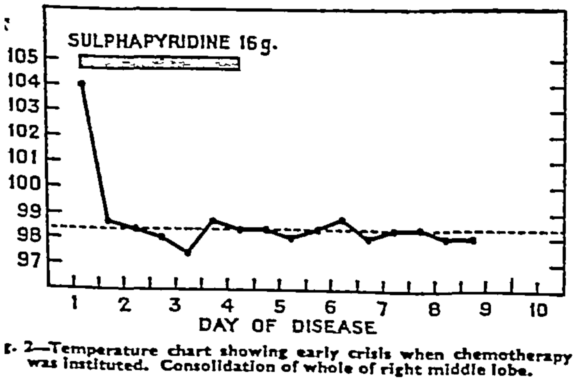
Length of stay in hospital	*Classical*	*Atypical*	*Abortive*
) to 14 days inclusive	52	5	14
er 14 days	65	14	2

DISCUSSION

dence and Fatality

ice (1944) states that among negroes in America on the Rand the incidence and case-mortality of onia are high; Conybeare (1943) that the negro s are specially susceptible to pneumonia; and r (1942) that in the U.S.A. the disease is more fatal egroes than to whites. According to Gelfand (1944), umonia, next to malaria, is the commonest acute ss among South African natives, accounting for y deaths. He comments on such predisposing ors as bilharziasis, hookworm, and chronic malaria, believes that nutritional disorders and poor living ditions may reduce resistance. Civilian medical cers in Sierra Leone do not describe a benign e of pneumonia in negroes, but among civilians a rule only the more serious cases find their way hospital.

actors probably contributing to the benign clinical ture in the present series were that all patients were nitted to hospital as soon as possible; they showed sign of malnutrition; very few were suffering from onic infestation; their living conditions were good; they had not undergone the hardships of active vice. Early hospital treatment under almost ropean conditions was undoubtedly very important. ough they seemed just as susceptible to attacks of disease as their civilian brethren their resistance to was apparently much higher.



t. 2—Temperature chart showing early crisis when chemotherapy was instituted. Consolidation of whole of right middle lobe.

Gelfand and Lewis (1942) and others have described the frequency with which jaundice is met with in the coloured races as a complication of pneumonia. It was present in only 5 cases in this series, including the 1 death where an acute hæmolysis was associated with sickling of the red cells. In 1 other case the blood showed some evidence of hæmolysis, but the remaining 3 were cases of toxic hepatitis. These 3 patients recovered rapidly, and the jaundice seemed to have no bearing on the severity of the illness. Turner et al. (1943) in the U.S.A. have suggested that the high incidence of icterus observed in negro patients with lobar pneumonia was due primarily to nutritional deficiencies, which rendered the liver more vulnerable to the effects of pneumococcal infection.

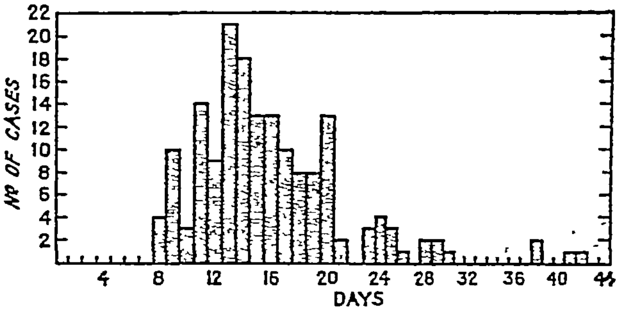


Fig. 3—Length of stay in hospital (average about 14 days).

The findings in general are similar to those of MacNaught and Murray-Lyon (1943) and suggest that pneumonia in the West African soldier in his own country is more benign than that encountered among African civilians or in negroes living in other parts of the world.

White-cell Counts

Though the great majority of cases of classical type showed a leucocytosis, 18 (17%) of this group had white-cell counts below 10,000, and of these 14 were regarded as very mild. This may be due to the type of infecting organism, 6 of these cases being due to a *Strep. viridans*, and 4 to a pneumococcus; or to the fact that only a portion of a lobe was involved in the pneumonic process, as in 84% of all cases without a leucocytosis only part of a lobe was involved.

A high white-cell count was mainly associated with an acute chest picture, sudden onset, high temperature, and early consolidation in which the whole of a lobe was involved. 15 out of 17 cases classified as atypical on clinical grounds had white-cell counts below 10,000, a finding which may now be regarded as orthodox.

Bacteriology

Perhaps the most interesting feature of this investigation was the isolation of pure cultures of *Strep. viridans* as the causal organism in 14 cases of classical type, 4 of abortive type, and 2 where the physical signs were those of simple bronchiolitis. A pure culture of pneumococci was obtained in only 28 cases. The predominant clinical picture produced by a *Strep. viridans* infection was that of a mild classical pneumonia, whereas that due to pneumococcal infection was on the whole more severe. Streptococcal cases resolved less often by crisis than pneumococcal cases, whether they received chemotherapy or not.

It has been established by Morgenroth et al. (1925) that there are close affinities between the pneumococci and the streptococci of the *viridans* group. In this investigation bile solubility was adopted as the final criterion of differentiation.

Atypical and Abortive Types

In some streptococcal cases the clinical picture was rather similar to that of atypical pneumonia as described by Turner (1945) in his Italian series, and the normal white-cell count in 6 of the present series seemed to support a theory that the *Strep. viridans* might be a causal organism of some varieties of atypical pneumonia. Much depends on the definition of "atypical," and though some of these cases were so benign as to be "not typical" of the classical pneumonia of older writers they did not fall into the clinical atypical group as defined here. In no case so defined was bacterial infection demonstrated, which supports the view that they are caused by a virus.

Almost 10% (16) of all cases have been classified as abortive. In 3 there were never any abnormal physical signs in the chest, and the radiological appearances were those of faint central opacities; yet the temperatures and white-cell counts were high.

One patient was of special interest. He was admitted with a temperature of 103°F of acute onset. This rose to 105°F the same evening, the pulse-rate was 120, and the respiration-rate was 30 per min. He presented an acute chest picture, with difficult respiration and an expiratory grunt. He had pain in the chest, expanding alæ nasi, and an irritating cough, which rapidly became productive. The sputum became rusty and mucopurulent, streaked with flecks of bright blood. On culture a heavy pure growth of pneumococci was obtained. The white-cell count was 16,500 per c.mm., mainly polymorphs. No malarial parasites were seen in repeated blood films. Radiography of the chest was normal both on admission and on two subsequent occasions. The urinary chlorides were not diminished at any time. No specific therapy was given, and the temperature fell to 99·4°F on the morning of the second day, was normal in the evening, and remained so. There were no abnormal physical signs in the chest at any time, the cough cleared in three days, and the patient returned to duty in eleven days.

Pulmonary Lesions

Almost a quarter of all cases showed an involvement of a segment of one lobe only, usually of the right upper or right lower lobe. Only 4 of these cases presented a severe classical picture, which was most commonly seen when a whole lobe was involved. Cases of lobar and segmental distribution, however, showed many similarities, whereas those of "partial" distribution seemed to form a separate group. On the whole, cases with a lobar or segmental picture had a more sudden onset, tended to develop higher temperatures, resolved more often by crisis, and had higher white-cell counts. "Partial" and "central" pictures were associated much more frequently with cases classified as atypical or abortive.

Urinary chlorides were absent or diminished in three-quarters of the cases with a segmental picture; the proportion with reduced chlorides was greater among those with a lobar or segmental picture than among those with a partial or central picture, and much lower in the atypical group than in the other groups. This further suggests that primary atypical pneumonia exists as a clinical entity among West African soldiers.

Diagnosis

The diagnosis of primary atypical pneumonia is not always straightforward. Some writers emphasise the radiological appearances, but Stein and Kresky (1944) have shown that small wedge-shaped shadows and hazy diffuse mottlings are often seen in proved pneumococcal pneumonia and are not pathognomonic of atypical pneumonia. The American Commission (1944) reported that in only 31% of their cases was the titre of cold agglutinins high enough to differentiate atypical pneumonia from other respiratory diseases. As Joules (1943) says, some cases of atypical pneumonia may have similar signs and somewhat the same mode of onset as pneumococcal pneumonia, and often an accurate diagnosis cannot be made without radiological and laboratory investigation.

Of the 172 cases 118 (69%) were regarded clinically as of classical type, and of these 62 presented a very benign clinical picture. Correlation of clinical, bacteriological, pathological, and radiological findings shows that none of these cases could be regarded as variants of primary atypical pneumonia.

Type of Pneumonia Changing

It is recognised that pneumonia in England is milder than some thirty years ago. Reimann (1941) has noted the diminution in the death-rate from pneumonia in the U.S.A., and questions whether this is due to serotherapy and chemotherapy, or to a change in the disease. Is it possible that pneumonia is undergoing a cyclical change similar to that seen in scarlet fever?

The type of infecting agent may be a factor. In this series there were relatively few cases of proved pneumococcal infection. Some writers are of the opinion that the pneumococcus does not flourish in the tropics, and Leishman and Kelsall (1944) found very few cases of lobar pneumonia among a large number of patients in India. In the present series the incidence of *Strep. viridans* infection was unexpectedly high. Some cases may have been due to a primary virus infection with a secondary bacterial invasion, though they did not suggest this clinically.

In English children, after infancy, lobar pneumonia usually runs a favourable course, and the illness seen in the West African soldier is clinically somewhat similar. Bullowa and Gleich (1938) found that positive blood-cultures were obtained less often in children with pneumonia than in adults, and a higher proportion of cases with an upper-lobe involvement is found both in children and in West Africans than in English adults. The West African soldier is in many ways a simple person with a childlike outlook on life; perhaps his psychological make-up may play a part. Simpson (1944) comments on the rapidity with which his uneducated patients recovered. Ryle (1931, 1932, 1933) and others have revived interest in the study of "those differences between man and man, which are associated with, or concerned in maintaining a liability to or freedom from, some common forms of disease," and he is of opinion that "pneumonia or any other disease in an individual may be influenced in its course, not only by the type of the invading microbe, but also by the age and type of the patient, by his hereditary endowments, by his environment and by his psychology." In producing the benign type of pneumonia seen in West African soldiers all these factors may play their part; but environment, adequate diet, and early treatment are perhaps especially important.

SUMMARY AND CONCLUSIONS

Clinical, laboratory, and radiological findings in 172 cases of pneumonia among native troops in West Africa are described. About two-thirds of all cases were of classical or mild classical clinical type, and about a tenth "atypical," with a similar number of abortive cases.

The classical pneumonia had a benign clinical picture which resembles in many ways that encountered in children in England. Complications were rare, cure was early, and resolution was rapid. The average stay in hospital, including convalescence, was only 14 days.

Strep. viridans was almost as common as the pneumococcus as the causal organism and was usually associated with a mild classical picture.

Good general health, adequate nutrition, and early treatment under good conditions were factors of great importance in the production of a less serious form of pneumonia than that usually encountered among African civilians.

I wish to thank Major B. M. Wright, pathologist to the hospital, for his constant interest and help; Captain H. J. March, Captain G. C. Macdonald, and other officers of the medical division for their willing collaboration; Captain J. Yudkin for his keen coöperation in the preparation of a set of tables of correlations; and Major-General Sir Alexander Biggam, consulting physician to the Army, for permission to publish.

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REABLEMENT OF CHILDREN WITH INFANTILE CEREBRAL PALSY

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IE term "infantile cerebral palsy" covers the ous types of sensorimotor disabilities formerly ly called "spastic paralysis and allied conditions." term "spastic paralysis" is often a dual misnomer: astic" should be applied only to upper-motor-neurone ns with true spasticity; and in upper-motor-neurone ns the term "paralysis" is not strictly applicable. . the reablement of children with infantile cerebral y, paralysis is defined as inability to contract muscle he reason that the muscle is completely cut off from ous control. Cerebral palsy, on the other hand, is unction of movement due to a cerebral lesion interg with one or more of the several pathways directly erned with normal human movement.

pinion is divided about the efficacy of treating ntile cerebral palsy. Treatment may be non-operative g., massage, exercises, muscle stretching, electroapy, ultraviolet radiation, hydrotherapy, sedative gs, and splinting—or operative—e.g., tenectomies, tomies, neurectomies, nerve crushes, tendon splants, brain surgery, and cordotomies.

nly too often the child with infantile cerebral palsy ains a problem case. Many authorities think that current therapeutic measures need reconsideration, some say they are altogether useless. The educaty of these children is often questioned by teachers doctors in hospital and other schools; too many ept these children at their face value and agree with a dict of mental defect.

he outstanding characteristic of infantile cerebral sy is imperfect motor control due to cerebral damage icted on a growing organism. The appearance and aviour of these patients often lead to an incorrect gnosis and subsequent mistreatment of the child il he fits his diagnosis and becomes mentally and sically incompetent. Damage may, however, be so ht that it is undetected and motor disability passes clumsiness, laziness, or mild mental defect where handicap is "hidden"—e.g., athetosis of the raocular muscles, or partial deafness.

HISTORICAL

n 1941 I studied physical therapy under Prof. W. M. elps, of Baltimore, the pioneer specialist in the treatment of infantile cerebral palsy, at his Children's Rehabilitation Institute in Maryland. Professor Phelps emphasises the importance of classification of cases into one of five types (spastic, athetoid, ataxic, rigid, tremor) and the need for treatment of the child in a community by specially trained workers. For many years he has devoted himself entirely to the study and treatment of cerebral palsy, and he is recognised as the leading authority in this field in the United States. As a result of his work, many hitherto hopeless sufferers have been transformed into independent citizens.

I was so impressed with the work that I returned to England to seek research facilities and to rouse interest in this large group of handicapped children. No statistics are available in this country, but there is no reason to believe that the incidence of infantile cerebral palsy is less here than in America; where it has been estimated that 7 children are born each year with cerebral palsy in every 100,000 of the population. Of these 7, 1 dies in infancy, leaving 6 survivors, of whom 2 are feeble-minded and 4 educable. In a city with a population of 1,000,000 there will always be 700 educable children with cerebral palsy under the age of sixteen, distributed fairly evenly in urban and rural districts alike. The incidence is predictable and unlikely to decrease (Phelps 1946).

Owing to war-time difficulties it was at first only possible to form a small Parents' Club, the nucleus of the present British Council for the Welfare of Spastics (a regrettable title in view of the fact that recent American research shows that only 45% of cerebral-palsy patients are spastics).

In January, 1943, limited facilities were given for experiment with a small series of cases at Queen Mary's Hospital (L.C.C.), Carshalton, Surrey. The results obtained here in four years were so striking that the London County Council decided to expand the work to include children of pre-school and school age in suitable groups, and to re-form the existing unit into a research and diagnostic clinic dealing with all aspects of cerebral palsy. Though the experiment was severely hampered by war-time and other difficulties it has provided useful information.

In 1943 five children were treated; this number was trebled in 1944 and quadrupled in 1946. The first five cases treated were selected because of their former lack of response to treatment. Subsequent cases have been examined before admission to eliminate those with mental defect. Doubtful cases are reviewed during the three months' probation on which all children are brought into the unit. It has been decided to reject also cases complicated by operative intervention, epilepsy, or certain other conditions; and to reduce the age-limit to include a larger proportion of pre-school children. The cases are reviewed from time to time to assess progress-rates, and to decide on transfer to suitable schools as occasion arises. A number of children have been removed after a probationary period for reasons given above or because the diagnosis of cerebral palsy proved incorrect. Twenty have been retained for intensive treatment.

ILLUSTRATIVE CASE-RECORDS

Case 1.—A girl aged 15 in 1943.

History.—No details of pregnancy or birth remembered by mother. Patient had had "chorea since birth; mentality poor." Treated in various hospitals by orthodox physiotherapy and sedative drugs for years. Had once been sent home as untreatable, but later returned to institutional life (dates not available). No improvement in condition throughout these years.

On examination (January, 1943).—Appearance of mental defect, listless, unhappy, neglected, undersized, and underweight. Severe generalised athetosis, facial grimaces, continuous dribbling. Unable to sit securely on a chair, unable to kneel or to stand. Locomotion by shuffling on all fours

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or with a walking-carriage. Able to feed herself to some extent, but threw food about; unable to drink unaided, dress, or care for herself. Speech laboured and indistinct; had not had speech training. Because she could not use her right hand she thought she was left-handed.

She was stated to have a peculiar body odour and to have violent fits of temper during which she bit, kicked, and scratched nurses; unfriendly with other children. She could not read or write, but made attempts to draw. Had been given lessons suited to a young mental defective, mainly handwork beyond her motor ability.

She was unwilling to coöperate in any new form of treatment, because she had suffered pain from muscle stretching and had been discouraged by lack of progress.

Deformities were due to severe tension, poor postural habit, and severe generalised athetosis (kypholordosis and bilateral calcaneovalgus). The deformity of both feet was said to be increasing.

She was allowed up for part of the day in a walking-carriage, but for the rest of the day was in bed with hospital restrainers on. She was taken by freighter transport to the massage department bi-weekly for walking exercises and muscle stretchings. She was not allowed to leave the ward except for treatment. Outside contacts were limited to staff and a bi-monthly visit from her mother.

During 1943 she remained under ward conditions, in a ward with some twenty chronically disabled and mentally defective children of various ages and types of neurological lesion; but by the end of that time she was permitted to leave off restrainers, fracture-boards on the bed, temperature-taking and use of the bedpan as a routine, and was permitted limited outdoor exercise and occasional excursions beyond the hospital gates. Drug treatment was given up in January, 1943, and visits to the massage department and use of walking-carriage and other apparatus discarded.

In 1944, when the cases for experimental training were selected, ward conditions were modified for the unit children within the limits of an institutional régime.

By 1946 further modification was permitted, and patient was given supervised employment in the new clinic.

By January, 1946, she walked on crutches with skis and was learning to use sticks, stood for an indefinite time unsupported, fed, dressed, bathed herself, and attended to her own toilet unaided, even when menstruating. She had no body odour.

She had learned to control deglutition and mastication, and there was no dribbling. She could drink unaided, perform tasks bimanually, and had made the shift from left to right hand dominance two years before. Speech, though affected, was usually intelligible to strangers.

In the supine and sitting positions there was no involuntary motion, and in the standing position very little. She could perform ballet exercises of the arms and trunk in the standing position and well-controlled rhythmic exercises in the lying, sitting, and kneeling positions.

She took meals at an ordinary table, seated upon an ordinary chair, using ordinary utensils; she slept in an ordinary bed in her own room, which she cleaned and kept tidy herself.

She had no deformities, wore no appliance, and had no drugs. In appearance she was attractive and clean. She read, wrote, painted, played in the rhythm band, could typewrite to some extent; she gardened and made knotted belts and dog-leads in her spare time. She enjoyed the cinema and could be taken out shopping or visiting.

In December, 1946, she showed slight regression owing to shortage of staff in the unit, but has since made excellent progress, particularly in the past 3 months, and she now walks unaided.

With continued treatment she should become employable under the Disabled Persons Act; but her age and hence long habit of faulty motor behaviour have prevented her from making greater progress, and lack of teaching has retarded her in school work.

The diagnosis of cerebral palsy of athetoid type with normal mentality has been confirmed.

Case 2.—A boy aged 12 in 1943.

History.—Normal birth. Normal progress until age of 7 years, when he had whooping-cough, followed by diphtheria, after which it was noted that he had increasing motor difficulty, including loss of speech.

Polioencephalitis, rheumatic chorea, spasticity, and postencephalitic parkinsonism had been diagnosed at various times.

Treatment at various hospitals had included that for rheumatic chorea, followed by that for a hopeless degenerating condition of postencephalitic type; sedative drugs; massage and exercises; and the application of various types of splints, a plaster bed, and a Clifford and Davis jacket.

Much deterioration in 1941 and 1942. Patient was to be sent home as a hopeless and progressive case in January, 1943, but he was given a final chance among the cases selected for experimental training.

He was up part of the day in a wheeled chair but had to be cared for in every way. His intelligence was said to be fair only, and he was afraid of any physical activity; he feared his right arm was permanently injured in a fall when he was aged 7 years; he knew that he had been given up by several doctors as a progressive case and he did not wish to try any further treatment.

He was listless and apathetic throughout the day, took two hours over a meal, food had to be pushed in through the side of his mouth by another child who sat beside him: his appetite was poor, and much food was spilled and wasted.

He slept badly in his plaster bed and had frequent night terrors. Unable to attend school because of complete helplessness and deformity.

On examination (January, 1943).—Helpless, thin, pale listless boy. Despondent mien. Nervous and sweated profusely during examination.

Continuous generalised athetosis, strong rotation of trunk and head and pelvis to right, strong flexion and torsion of trunk, right dorsal, left lumbar curve, asymmetry of buttocks, alteration of gluteal folds, left leg rotated out, dropped left foot, valgoid deformity, tibialis anticus tendon not palpable, no power in anterior tibial group. No use in either hand. Able to stand in a contorted position and to take a few sliding dipping steps, but tired easily.

Speech unintelligible and almost inaudible; closed eyes and grimaced violently on attempted phonation. Deglutition and control of tongue impaired. Breathing shallow and irregular. Unable to blow a whistle or sound the notes of a scale.

Treatment on new lines was begun in January, 1943, subject to the same limitations as those in case 1. Limitations were similarly decreased, and by 1946 he similarly lived a normal life in a self-contained unit and received treatment as a whole. He never wore the Clifford and Davis jacket made for him.

By January, 1946, he was a practising scout, attending outings and a summer holiday camp with normal boys; he could roller-skate, garden, kept rabbits, played in a rhythm band, could dance, run, and hop. He was the most athletic child in the unit and could turn somersaults, swing on the ropes by his hands, and was learning to ride a bicycle. He wore no splints of any kind.

He had slight residual disability of the right arm, but in spite of this achieved everything he undertook bimanually and he used his right hand for many acts, though not entirely for feeding or for writing and painting, but he was learning to paint with his right hand.

A report based on graphs kept from January, 1943, to January, 1945, runs as follows:

January, 1943	*January,* 1945
Walking	
Few slow shuffling steps at a time. Wheeled chair used. Much scoliosis and postural imbalance.	5 miles at an ordinary speed, up and down hill, runs at average speed, but with slight postural imbalance.
Relaxation, supine	
Not possible.	No involuntary motion during 10 min. Apart from the right arm, general relaxation maintained for 30 min.
Feeding	
Not possible, either hand. Takes about 2 hours over a meal because of facial athetosis and difficulty in opening mouth and in masticating.	Full meal in 30 min. Ordinary spoon and fork. Can drink with left hand. S yet a very tidy eater, competent and of appetite.
Speech	
Unintelligible, superimposed stammer. Said to have aphonia, but can make stammered sounds at times.	No stammer. Speech ally intelligible to staff, b less so to strangers, part because of self-consci ness under scrutiny

January, 1943	*January*, 1945
Typing	
been taught, but unsuccessfully; unable to use ands.	Types unaided, using both hands: apart from faulty spelling, typing is accurate and legible.
Domestic tasks	
possible.	In spite of residual disability of right arm, he achieves everything he undertakes.
Painting	
ng paint brush between eeth makes marks on paper.	This method was immediately discarded as psychologically unsatisfactory, and when he began painting again he had sufficient motor ability to use his left hand; he is talented and imaginative. Now using his right hand to a limited extent.

Similar records kept for other children show a similar gree of progress, but in this case startling improvent under intensive treatment was followed by considere regression when treatment was suspended owing to ffing difficulty. All cases have regressed in the past nths, but it is felt that renewed treatment will lead to ewed progress.

School work.—A special teacher is attached to the unit, l children of school age have ordinary lessons. Case 2 done well, but there are large gaps in his education, ause he had virtually no schooling between the age of nd 13. He is a voracious reader, fond of outdoor life, and inema addict. He is likely to become employable.

Social response.—Socially this boy, like all the other ldren in the unit, is acceptable; he has charming manners, ively and good-looking, with a healthy tan due to the fact t he spends much time out of doors.

In March, 1947, he showed marked regression, but the mbers of the Cerebral Palsy Committee were satisfied that s was temporary and due to old bad habit reasserting itself ring abeyance of regular treatment.

Final diagnosis of cerebral palsy of athetoid type with sion, and normal mentality.

Case 3.—A girl aged 4.

History.—Difficult birth. Asphyxia neonatorum. No king difficulty. No fits. No abnormality apparent to ther until child was aged 2 years and in the care of fosterents, to whom she had been removed because she had been lected by her own parents from the age of 9 months.

t 2 years she had been removed to a nursery, where she l been considered mentally defective. She had been dically examined and stated to be a case of spasticity with oördinate movements and mental defect. A further gnosis was "spasticity, abnormality of nervous system, ght be early progressive muscular atrophy."

n April, 1945, she had been recommended for institutional e as she was "gradually becoming more unstable in walking l even standing. Mentally alert child."

n September, 1945, she had been examined as a suspected e of Friedreich's ataxia.

n November, 1945, "spastic paraplegia with some ? microhaly, presumably a cortical development defect" had n diagnosed.

ater in the same month "? ataxy or athetosis with tension" l been diagnosed.

On examination (December, 1945).—Pale shy nervous with incoördinate movement and a stance resembling t of bilateral congenital dislocation of hip. No abnormality ected on radiography.

She walked with a lordotic gait on a wide base and with ch instability. She could not run, jump, or stand on ner leg. She had no idea how to play with toys, and use hands was limited by incoördination, but she could feed self.

She had fractured her right arm some months before in all and was apprehensive about using it, but she did not pear to be naturally left-handed. Speech was difficult to understand, but there appeared to be no true speech defect. Expression was furtive, with some dribbling and an open mouth.

A report was received that she was "a spastic with a sullen mentally defective appearance" and that she was "dirty, backward, clumsy, and intractable."

In December, 1946, after a year in the unit, visiting clinicians decided that the former diagnoses were mistaken. They could find no evidence of any neurological lesion and wished to discharge the child as normal. But as in another case in the series the parents had removed a child with athetosis as they were convinced she was "cured" and she had then regressed, the hospital authorities were asked to delay, for a few months, patient's discharge.

Owing to illness among the staff this child had received no specific treatment for some months. When her case was reviewed by the same panel of specialists, they found considerable evidence of athetoid instability, deterioration of gait, increase of facial athetosis, and renewed dribbling. They withdrew their former recommendation for her discharge and recorded the therapy finding of cerebral palsy, tension athetoid type, normal mentality. They recommended further treatment along the lines used between December, 1945, and July, 1946.

Patient now receives regular therapy to the extent permitted by staff shortage, and continues to make progress; she has again ceased to dribble, expression is happy, speech is normal. She has no deformities, and gait is steadily improving. In school she is slightly above the average for normal five-year-old children.

In these case-records note is made of facial appearance as it is often stated that children with cerebral palsy are unattractive in looks and behaviour. Where such children are being adequately treated by modern methods they present a pleasant and attractive appearance, do not dribble and grimace, and, as motor control develops, may reveal good looks formerly obscured by facial distortion.

The rest of the cases in this series have also made progress; no child has developed deformity since admission; and existing deformities have decreased or disappeared without recourse to usual hospital appliances.

It may, perhaps, be deduced that where selection is on a basis of mental competence, and where concomitant disabilities are not present, cases of cerebral palsy can be effectively treated, within the limits of present knowledge, by trained rehabilitation teams, and that treatment is most effective when begun at the earliest possible age—i.e., as soon after six months of age as a diagnosis can be made—and continued throughout childhood.

CLASSIFICATION

In the cerebral palsy unit a probationary period in each case led to reclassification in most cases, only two educable spastics being found among those presented as spastic diplegia or hemiplegia. The rest were educable athetoids. All were quadriplegics. Athetoids were found to be in excess of spastics in a proportion of 5 to 1. No true ataxias were discovered; those presented as ataxic were found to have athetosis.

It is therefore possible that very many cases of tension athetosis are at present classified as "spastic paralysis," and it may be that there is a preponderance of athetosis over spasticity generally in infantile cerebral palsy. It is also possible that most cases presumed to be mixed cases are tension athetoids, and many of the remainder may be spastics with apparent incoördination due to pyramidal involvement only.

Several children were transferred from the unit to institutions because of epilepsy, mental defect, and postoperative paralysis. Among cases reviewed 2 were seen with rigidity and tremor combined, and 3 were cases of mental defect with no motor disability due to dysfunction of the type describable as cerebral palsy.

After a preliminary examination by the cerebral palsy committee of the London County Council (now consisting of the medical superintendent of Queen Mary's Hospital for Children, four medical specialists, and myself) the child is given a probationary period in the unit to allow for classification and conditioning to environment, and to permit of some assessment of the mental potentialities of the child under review. Assessment of the total handicap, so far as present knowledge permits, is made as follows :

(1) Functional ability.
(2) Nutrition and appearance.
(3) Ætiology.
(4) Classification into one of five motor groups defined by Professor Phelps : spastic, athetoid, ataxic, rigid, tremor, or combined disability.
(5) Analysis of specific disabilities—e.g., muscle imbalance, joint motion difficulty, eye defect, hearing defect.
(6) Dominant handedness.
(7) Mentality, having regard to sensorimotor handicap and former environmental factors.

TRAINING

Training is instituted as follows, all measures overlapping to form a whole rehabilitation scheme :

(1) Physiotherapy.
(2) Everyday activities.
(3) Occupational therapy.
(4) Speech therapy.
(5) School or kindergarten work.

Physiotherapy includes the following measures :

(1) Functional examination, designed to discover the present ability of the child in ordinary life—e.g., ability to sit on a chair and to gain a standing position.
(2) Athetoid or spastic motor examination (according to classification) to discover the range of voluntary motion and control present, and the limitations imposed by the disability in respect of each part.
(3) Respiratory and deglutition training.
(4) Removal of faulty habit patterns.
(5) Establishment of correct motor patterns through trained motion according to analyses made.
(6) Balance—equilibration and muscle balance training.
(7) Voluntary postural correction.
(8) Special sense training.

Everyday activities consist of motion learnt in physiotherapy practically applied—e.g., hopping, ball-throwing, eurhythmy, and group work, such as rhythm band and games of all kinds.

Occupational therapy consists of movement learnt in physiotherapy applied to the use of material—e.g., self-feeding, dressing, brick-building, typewriting, and group work, such as gardening, care of animals, &c.

Speech therapy.—Speech training is based on movement learnt in physiotherapy applied to vocalisation and diction. Of course neither of these can be learned until respiratory difficulties, excess salivation, facial athetosis or spasticity, and tongue difficulties have been eliminated to some extent by physiotherapy.

School work.—Ordinary lessons are taught : learned movement is applied in school ; speech is practised in oral work.

Physiotherapy is based on the concept that in spasticity the lesion is pyramidal whereas in athetosis the lesion is extrapyramidal ; that damage to the cortex leads to a type of motor dysfunction which differs essentially from that due to basal damage ; that dual lesions are actually rare, though commonly children are thought to have a dual lesion ; and that tension athetosis is commonly diagnosed as spasticity.

Movement training is so directed that in each case substitution is effected for the damaged function. It is impossible to condense a description of therapy techniques or to elucidate the theories underlying these techniques in a paper of this length ; but for those interested a bibliography is appended, and the unit has always welcomed visits from members of the medical and ancillary professions.

Mechanical aids to training are introduced only to be discarded as progress is made ; these include "skis" for walking, individually adapted chairs and tables, wooden-handled spoons. Light splints or small springs are occasionally used temporarily in education of movement. Physiotherapy apparatus is simple and consists only of two ordinary tables, one set of webbing slings, one sloping board, and one ski-slide for walking. Occupational therapy equipment is that used in any kindergarten, plus a typewriter, a fretsaw, and gardening equipment.

Since the cerebral palsy unit at Queen Mary's Hospital for Children is primarily a diagnostic and research unit, education in school is carried on as part of the rehabilitation programme for children of school age during their stay in the unit. Children who had entered this unit at pre-school ages are now up to the normal standard in school work. Those who have had hospital treatment before admission to the unit are necessarily retarded in school for reasons of motor disability and consequent general retardation. In some cases these children have been enabled to "catch up" to normal; in others the age factor and long-established poor habit were against them. All have made progress consistent with increasing motor ability.

RESULTS

Owing to lack of provision of complete facilities and orthodox checking of results, it is impossible to offer final evidence other than the records and graphs kept between 1943 and 1946, the findings of the cerebral palsy committee, and the present condition of these children, formerly regarded as mentally affected spastic diplegics.

ADMINISTRATION

Since July, 1944, the cerebral palsy unit has been a separate entity so far as treatment is concerned; the children remain patients of the hospital but are housed in a separate building in the hospital grounds ; this block has been adequately equipped for twenty children. The London County Council intends to expand the work, using the present unit as the diagnostic centre, and providing for children of educable mentality in special schools after a period of intensive treatment in this unit. Medical supervision is at present in the hands of the medical superintendent of the hospital, Dr. C. D. Agassiz, and, since its inception on an experimental basis, treatment as a whole has been my responsibility. A part-time medical officer, a physiotherapist, an occupational therapist, a part-time speech therapist, a teacher, and a splintman have since been added to the staff and specially trained in the work. Care of the children is undertaken by a permanent staff of women orderlies supervised by a departmental sister.

The building was designed for two main wards of forty beds, and two day-rooms, enclosing on three sides a common courtyard. The two wings are now used as dormitory and dining- and school-room. The third side, which unites them, is divided into treatment rooms, with four small side wards two of which are separate bedrooms, one a speech-room, and the fourth an office. One former ward kitchen is still used for meal service, and the other is partly a store-room for tools, clay, and other equipment, and partly a common-room for orderlies.

Sanitary equipment includes low wash-basins and low lavatory seats with removable steps and arms for the younger children. Meals are served in the dining-room at a table for competent self-feeders, furnished with ordinary knives and forks and mugs, or at individual tables for learning self-feeders, who use a detachable wooden tray with slots for plate and mug and a wooden-handled spoon. Children who have still to be fed a separate tables in a row, so that one orderly can feed 'm all. Chairs fit each table and are adapted for each ld; steps and arms are used as long as they are ded. Similar chairs and tables are used for school rk. Children unable to walk are moved from place to ce in light wheeled chairs and are taken out daily; se who can walk go about freely in the playground. casionally an outing is arranged, or the children are ertained in the hospital building.

Routine is strict and allows $1^1/_2$ hours' individual rapy per child per week at present, and 2 hours h of group therapy. School work is limited to the nal terms but treatment is continued throughout the lidays, except where children are allowed to go home a short time. In the holidays much attention is paid outdoor games; see-saws, slides, swings are used, d there is a swimming-pool close by, where swimming taught. In fact, all activities commonly supposed to out of reach of children with cerebral palsy are ientifically taught to this group. The results have been riking in spite of staff-shortage and other handicaps.

CONCLUSIONS

Patients with cerebral palsy can be classified according the clinical manifestations, which can generally be rrelated with a presumed site of the lesion.

Owing to the complicated nature of the syndromes and e factors of growth, it may take time fully to observe e manifestations which differentiate the syndromes; at differentiation is simplified after a period of systematic aining in a special clinic. Training differs essentially r each type of motor disability.

In view of the facts that damage has been inflicted on growing organism and that the repercussions of this amage are widespread, treatment should be given early nd to the child as a whole, and preferably in suitable ommunities where all personnel are specially trained o work as a team.

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CONGENITAL ATRESIA OF THE ŒSOPHAGUS

TWO CASES SUCCESSFULLY TREATED BY ANASTOMOSIS

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THE two cases of œsophageal atresia with tracheo-œsophageal fistula reported below seem to be the first to be successfully treated in England.

In America Ladd (1944), Haight (1944a and b), Haight and Townsley (1943), Holt et al. (1946), Leven (1939, 1941), and Humphreys (1944) have notably contributed to the surgery of this condition and great success has attended their efforts.

Two factors have delayed progress in this country: the idea that the condition is extremely rare, and misconceptions about its nature. It is less rare than is usually supposed: 4 cases were found in 10,543 deliveries at the British Postgraduate Medical School, and Guthrie (1945), searching the records at the Royal Hospital for Sick Children, Glasgow, found 24 proved and a further 6 probable cases in 6916 necropsies.

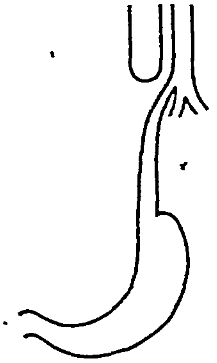

Fig. 1—Commonest type of congenital œsophageal atresia: upper œsophageal segment ends blindly at level of vena azygos arch; lower segment arises from trachea.

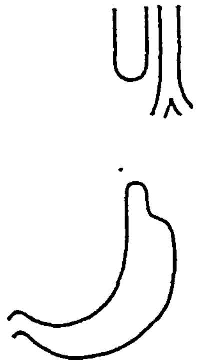

Fig. 2—Second commonest type of congenital œsophageal atresia: both segments end blindly, there being no fistula. Gap between segments may be large.

In the commonest type (80%) of congenital œsophageal atresia (fig. 1) the upper œsophageal segment ends blindly, and the lower segment arises from the back of the trachea, forming a tracheo-œsophageal fistula. In the next most common type (fig. 2) both segments of the œsophagus end blindly, and there may be a large gap between the segments. Very rarely there is a fistula between the upper segment and the trachea, or between both segments and the trachea. Still more rarely a fistula may exist without atresia. The cases here described were of the type shown in fig. 1.

Case 1.—A female infant, first child, born in Queen Charlotte's Hospital on Jan. 10, 1947, birth weight 7 lb. 7 oz., had attacks of cyanosis soon after birth, and attempts at feeding were followed immediately by cyanosis and choking.

The infant was seen by Prof. Alan Moncrieff, who made a tentative diagnosis of œsophageal atresia. No further feeding was attempted. The infant was transferred on Jan. 13 to Hammersmith Hospital, where the diagnosis was confirmed.

Confirmation of Diagnosis.—A soft rubber catheter was passed through the mouth and was arrested 10 cm. from the alveolar margin. Radioscopy showed that the lung fields were clear. Air was present in the stomach. Iodised oil, 1 c.cm., was introduced into the catheter and was seen to remain in the blind upper segment; the oil was then withdrawn. This examination confirmed the presence of atresia, and, by demonstrating air in the stomach, showed the type of anomaly. Care was taken to use only the smallest amount of iodised oil, so that none should spill over into the lungs.

Preoperative Management.—The blind upper segment was kept empty by frequent aspiration. The child's position was changed every quarter of an hour to allow each lung to expand. Dehydration was not noticeable, and no measures were instituted at this stage to introduce fluids.

Operation (Jan. 13).—The infant was secured in a prone position over a rubber water-bottle, the head turned to the right and a folded towel placed under the right shoulder. The line of the skin incision was infiltrated with 1% procaine. No other anæsthetic was used. Oxygen was given throughout the operation.

The incision started over the second right rib 1 cm. from the spine and passed downwards, curving slightly outwards at its lower end over the sixth rib; 2 cm. of the posterior part of the fifth rib was excised subperiosteally, great care being taken to avoid opening the pleura. The incision was carried upwards in the extrapleural plane, the intercostal bundles being ligated and divided, and the fourth, third, and second ribs divided. A small piece of the fourth rib was excised to improve the exposure.

The pleura was cautiously pushed inwards with a blunt dissector, and was inadvertently torn, but the hole was repaired by tying the edges together. The separation of the pleura was continued until the vena azygos arch came into view. This was divided between silk ligatures.

By gentle manipulation of the catheter the upper segment was identified, and stay sutures were introduced. The lower segment was found arising from the posterior surface of the trachea at the level of the azygos arch and was ligated and divided as close to the trachea as possible. Stay sutures were introduced into the lower segment.

Anastomosis was carried out with interrupted sutures of no. 0 silk. The lower segment was attached to the blind upper segment before the latter was opened; and, when the posterior part of the anastomosis had been completed, a catheter was gently pushed down from the mouth into the stomach and the anastomosis completed over the catheter.

At the end of the operation the catheter was withdrawn, and the wound was dusted with penicillin powder and closed round a rubber drainage-tube lying in the extrapleural space.

Postoperative Management.—The infant was placed in an oxygen tent, and the mediastinal drainage-tube was connected to a water-seal bottle. Nasopharyngeal aspiration continued. Position of infant changed systematically. Penicillin therapy started by intravenous drip set up in left leg.

Progress.—Jan. 14: condition excellent.

Jan. 15: good air-entry on both sides of chest; penicillin by mouth every hour; swelling and induration of left calf; drip set up in right leg.

Jan. 16: penicillin 4000 units hourly by mouth; saliva escaping round drainage-tube; much œdema and redness of right leg; drip taken down; rectal drip set up, 14,000 units hourly.

Jan. 18: infant passed a stool; no penicillin found in mediastinal fistula; radioscopy after introduction of a small quantity of iodised oil into nasopharynx showed that the oil entered the stomach; drainage-tube removed, and oral feeding started at noon: at 10.30 P.M. the dressing was moist and curds were present.

Jan. 19: infant very hungry; Kader Senn gastrostomy carried out (1% procaine) at noon; at 6 P.M. blood escaped from mediastinal wound on coughing.

Jan. 20: 1.30 P.M., child exsanguinated; blood-transfusion given. Condition much improved at 4 P.M.

During the next few days the chief concern was the varying amount of leakage from the mediastinal wound.

Jan. 28: no leakage of milk from chest wound; saliva still leaks.

Jan. 31: chest wound dry; gastrostomy tube removed; child started breast-feeding.

Feb. 17: child behaved normal except that Hb had fallen to 51%; ferrous sulphate given.

March 12: Hb returning to normal; child taking food well by mouth.

Case 2.—A female infant, second child delivered at St. Helier's Hospital on April 24, 1947, by cæsarean section by Miss M. D. Daley (disproportion had necessitated cæsarean section in the first pregnancy).

Birth weight 6 lb. 7 oz. Excessive mucus and slight cyanosis noted at birth; colour improved after pharyngeal aspiration. Saline by mouth produced a recurrence of symptoms, but one dose of penicillin is said to have been retained. A rubber catheter passed by mouth was arrested 10 cm. from the anterior alveolar margin.

Diagnosis was confirmed by radiography carried out as in case 1. Air demonstrated in stomach. In spite of care taken, some iodised oil regurgitated into lungs and these passed by an exceptionally large fistula into lower œsophageal segment and so into stomach. (This might lead to difficulty in diagnosis if screening were to be omitted and sole reliance placed on the radiogram.)

Operation (April 26).—Local anæsthetic. Posterior mediastinal extrapleural approach. Details of operation as in case 1. Anomaly found of type shown in fig. 1. Calibre of tracheo-œsophageal fistula almost as large as that of œsophagus. Œsophagus reconstructed as in case 1.

Postoperative Management.—A blood-transfusion (100 c.cm.) was started in the theatre and was followed by an intravenous drip of *N*/5 glucose saline. The rest of the postoperative management closely followed what had been carried out in case 1 and was in the hands of Dr. J. N. O'Reilly; but two improvements were made: (1) the penicillin was given by mouth 10,000 units hourly, starting when the infant was returned to the ward; and (2) the mediastinal drainage-tube was removed earlier (April 30). Before the tube was removed it was shown radiographically that iodised oil was passing down the reconstructed œsophagus into the stomach.

Feeds of expressed breast-milk were started on April 28. No leakage took place from the mediastinal wound at any time, consequently a gastrostomy was unnecessary. This fact made it possible for the infant to make a smooth convalescence, and the only complications were a Horner's syndrome and a slight ulnar palsy (both on the right side). The former cleared before the child left hospital.

When discharged on April 25 the child was taking breast feeds normally every four hours. Her progress has been maintained.

DISCUSSION

Early diagnosis is essential if success is to be obtained in these cases; to this end all babies with attacks of cyanosis and choking, made worse by attempts at feeding, must, until the contrary is proved, be regarded as having congenital œsophageal atresia. Meanwhile no feeding must be attempted. Unskilled attempts at diagnosis may lead to the contrast medium spilling over into the lungs. The proper method of diagnosis is described in detail.

As regards the operation, the extrapleural approach offers the best chance of success, because the suture line is almost certain to leak, and a leak within the pleura will almost inevitably kill the child. The use of penicillin greatly increases the chances of success.

The postoperative management is of the utmost importance, and without the coöperation of a skilled pædiatrician to take charge of the fluid requirements, and the unstinted services of an intelligent and conscientious nurse, the most careful operation will be of no avail.

I wish to thank Dr. Trevor Mann for looking after water balance and feeding after the operation; Prof. Alan Moncrieff for most helpful advice; and Sister Anderson and her staff nurse for their willing coöperation.

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UDDEN DEATH FROM PERFORATED GASTRIC ULCER

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ASES of immediate death from the perforation of a rio ulcer seem to be rare. Hurst and Stewart (1929) ed that "in exceptional cases the agony caused by perforation is so overwhelming, and its effect on the ulation and nervous system so great, that it has sed sudden and immediate death; and in other es, though not immediate, death occurs before signs peritonitis have developed." Moynihan (1901) found erforation of the duodenum just beyond the pylorus a case of sudden death, the relatives affirming that patient had never had *any gastric or intestinal* ease. Simpson (1936), in a very extensive experience autopsies on cases of sudden death, only recalls two ilar cases, one of which was that of a man, aged 32, o collapsed and died in the street; a very recent foration of an acute duodenal ulcer was found post rtem, and although the peritoneal sac was full of bile-ined duodenal contents, there was no peritonitis. The ht heart was widely dilated, the left firmly contracted. ere was no other disease.

Moynihan (1928) stated that not one of the signs of ock (increased pulse-rate, diminished blood-pressure, luced blood volume) may be present within an hour two of perforation, and that prostration was a more itable term for the condition found. McCreery (1938) mmented on the relative infrequency of shock in ese cases. The systolic blood-pressure was below 0 mm. Hg in only 1 of the 63 of his cases that covered, and in 7 of 19 fatal cases. Eliason and beling (1934) stated that in only 4 of 46 cases was the stolic pressure below 100 mm. Hg. Soutter (1941) id that only 6% of 335 cases had classical symptoms of ock. He found no definite relation between the degree shock and the size of the perforation or the amount fluid in the peritoneal cavity. In the following case dden death followed the perforation of an ulcer on e lesser curvature of the stomach.

CASE-RECORD

A tube-finisher, aged 45, who had been an outdoor labourer til three years earlier, had had gastric trouble for some ears, not serious enough to interfere with his work. Epi-stric pain came on about an hour after food, lasted about lf an hour or less, and was relieved by alkaline powder. adiography on Aug. 11, 1942, revealed an ulcer of the lesser rvature, the gastric emptying time being four hours. He as put on a restricted diet but continued at his work as efore.

On the morning of Sept. 16 he complained of pain in the pper part of his chest at the back, and later at work he ad a feeling of oppression in the chest. However, he worked roughout the day as usual and partook of his usual meals t 10.30 A.M. and 12.30 P.M., both of which consisted of eamed fish, white sauce, butter, and milk. He had a cup of a and some biscuits at 4 P.M. and returned home at 8.45 P.M., ormal and apparently cheerful. He took a dose of alkaline owder, as was his custom. He then had occasion to reprove nd punish his young son and was very much emotionally pset later on at finding himself in error for doing so. He hen became short of breath and was tapping his chest with he flat of his hands and complained of a pain over the right capula. He retched but did not vomit, then sat down and it a cigarette. He seemed comfortable and went upstairs at 0.20 P.M., where he undressed, wound up his watch, put out is cigarette, and went to bed. Shortly afterwards his wife eard him moaning. She found him with his arms and legs xtended and his hands clenched. His face was deathly pale, and he repeatedly blinked his eyelids. He gasped but ould not speak; but, asked where his pain was, pointed to he lower part of the sternum. He died at 10.35 P.M.

Post-mortem Findings.—Necropsy was performed next day. here was no food, blood, or free fluid recognisable in the peritoneal cavity, and no sign of peritoneal irritation or inflammation. The stomach was large and contained a moderate amount of milky white fluid. There was a simple obviously chronic ulcer on the anterior surface, close to the lesser curvature, midway between the œsophageal opening and the pylorus. The ulcer crater was $^1/_2$ in. deep and 1 in. wide. There was an oval perforation, 4 mm. long and 2 mm. wide, through the floor of the ulcer into the main peritoneal cavity. There were some local peritoneal and omental adhesions. The gall-bladder also was bound down by adhesions.

There was evidence that the heart had stopped in a systolic phase, and no blood was present in the left ventricle. No defect was found in the coronary arteries or their branches apart from slight atheroma; the myocardium and the cardiac structure appeared normal. There was some atheroma of the descending aorta, especially near its bifurcation. There was no macroscopic abnormality of the kidneys and endocrine system, including the suprarenals. There was a small diverticulum of the urinary bladder. The intestinal tract, peritoneum, and brain appeared normal.

COMMENTS

Death apparently took place almost immediately after the perforation of a gastric ulcer and before any signs of peritonitis had time to develop. It is not clear exactly how the termination, in such a case, is brought about. It is known that mechanical irritation or accidental section of the vagus nerve in the neck can cause sudden death, attributed to inhibition of the action of the heart. It is also possible that exhaustion of the hypothalamus, such as might result from an emotional upheaval, followed by perforation of the ulcer, as in this case, might lead to uncontrolled vagal inhibition and sudden death.

Gas embolism as the cause of sudden death is unlikely, since the gas would have to enter the systemic circulation, and examination of the lungs excluded this.

Widal et al. (1920) produced in dogs sudden death from "hæmoclastic crisis" by injecting autolytic products of protein digestion into the general circulation, but the absence of food or fluid in the peritoneal cavity in the present case rules out such a happening.

I am indebted to Dr. A. V. Neale, physician to the Birmingham United Hospital, who performed the necropsy, for the following comment:

> "There seems to be no doubt, from the clinical sequence of events and the necropsy findings, that this man died very rapidly as a direct result of the ulcer perforation. There were no indications of any other important structural disease. The mode of death suggests a rapid exhaustion of the neuro-circulatory mechanisms, as a final response to the violent and sustained pain of the perforation. Vagus reflex inhibitory influences may have played some part in this adverse reaction. The total circumstances, mental and physical, in a catastrophe of this kind have to be summed up in arriving at possible reasons for rapid death. An emotional storm, as in the present case, though subsiding somewhat, may be a relevant factor in increasing the susceptibility. There are points in the present case directing towards this view."

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". . . Public health research of earlier days was often concerned with the minimum conditions necessary to ward off disease and preserve health. . . . Now . . . we are travelling away from the nicely-calculated more-or-less-ness of minima, towards the more liberal view of optima for the preservation and enhancement of health."—Dr. J. L. BURN, *Recent Advance in Public Health*, London, 1947, p. 1.

Reviews of Books

Animal Genetics and Medicine

HANS GRÜNEBERG, PH.D., M.D., reader in genetics, University College, London. With a foreword by Sir HENRY DALE, O.M. London: H. Hamilton. 1947. Pp. xii + 296. 21*s*.

IN human genetics people too often assume, once it has been established that a disease is due to a particular gene—dominant, recessive, or sex-linked—that there is no more to be said. Dr. Grüneberg's account of animal genetics, though confined to rodents, indicates how far from being correct is this narrow viewpoint. Inherited disease is as dynamic a process as any other type of disease. The gene is a substance, whose action is not magical but which produces an end-result by means of concrete physiological and pathological mechanisms. These mechanisms can be closely studied in animals, where both gene and environment can be purified to a degree unthinkable in the case of human subjects. The obvious disadvantage of insect material —that the experimental organism is so unlike man— does not apply so strongly to rodents. The medical reader of this book will be astonished to find how many hereditary or partly hereditary conditions and diseases known in man are paralleled in other mammals. Spastic paralysis, ataxia, acholuric jaundice, microphthalmia, polydactyly, diabetes, and harelip are just a few examples. Even epilepsy occurs in rodents. The Viennese white rabbit is liable to spontaneous major attacks, and these and other animals with inherited epileptic diathesis have a lowered threshold to 'Cardiazol.' Certain mice are thrown into convulsions by sound and others similarly affected by odours.

The essence of Dr. Grüneberg's presentation, however, is not so much to point out parallels as to establish the system of cause and effect which has been initiated by each gene. This treatment lays bare fascinating networks of pathological events; in tracing the multiple effects seen, for example, in the grey lethal or the hydrocephalic mouse, it rivals any study of crime in fact or fiction. Moreover, the discovery of red cells containing "free" iron (siderocytes) in flexed-tail anæmic mice has had a direct bearing on the diagnosis of anæmias in man. The accounts of hereditary variation in immunity to infections, though brief, are stimulating to the imagination. At the same time, the student who reads the book is never in danger of being misled by speculative discussion. The known facts are always stated in the clearest language and distinguished from the author's own inferences or those of other workers. No attempt is made to conceal the numerous points on which information is inadequate, however uncomfortable this may be as regards satisfactory theory. The "pedigree of causes," which it is the aim of the method to establish for each condition, is almost always incomplete. As the writer himself points out, the analyses which can be made on existing embryological, histological, and clinical evidence are usually at the mechanical level rather than at the more fundamental chemical level. Such analysis is, however, the first step, which must be taken; and in taking it Dr. Grüneberg is doing for the pathology of genetically determined diseases what Virchow did for pathology in general. The happy circumstance that he himself has not only contributed very substantially to our present knowledge of rodent genetics but is also a clinician and a pathologist has enabled him to present the new field of investigation so well that the book should become a medical classic.

Insect Pests

(2nd ed.) W. CLUNIE HARVEY, M.D., D.P.H.; HARRY HILL, F.R.SAN.I., A.M.I.S.E. London: H. K. Lewis. 1947. Pp. 347. 14*s*.

THIS handbook, dealing with the insect pests liable to infest British people or their dwellings, is designed for regular reference by the practical hygiene official. The chapters on procedure and legislative control, as well as that on building construction and infestation, are comprehensive, and are no doubt based on the solid experience of the authors. The sections dealing with control measures are generally good, though it is surprising to find no description of controlled tipping, or the management of refuse-tips to control infestations by flies and crickets. The hot-air disinfestors, which were so useful to disinfest bundles from air-raid shelters during the war, are not mentioned, and there are also lacunæ in the biological data: for example, a section on the bed-bug which goes into anatomical details of the organ of Berlese should not omit the useful information on bug biology summarised in the Medical Research Council report of 1942. Data on speed of development of the bug and its resistance to starvation under different climatic conditions are of practical importance. A number of misprints in the specific names of insects should not have crept into a second edition. Two new chapters, on mosquitoes and on new insecticides, are useful, and where the specific uses of new insecticides are given, the advice is sound; but several out-of-date methods should have been relegated to second place or dropped altogether: for example, the elaborate method of bug-disinfestation by use of heavy naphtha should be superseded by the much simpler and more reliable use of D.D.T. spray. No mention is made of lethane hair oil for use against head lice, nor of benzyl benzoate emulsion for scabies, though both were added to the *National War Formulary* in recent years.

Treatment of Diabetes Mellitus

(8th ed.) ELLIOTT P. JOSLIN, M.D.; HOWARD F. ROOT, M.D.; PRISCILLA WHITE, M.D.; ALEXANDER MARBLE, M.D.; C. CABELL BAILEY, M.D. London: H. Kimpton. 1947. Pp. 861. 50*s*.

WE welcome the new edition of this book not only because it brings the Boston school's thoughts on the subject up to date, but because it gives us most of the references new and old on this wide subject. For this reason alone everybody seriously interested in diabetes and carbohydrate metabolism must have it; and the covers and binding hardly seem strong enough for the hard reference work the book will meet. The indefatigable work of Joslin and his group is so highly valued, and their ideas are so often ahead of accepted facts, that criticism of their book may be offered almost appreciatively. One edition stated that diabetes starts and ends with obesity as a cause, another that diabetes is a recessive mendelian hereditary disease; but this edition seems to have retracted its statistical dogmatism on these points. A new and interesting suggestion is that "hormonal imbalance" is the chief cause of the high prenatal and neonatal death-rate in the babies of diabetic mothers. The authors claim that such disasters can be prevented by giving the diabetic mother very large doses of œstrogen (stilbœstrol) and progesterone, the former being the more important.

The Principles and Practice of Medicine

Originally written by WILLIAM OSLER, M.D., F.R.C.P. (16th ed.) H. A. CHRISTIAN, A.M., M.D.; LL.D., HON. SC.D., HON. F.R.C.P.C., F.A.C.P., Hersey professor of the theory and practice of physic, emeritus, Harvard University. New York: D. Appleton-Century Co. 1947. Pp. 15[illegible]. $10·00.

ACCOMPANYING the 16th edition of this famous textbook is a short history of medicine as it has developed since Osler brought out his first edition in 1892—a story of remarkable progress. Professor Christian has retained the personal touch for which "Osler" has always been famous, while bringing the book up to date. Penicillin and the sulphonamides are here in full; tridione is mentioned in the treatment of petit-mal, and streptomycin for tuberculosis (though not for leprosy). Psychosomatic medicine was recognised in the last edition (1942), but surely by now deserves more than a page and a half. Medical facts of historical interest which have helped to make the book so popular, are still here: for example, the researches carried out on acclimatisation by Haldane, Douglas, and Henderson on Pike's Peak. The references at the end of each chapter might conveniently be put in alphabetical order. The last seven pages are devoted to those normal laboratory values of blood, plasma, and serum which sooner or later everyone forgets. Taking it all round "Osler" remains the ideal bedside medical textbook.

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LONDON: SATURDAY, AUGUST 16, 1947

Readjustment

A PATIENT comes to his doctor in a state of mild rvous breakdown. He is finding the day-to-day nagement of his life increasingly difficult. No gan system is unhealthy, but his capacity for aptation to the demands of his environment and his inner needs is inadequate; there is a breakwn affecting the person as a whole vis-à-vis e environment as a whole. In such a case the tient's inability to meet the current requirements work and adaptation can generally be traced to version of part of his energies to the solution of solved emotional or personal problems of the past problems by no means extinct but living on into e present, usually well below the level of conscious areness. On the surface there seems to be no ason why, with all his apparent health and good will, e patient cannot make a success of his life. He is ready to start again," to start with a clean slate. ut Nature provides the sponge only for those who ve finished their tasks. It may be impossible to store a working equilibrium unless each of the sues once shirked is faced again, the reason for the ast evasions is examined, and the old struggles are lived (but with clearer insight) till the gaps in ast experience are closed and his life in the present unencumbered by the pressure of old conflicts. n all this the doctor's function is to be not only n analyst of the forces, cohesive and disruptive, ithin the patient's mind, but also to be the catalyst a new synthesis.

Today, in our body politic, no one "system," ade, or industry is manifestly disordered, but their teraction as one whole is unsatisfactory. On supercial viewing there is enough energy to meet all urrent requirements; but something is lacking n coördination or morale. Computations of manower or horse-power are no true index of potentiality: n the coal industry, for example, failure to act on the commendations of the Sankey Commission after e first world war created a gap between expectation nd fulfilment—a sense of frustration—which pereates the situation today. Time, says the psychonalyst, never heals; procrastination is not a theraeutic agent; and it is not an act of political wisdom o ask any man to forget the past. Similarly, in nternational as well as national relations unmeasurble elements have to be given their importance if e are to readjust our values, and redeploy our forces, n this our latest malaise.

One of the great (but little sung) benefits of war is hat the community is given an object, the enemy, n which aggression may be turned with an easy onscience. The group-disruptive forces, which are lways present—is not a mixture of love and hate for the same object our most human characteristic? —thus find to a large extent a temporary approved outlet. To try to recapture "the Dunkirk spirit" without providing a threatening enemy at the doorstep is to attempt the impossible; for the problem is different. The threat now is not so much external as internal; and we face only with great reluctance the need to reorganise our way of living sufficiently to make our social and economic metabolism balance. Just as the individual dreads to face the disruptive forces within himself, so the community now dreads to face the social aggression and economic chaos which it fears is imminent. It is highly unlikely that such a danger is actually near, but the anxiety about it is present just the same. Our British way of adjustment and compromise rejects either extreme measures or short cuts; our political experience and the faith we repose in each other leads us to believe that it will be unnecessary for us either to be swept into the Russian orbit or become a cat's-paw of American big business. But time is short, adjustment is always slow, and we always fear the worst, not least while denying its possibility.

Each of us responds to the national difficulties in his own way. Some feel threatened by any change at all; a very few regard any change, however tumultuous, with indifference or amusement; the majority are affected, though by different aspects of the same thing. A crisis exists when everyone, except the queer people at either extreme, believes that a change beyond anyone's control will occur. A crisis does not exist if changes, however great, are unobserved, or if there is a strong belief that the pattern of equilibrium will right itself, or if the changes can be controlled by forces or institutions or people who are trusted. Where morale is high, adaptability is also high: and if a high degree of adaptability can be achieved the danger-point will nearly always be passed in safety. To judge whether there is a "crisis" on us now we may ask what is the state of our morale, our capacity for mutual trust, our belief in a common purpose, our tolerance of differences, and our readiness to accept changes, if need be, in the pattern of our lives.

If we are all in this together, who is to be the therapist to resolve our difficulties? Are the blind to lead the blind? Do we not need a leader whose clarion calls will rally the nation, a powerful will to overrule the obstructive, a man of blameless record on whom all can rely? (How reminiscent are these pleading wishes of the sufferer in his individual crisis who desires as a helper the biggest name in the profession, or to be told what to do, or someone he can "really" trust.) How, more rationally, can we find an outside helper, a catalyst and synthesiser, who stands calmly above the battle? If the only analogue known to medicine were that of individual therapy the question would be hard to answer. But the past few years have seen developments in another technique in which the study of the intra-group tensions is made the task, the therapeutic task, of the group itself. Here the disruptive forces tending to break up the group are given at least as much consideration as those which lead to group coherence, and the members get from the discussion only as much as they put into it. In group therapy of this kind, the rôle of the doctor is not that of an adviser but of a "clarifier": the patients' appeals to him for guidance, their looking to him for leadership, are signs of temporary mutual distrust. His most effective power is shown, or his impotence most clearly displayed, in his handling of the hostile demands for action at a time when action is inappropriate. His skill lies not in persuading them to follow a course of action but examining *with* them—for he is a member of the group—the reason why they are blocked from achieving their goals. Today, instead of asking for a leader, we should be recognising that part of the duty of analysis, clarification, and catalysis devolves on each one of us; we must not pass on any burden of thought, responsibility, or courage that we can carry ourselves. The Government must inevitably function as the chief clarifier, but it cannot do this if the public does not want the issues to be clear.

Gonorrhœa in General Practice

GONORRHŒA is one of those problem diseases which the practitioner has always regarded rather warily. He has recognised that it is resistant to treatment, that its cure is hard to determine, and that it may have serious consequences for the individual, the family, and the public health. Formerly, therefore, he was content to send the patient straight to a specialist and to limit his own rôle to help in adjusting family difficulties. In the days when the sulphonamide drugs seemed to lessen the difficulty he became much more inclined to "have a go"; but, while rejoicing in apparent successes, he quickly passed the failures on for expert advice. Since penicillin has been obtainable there has been a further change of outlook, and the practitioner is tending more and more to treat gonorrhœa, at any rate in the male. This may prove an advantage to the patient, provided certain standards are maintained and certain responsibilities are recognised and accepted. The drug is easily administered, safe, and effective. Where, then, do any dangers lie?

First is the question of diagnosis. It is still not universally appreciated that there are common causes of urethritis other than the gonococcus, and that most of them are not susceptible to penicillin treatment. If penicillin is given without a preliminary microscopical test the diagnosis may always remain in doubt; and accurate diagnosis is essential both for successful treatment and as a guide to the right course to adopt in investigating and treating contacts, both inside and outside the family. Next comes the question of dosage. With so safe a drug it is tempting to overwhelm the gonococcus with a massive initial dose. The difficulty is, of course, that syphilis is often contracted at the same time as the gonorrhœa, and syphilis has a longer incubation period. Even small doses of penicillin can prolong the incubation period of syphilis, or mask the early stages of the disease, and larger doses, if they do not entirely destroy the infection, will increase this danger. Dosage should therefore be limited to the minimum which will give a high proportion of successes.

After treatment cure must be established. With penicillin prompt cessation of symptoms and signs is the rule; but it may be deceptive, for gonorrhœa is notorious for its tendency to infectious latency. A period of close observation and a series of careful tests are essential before cure can be presumed. Most of these tests are matters for the expert, but with male patients there is a simple one which is within the scope of the practitioner and may indicate in good time the desirability of further advice. Symptomless carriers of infection are often free from signs at most times of the day, but examination of the first morning specimen of urine, held for at least eight hours and recently passed, is likely to yield evidence of infection obvious to the naked eye in the form of threads, haziness, or turbidity. Such a test should be repeated several times. That cure should not be presumed easily or lightly is evident from the co experience that relapse in the symptomless patient may come weeks or months after apparently successful treatment. Clinically these cases cannot be distinguished from those due to reinfection, but the sequence of events has been observed so often in patients whose histories seem reliable that the fact of genuine relapses must be accepted. In the female diagnosis and the determination of cure are considerably more difficult, and require specialised aids, such as a good culture medium, which practitioners seldom have at hand.

Already there is reason to think that these simple rules are not being observed. Sometimes patients with urethritis arrive at hospital for diagnosis after having had anything up to 3 mega units of penicillin from their doctors; and there *must* be other cases in which this attempt at confirmation is not made at all. There is some fear too that the greater use of penicillin by mouth may add to the confusion of a dangerous situation. Oral penicillin is less certain in its action, and the appropriate dosage is more difficult to estimate: the patient must coöperate strictly in taking the right doses at the right time, and the standards of tests for cure must be very high. If we allow ourselves to be misled by the ease and simplicity of this form of treatment the result will be a legacy of latent infection with all its crippling after-effects; and it is only too likely that we shall breed and foster lusty strains of penicillin-resistant gonococci.

Cerebral Palsy in Children

THE idea that congenital and acquired cerebral palsy can be treated is still new enough to be startling. The work of Dr. WINTHROP M. PHELPS in America, the example of Dr. E. R. CARLSON (himself a cerebral diplegic), and the founding of schools at Croydon[1] and Birmingham[2] for affected children, and of hospital clinics for their treatment, all testify to a live interest in this subject. The newly formed British Council for the Welfare of Spastics and the Scottish Council for the Care of Spastics are planning programmes of research and courses of training for therapists and teachers, and the Ministry of Education[3] is supporting an appeal of the B.C.W.S. to local education authorities for financial contributions.

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[1] *Lancet*, 1946, ii, 354.
[2] *Ibid*, 1947, i, 108.
[3] *Ibid*, Aug. 9, p. 230.

Some of the best work of the kind has been done
the London County Council cerebral palsy unit
Queen Mary's Hospital, Carshalton, since January,
3. Here, with makeshift and limited equipment
l dowdy though roomy quarters, Mrs. EIRENE
LIS is making studies of muscle action, and
ting good results in the treatment of a group
diplegic children. On p. 239 she describes some
her results. She classfies cases under two main
ds: as spastic, where the lesion is mainly pyra-
lal, and as athetoid, where the lesion is mainly in
basal ganglia. There are also ataxic cases in which
lesion is cerebellar. Mixed cases, it seems, are
, and in practice it can be assumed that a child
h athetosis has no true spasticity: his apparent
sticity is of psychological origin, deriving from his
empt to control the athetosis; and the child can
rcome it. He is first taught to relax—to lie
npletely at physiological rest for a longer and
ger period at each session. He then learns accurate
poseful movement, not merely as a form of play
rapy or as a side-line to occupational pursuits
ough these may be used too), but as a serious study
which he is expected to work. The atmosphere of
k and attention in the treatment room helps the
ld to develop his character and sense of responsi-
ty. Nor are things made particularly easy for him;
is not told "Lift your arm"—a thing he does
ry day of his life and takes as a matter of course—
"Abduct your arm," a technical term which
s the movement in a different and more important
it. He learns incidentally to his treatment the main
scles by name, and responds to requests in which
y are so mentioned. This calls for at least average
elligence in the child; and children with cerebral
sy are in fact nearly always normal mentally.
leed, if a child, whether athetoid or spastic, proves
apable of benefiting by sustained adequate treat-
nt this is generally evidence, Mrs COLLIS finds, of
ntal defect. The younger children of course,
not follow such complex patterns as the older
ldren, but they early learn to think of the
atment room as a place of work and study.
e playroom is different, with its own informal
nosphere.

The spastic child differs considerably from the
etoid; his spasm is pyramidal in origin, and he
not relax it; no amount of training in relaxation
l help him to lengthen a spastic muscle. His
iculty must be approached in another way. In
movement, the prime mover of a joint is a muscle
ing against gravity or against resistance. Thus in
ordinary position of the arm the biceps is the
me mover of the elbow-joint. In the spastic child
tense biceps cannot lengthen steadily and easily
order to let the triceps straighten the elbow; but
e the arm above the head and the situation is
nged: the triceps is now the prime mover, acting
inst gravity, while the biceps becomes the synergist,
l it is now found that the child can easily straighten
arm. In other words, the biceps when acting as a
ergist loses its spasm; for, as WOOD JONES[4] has
nted out, we cannot by taking thought alter the
scle sequence in a movement. Once the prime
mover acts the synergists fall into their pattern and accompany its movements by changing length appropriately. The task, then, with the spastic child, is to teach him the feel of his muscles when they are acting without spasm: to give him a "kinæsthetic image" of the perfect movement. Once this has been achieved the child himself develops the idea—he learns to perform the same movements with the muscle in the ordinary anti-gravity position.

Mrs. COLLIS has a simple device for reversing the effect of gravity: she places the child head downwards on rather a steep inclined plane, and tells him to let his arms hang above his head. In this position all the usual prime movers take their place as synergists: the latissimus dorsi and biceps lengthen, the legs fall apart by their own weight, the gastrocnemius lengthens in favour of the tibialis anticus; and the child is able to learn movements long denied him.

It requires attention on the child's part to perform these movements and to translate them into their counterparts in the upright position; and it is thus not surprising that if treatment is interrupted the child's progress is hindered, and he deteriorates. A pianist maintains his virtuosity only by constant and regular practice, particularly in the early stages. The adult spastic who has worked hard at overcoming his disability is able to maintain his standard because he has the necessary knowledge and responsibility, quite apart from the years of practice behind him; but similar qualities cannot be expected of a child. It is thus the more unfortunate that the L.C.C. cerebral palsy unit is at present handicapped by lack of adequate staff, both trained and untrained.

The subject is intricate, and calls for a careful study of individual movements. At the unit a chart for the examination of spastics covers 74 muscles, which must be noted as normal, spastic, or flaccid; while a joint-motion chart for athetoids covers 86 movements.[5] Exercise is planned to meet the findings in individual children, and is based on analyses of normal movements. From this unit, which is mainly for research, older children will shortly be handed on to appropriate schools after diagnosis, classification, and a comparatively short period of intensive training; the chief aim of the unit is to provide for the preschool child before he can acquire deformities and bizarre behaviour patterns.

Ordinary school lessons are given to the school-age children daily in between time by a qualified teacher specially trained in the unit, and it is noteworthy that the behaviour of the children both at school and at play is much more like that of normal children than is that of the usual "hospitalised" child. They do not freeze into dumb politeness before a visitor, and they are pleasantly boisterous with one another: the atmosphere is not that of a ward, nor are the children encouraged to think of themselves as patients; they are a group of school and preschool children working to overcome a disability while pursuing their ordinary studies. This is the spirit which should be encouraged in all wards where children are gathered for long-term treatment.

Vood Jones, F., Porteus, S. D. Matrix of the Mind, Honolulu, 1928.

[5] Routine work is set out in Mrs. Collis's book: A Way of Life for the Handicapped Child. London: Faber & Faber. 1947. Pp. 183. 10s. 6d.

Annotations

TEMPORARY REGISTER

LAST week we summarised the Bill by which the Government propose next session to regularise the position of doctors holding Colonial or foreign qualifications, who have been temporarily registered by the General Medical Council, or have served in the British Armed Forces, or have entered this country through circumstances of war. Since 1940 temporary registration has permitted refugee doctors to work in this country in hospitals or as assistants, though not as independent practitioners; but unless fresh action is taken this permission will lapse at the end of the year. The number who may be expected to seek permanent registration is less than 2000, and many are elderly people. While refugees could not expect any arrangements to be made which in the post-war search for appointments would place them in a better position than their British colleagues retained in the Services, the time has certainly come for putting an end to the miserable uncertainties of their position. Very many have proved themselves good friends in war and peace, and will have no difficulty in providing the General Medical Council with evidence of "satisfactory service." The claims of recent entrants who have made no contribution to the Allied war effort are of course more open to question; but in general we welcome a measure which if anything is overdue.

EARLY DETECTION OF POLIOMYELITIS

THE United States, with its heavier incidence of the disease, offers scope for observation of poliomyelitis that have not been paralleled in this country. In an analysis of 1125 cases treated in Minneapolis during the 1946 epidemic, Dr. John F. Pohl[1] suggests that the diagnosis can usually be established within twenty-four hours of onset. Headache, he says, was the most distinctive initial complaint, and this was usually of a severe, generalised, unrelenting type rare in the illnesses of childhood; it was particularly prominent during the first twenty-four hours in 57% of all patients. Fever was recorded within the first twenty-four hours in 80%, but this was in no way distinctive; the elevation of temperature was usually moderate. Otherwise the principal symptoms, in order of frequency during the first twenty-four hours, were nausea, vomiting, anorexia, stiff neck, stiff back, painful extremities, and general malaise with listlessness. Among the 4% of patients who complained of head cold or respiratory infection at the onset, the complaint was not generally confirmed on physical examination; and the 10% in whom sore throat was an early symptom were observed to have no inflammation of the throat. This symptom was ten times commoner in cases where bulbar symptoms ultimately developed than in those which eventually showed paralysis of spinal origin. In 22% of the patients there was a history of the symptoms having abated for 2–3 days after an initial and characteristic illness of about twenty-four hours.

The diagnosis, Pohl asserts, can be established very surely by physical examination. The patient lies quietly in bed and does not wish to be disturbed; he is irritable and resentful of interference. Spasm is indicated by the painful irritability of the peripheral tissues, and by the stiff neck, stiff back, or shortened hamstrings. Muscles elsewhere may be spastic; and spasm of the abdominal muscles may simulate that found in acute appendicitis. Spasm is found more often, and is more severe, in the paralytic than in the non-paralytic cases. Weakness or paralysis developed within the first twenty-four hours in only 5% of all cases. The cerebrospinal fluid (C.S.F.) is typically crystal-clear, is at a normal or low pressure, and has a moderately elevated cell count, n exceeding 350 per c.mm.; and in Pohl's series all cases and 1% of those in which paralysis had a normal C.S.F. cell count.

The diseases often confused with poliomyelitis, suggests, are the Guillain-Barré syndrome, enc meningitis, and transverse myelitis. In the Barré syndrome (or radiculoneuritis) the neck is not and weakness or paralysis tends to progress over the protein content of the C.S.F. is increased but the count is usually normal. The patient with men encephalitis is restless and hyperactive at the while transverse myelitis is marked not only by w but by sensory changes, which are most unu poliomyelitis.

CHILDREN IN DAY-NURSERIES

THAT the happiness and general well-being of c in a day-nursery depends on the quality of the s charge can hardly be questioned. But there are to young children living in a group which even t of care cannot wholly defeat. These may be c physical dangers from infection and emotional arising from the inevitable lack of individual love, and attention for a great part of the day. Yet nurseries are needed not only for the relief of mothers, but also—just at present—because must be released to work in industry. We must t try to assess accurately how serious these dan, how far they can be offset by benefits to the child, what age-groups suffer most.

The Medical Women's Federation, who have reviewed[1] recent studies in the field, quote the of Dr. Margaret McLaughlin that respiratory i was 2–8 times as common among 557 day-n children than among 641 children living at home, the higher incidence was present at all ages, and the nursery children developed respiratory inf at an earlier age. The older children in the n weighed more, but those under 2 years of age less, their counterparts living at home. Measles was times commoner among presumed susceptibles in nursery group than in the home group, and the was found particularly among children under 18 m these formed 33·6% of the nursery group against of those living at home.

The federation think that day-nurseries are principally to alleviate the effects of bad housing, crowding, and other social evils which prevent children from having a healthy and happy life at But group care is in any case not a sound health m they hold, for children under the age of 2 or 3. Every mother should be enabled to bring up her c in the home circle in the early years, and day-nu they suggest, should be regarded mainly as an in measure until the social disorders which stand in the of such home upbringing have been corrected. no doubt the ideal, but meanwhile it is encouraging note that day-nurseries do not always spell disaster the child, even from the dangers of infection. Dr. B Nisbet (p. 253) gives figures to show that in two nurseries at Kilmarnock infections did not seem to excessive, weight-gains were normal, and children had been to the nurseries seemed later, to their m mistresses, to be more self-reliant and better beha than children who had not.

While most doctors would agree that the child 2 is unfitted, both physically and emotionally, for life with other children, it is also certain, as Ma McMillan showed, that those between 2 and 5 greatly from community life; and though day-nu have not in the main achieved the standards of the nursery school, they have already travelled far from passive notion of the nursery as a place where a child be " minded " while his mother is elsewhere. If the gers to health can be overcome, or offset by benefits ich the child would lack at home, the day-nurseries ve in them the makings of good nursery schools, and ght be developed along such lines. As long as the al of uncrowded family life in good home surroundings nains far beyond the child's prospects and the country's se, nurseries still have work to do, and should be ouraged to do it at a better level.

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[1] *J. Amer. med. Ass.* July 26, p. 1059.

[1] *Brit. med. J.* Aug. 9, p. 207.

HUMAN-MILK BANKS

LTHOUGH the wet-nurse of our grandmother's time almost disappeared, the virtues of human milk for feeding of infants in general and premature babies particular continue to be extolled. But practice, as al, lags behind precept, so that today less than half our babies are breast-fed for periods of 3–6 months, ile many premature and difficult-feeding infants are ied the benefits, if such they be, of human milk ause there is no large-scale arrangement for the ection and distribution of this commodity. Milk-eaux, as they are called, have been established in a nber of American cities and take one of two forms: ier the milk is expressed by the nursing mother in her house and is collected daily to be pooled and cessed at the milk bureaux, or the women attend at milk centre and express their milk manually under trolled hygienic conditions.[1 2] The collection of surplus k has of course long been practised in many maternity artments for the use of premature infants, and a centres, such as Queen Charlotte's, have collected k for distribution to a wider public. There is some son to believe that if there were larger supplies the nand would correspondingly increase. If this is so, collection of human milk must be so organised that final product is safe and palatable.

he necessary steps in the organisation of the human-k bank, either for hospital use or for wider distribution, the hygienic collection of the milk, and its sterilisation l preservation. In papers published on July 26 and our present issue Dr. Joyce Wright, with the coöpera-n of Sister E. M. C. Edwards, has shown how this can accomplished satisfactorily and inexpensively in a ternity department—even in one exposed to air ack. The collection of milk from mothers in a ternity unit has the advantage that the donors are ady in situ, but the disadvantage that small amounts milk have to be obtained from a large number of nors: where the mothers attend as outpatients, or ply milk from home during the whole period of tation, daily amounts of 10–20 ounces can be obtained m each donor and tuition in the cleanly collection of k is limited to the few. That instruction in milk llection so as to avoid gross bacterial pollution is ential, was demonstrated by Dr. Wright's finding of h bacterial counts in milk collected by the methods nmonly used in a number of maternity departments. e main sources of pollution were the unboiled collecting-ls, breast-pumps, mothers' hands, and nipples. The ption of simple measures to obviate these and other sible sources of bacterial contamination reduced the terial counts in the milk from a mean of over 2,000,000 ml. to 8600. Besides environmental contamination wever, the milk itself may be infected, particularly h *Staphylococcus aureus*, which in the experience of ferent workers may be present in appreciable numbers the breast-milk of more than half the women in a ternity unit. That this organism can be imbibed h impunity is attested by the numbers of babies who fer no upset from ingesting large numbers of staphylococci; but if enterotoxin-producing strains are allowed to multiply in milk after it is withdrawn the risk of serious gastro-enteritis among susceptible babies is obvious.

Milk should therefore be boiled and sterilised as soon as possible after it is withdrawn. Pasteurisation by the holder or flash method will destroy all vegetative bacteria, but this method of sterilisation is not easily carried out in a hospital ward without additional equipment. Wright and Edwards therefore recommend bringing the milk to the boil in a lidded saucepan, which practically sterilises the milk without affecting its palatability.

The last stage is preservation of surplus milk for use in the hospital when supplies are short, or for distribution outside. American workers have found that a relatively slow freeze method using a commercial ice-cream freezing-cabinet will serve the purpose admirably. The milk after sterilisation is distributed in 4–8 oz. amounts and frozen at −12°C, at which temperature it will keep without obvious deterioration in flavour for periods up to 8–12 weeks. Milk so preserved may be sent by rail packed in ice to considerable distances. If human-milk banks utilising lactating mothers outside the hospital are to be established, there are obvious advantages from the viewpoint of hygienic collection and preservation in having the donors attend as daily outpatients; but obviously they need an incentive, and the American practice of paying 5–15 cents per ounce of milk could be adopted. Sums of $1000–1500 have been paid out to donors for a session's attendance, and stories of mothers who save enough to put their children through college are told at these milk bureaux. An efficient and enthusiastic organiser is also needed to maintain a constant supply of donors if milk-banks are to continue their work satisfactorily. The experience and machinery that have gone to the organisation of blood-banks throughout the country could probably be made available if the pædiatricians are agreed that human-milk banks are as essential as the blood-banks have proved to be.

HUMAN RELATIONS

DIRECT study of community problems by the methods of the psychologist proved useful during the war, and is nowadays being applied to problems of industry. The Tavistock Institute of Human Relations, formed about a year ago by the Tavistock Clinic, and granted £22,000 by the Rockefeller Foundation, has a team of two psychiatrists, an educational psychologist, and an economist with psychological experience who study human relations in industry. They have already investigated situations in several factories, one of which was mentioned in the *Manchester Guardian* of June 25. A Yorkshire factory had difficulty in attracting and retaining staff. After talking with some of the girls employed, a member of the team was able to list 68 complaints and suggestions. Some of these related to the domestic economy of the factory, but more to the feeling the girls had that their work was unrelated to life and that they were regarded as parts of the machinery rather than as responsible humans. Not one of the complaints related to wages. The team have been able to offer constructive suggestions on this and other occasions.

This type of work is specially important today when the old distinction between employer and employed is disappearing in favour of a new spirit—a spirit in which both are partners in a joint enterprise. The first number of a journal designed to integrate the work of social scientists, on both sides of the Atlantic and in countries abroad, has just been published, and promises well. *Human Relations* is a quarterly sponsored jointly by the Tavistock Institute of Human Relations and the Research Center for Group Dynamics, Cambridge, Mass. The editorial committee (managing editor, Dr. Thomas Fairley) is composed of five representatives from each

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Smith, C. A. *J. Pediat.* 1942, 20, 616.

Recommended Standards for the Operation of Mothers' Milk Bureaus, *Ibid*, 1943 23, 112.

of these bodies, most of the British members being doctors. There are also British and North American advisory editorial boards, composed of experienced British, American, and Canadian social scientists. These will collaborate to develop the journal, the purpose of which is to review original work done in any country, and to report research and contributions to theory and method. Social theory, it is hoped, may thus be related to social practice, and principles will doubtless emerge which will apply to the whole field of social science.

The well-produced first issue carries a paper on frontiers in group dynamics by the late Prof. Kurt Lewin. Other articles deal with a follow-up study of the civil resettlement of British prisoners-of-war, autistic hostility and social reality, residential management as treatment for difficult children, antisemitic prejudice in an American town, and task perception and interpersonal relations in industrial training. Future issues will carry in addition surveys of new techniques in social science and of legislative and administrative problems, as well as reviews of books and notes on current research.

DISEASE AND THE WEATHER

MAN, we are told, has inherited from his ancestors the predilection for a climate with a temperature of 47°F in March and of 62°F in June[1]; but in colonising the globe he has had to adapt himself as best he may to much less favourable conditions. The adversity is plainest in the tropics; here growth is slower, and, according to Mills,[2] the menarche, contrary to popular belief, occurs later than in temperate zones. Gelineo[3] has proved experimentally that the lower the temperature to which an animal has been accustomed the greater its response, by increased heat-output, to chilling; since heat-production and energy are interdependent, general vigour is presumably at its lowest in hot climates, and the risk of succumbing to infections is usually greater than in cooler zones. Invigorating climates have their special hazards, too: these include such disorders as diabetes, pernicious anæmia, exophthalmic goitre, leukæmia, Addison's disease, cardiovascular lesions, rheumatoid arthritis, and chronic respiratory infections.

It is generally agreed that the incidence of respiratory infections varies inversely with the atmospheric temperature, though the particular climatic factor involved is uncertain. How did it happen that, as Sir Andrew Davidson pointed out,[4] the incidence of children's diseases in Scotland, previously rising, fell sharply with the start of last winter's long cold spell? Perhaps real winter-sports weather, which tempts the young and active to disport themselves in the open air, has the opposite effect to the damp chilliness which drives everyone indoors. Experimentally[5] chilling, though not affecting resistance to the intraperitoneal injection of pneumococci, greatly increases the incidence of pneumonia after the intranasal inoculation of mixtures of pneumococci and mucin. Herrington and Moriyama,[6] in a statistical analysis of respiratory infections against climatic and socio-economic conditions, found a high pneumonia mortality in cold stable climates with (for lobar pneumonia) high precipitation; but, like other workers, they found no correlation of respiratory diseases with relative humidity. They concluded that the importance of climatic factors was far outweighed by that of the socio-economic ones, particularly urbanisation. This links with the observation of Haythorn and Meller,[7] that the smokiest wards of Pittsburgh have the highest pneumonia death-rates, and that deaths from pneumonia increase after periods of "smog" (smoke and fog).

Of even greater economic concern is the relation climate to the common cold. Several years ago a controlled experiment in America established that residence in a constant warm "climate" almost complet protected volunteers against infection. The mortality figures of the Social Survey ought to tell us in time exactly what weather it is that precipitates the annual outbreak of coughs and sneezes.

EXCERPTA MEDICA

As the achievements of scientific medicine go forward the great snowball of published work rolls behind them, and the busy doctor gazes with despair at its colossal proportions. Nobody can keep abreast of all that goes on: British readers are irritated by the lack of references to European work in publications from the New World, Americans no doubt shake their heads at the dar of Europe where American advances are not st as they should be. H. G. Wells in one of his books recommended an international bureau where scientific work should be gathered, sorted, collated, and then become accessible to all. Holland is attempting to this ideal by establishing an abstracting service of medical work published throughout the world. *Excerpta Medica* will provide "pertinent and reliable abstracts in English of every article appearing in every available medical publication in the world." The abstracts are being issued in the form of fifteen sectional journals of which will be published monthly.

The fifteen journals cover: anatomy, anthropology, embryology and histology; physiology, biochemistry and pharmacology; endocrinology; public health and social and industrial medicine; general pathology, pathological anatomy and bacteriology; internal medicine, tropical medicine and hygiene; pædiatrics; neurology and psychiatry; surgery and anæsthesia; obstetrics and gynæcology; oto-rhino-laryngology; ophthalmology; dermatology and venereology, radiology; and tuberculosis.

The central administration is at Amsterdam under the direction of a chief editorial board of three members, Dr. M. W. Woerdeman, professor of anatomy and embryology, Dr. A. P. H. A. de Kleijn, professor of rhino-laryngology, and Dr. W. P. C. Zeeman, professor of ophthalmology. Each section is placed under the direction of a separate board of editors, people of distinction and of many nationalities.

For example, the internal medicine section has 23 authorities on the editorial board, while the section on neurology has 34 residing in such varied places as Philadelphia, Stockholm, Chicago, Strasbourg, Berchem-Antwerp, New York, Amsterdam, Indianapolis, Oxford, London, Lund, Op Washington, Bristol, Prague, Cape Town, Copenhagen, Paris, Toronto, Warsaw, Zürich, Lisbon, Oslo, Utrecht, Barcelona, and Batavia. Great Britain is well represented in all but three of the sections.

The organisation stretches as far afield as China and through the courtesy of the embassy of the U.S.S.R. in the Hague it has been possible to make arrangements with Russian scientific organisations ensuring the hitherto inaccessible work will be abstracted. venture should do more than fill the gap left by journals as the *Zentralblatter* and *Berichte*, which doing the same sort of thing, but less comprehensively before the war. The difficulties of collecting, month, several thousands of abstracts, all needing careful editing, and many requiring translation into English are not small, but the first two sections to issue maiden numbers—*Dermatology and Venereology*, *Radiology*—show that a high standard has been set. it seems likely that the *Excerpta Medica* will prove important agent for disseminating knowledge of medi

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Dr. W. P. FORREST, former chief medical officer UNRRA's Ukrainian mission, has been appointed assistant director of the headquarters office of the World Health Organisation, Interim Commission, in New York C

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1. Huntington, E. *J. Psycho-Asth.* 1937, 42, 116.
2. Mills, C. A. *Int. Clin.* 1936, 2, 143.
3. Gelineo, S. *Ann. Physiol. Physicochim. biol.* 1934, 10, 1083.
4. See *Lancet*, 1947, i, 342.
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6. Herrington, L. P., Moriyama, I. M. *Amer. J. Hyg.* 1939, 29A, 111.
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Special Articles

CHILDREN IN DAY-NURSERIES

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WHEN Menzies [1] described her experiences with children two day-nurseries at Leyton she concluded, inter alia, t a substantial proportion of children under 2 years did not make satisfactory progress as judged by their ght gains over three-monthly periods. I have extracted nparable figures for the children in the two nurseries he Burgh of Kilmarnock. In this burgh one nursery, ned in April, 1943, has 40 places (temporarily increased 45 while the other nursery was being completed), l the other, a mixed nursery, opened in June, 1945, 43 places for day children and 10 residential billets. n three and a half years in nursery A 148 children e been admitted and have left; of these, 28 (18·9%) yed until they went to school. In one and a half rs in nursery B 46 children have been admitted and e left; of these, 12 (26%) stayed until they went to ool. Thus, in both nurseries 20·6% of the children nained until they went to school. Of these 194 ldren 7 left within a week, 14 others within a month, others in less than six months, and the remaining stayed more than six months.

The accompanying table sets forth the gains in weight the various classes of children. The numbers in each ss are small, but the findings are given for what they worth.

INFECTION

At nursery A, of 54 children admitted under the age 2 years who remained longer than three months, 7 veloped an infectious disease. At nursery B, of 36 ldren admitted under the age of 2 years who remained ger than three months, 17 developed an infection. At rsery A measles was the main trouble, and at nursery measles and chickenpox. At both nurseries the mber of children admitted under the age of 2 years o remained for a year or more was 38. During the t year of their stay in nursery A, of 20 children 5 aped an infection. At nursery B the number was and 7 escaped infection. Altogether, then, 12 out 38 escaped infection.

DISCUSSION

In connexion with the rapid turnover of children in rseries noted by Menzies, the figures for Kilmarnock not nearly so striking as those from Leyton, where 3 children were admitted and left and only 60 (16%) yed until they went to school. The comparable ures for Kilmarnock are 194 children admitted and t, 40 (20%) of whom stayed until they went to school. nost a quarter of the children at Leyton who left did within a week, whereas here a child leaving within a ek is an exception—3–4% of admissions. At Leyton ore than a fifth of the others left within a month, ereas at Kilmarnock only about another 7% did so. retting" as a cause for the withdrawal of a child s seldom put forward by a mother—in effect only ice.

It has been the rule here to note carefully the reasons, far as they have been ascertainable, for the child ving, and we find that by far the greatest number of ldren left the nursery because the mother gave up rk. We had often to request the mother to remove r child, as our policy was to admit only the children mothers working. The number of children removed cause the mother either gave up work or was told to do so was 99. When mothers were questioned, their reasons for giving up work fell into three main categories:

(1) The mothers said they did not like the work (57 cases).

(2) The mothers felt unable to continue work (15 cases).

(3) The mothers became pregnant again (12 cases).

A few children were taken into the nursery to allow mothers to try to get work; if the mothers failed, these children had to be sent out again. One or two women gave as their reasons for giving up work the fact that their husbands had been demobilised.

Further, 23 children were taken away because the mother was leaving the district. In 13 cases no reason was given.

Though the numbers of children in each group shown in the table are small, the weights seem to show that the gains, though not spectacular, are within the limits of normality and considerably better than the figures for Leyton.

As regards infection, it is difficult to get comparable figures for children in this district, since much depends on what infections are prevalent, and the position varied greatly from time to time. The figures extracted did not seem to show an excessive number of infections. Our experience is that at times there is a fairly heavy incidence, and then for long periods the incidence is slight.

GAINS IN WEIGHT

Age on admission (months)	Nursery	Total admissions	In 3 months		3–6 months		0–12 months	
			No. of children	Av. gain (lb.)	No. of children	Av. gain (lb.)	No. of children	Av. gain (lb.)
Under 12	A	33	22	2·4	16	2·3	8	8·6
	B	21	17	2·1	13	2·3	10	7·8
12–17	A	24	20	1·8	15	1·7	9	6·8
	B	12	9	1·2	5	1·6	4	5·8
18–23	A	17	12	1·6	6	2·3	3	7·1
	B	12	10	1·8	8	1·2	4	4·0
24–35	A	39	26	1·6	12	1·4	7	5·0
	B	20	10	2·2	6	2·2	4	7·8
36 and over	A	73	52	1·4	34	1·2	14	3·8
	B	28	18	1·0	16	1·2	4	5·0

The above admissions include not only the children who had left but also those who still remained in the nurseries.

An effort has been made to trace 40 children who have passed on to school. So far, detailed reports of head-mistresses on 27 children who have been long enough at school to warrant a report have been received. The general opinion is that the children who have been at nurseries mix well, are more self-reliant, and are better behaved than children who have not.

The general impression of the work in nurseries at Kilmarnock has been that they have fulfilled a need, and that the children have done well in them. There is a waiting-list for admission which has remained steady for the past few months at about 60 children, and there is no sign of the numbers diminishing.

SUMMARY

Of 194 children admitted to day-nurseries in Kilmarnock, 7 left within a week, 14 others within a month, 95 others in less than six months, and 78 stayed longer than six months.

The gains in weight were normal.

The number of infections in the nurseries seemed to be not unduly high.

The children who passed on to school mostly made a good impression on their teachers.

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[1] Menzies, H. F. *Lancet*, 1946, ii, 499.

MISSILE WOUNDS OF THE HEAD

REVIEW OF WAR EXPERIENCE

THE *British Journal of Surgery*, which published a special supplement on penicillin during the war, is now producing a series of supplements on war surgery as a record of the achievements of British surgeons during the second world war. The first of these supplements is on missile wounds of the head.

G. JEFFERSON writes a characteristic and valuable account of infection of head wounds in the first world war and attributes the greatly improved results in the second world war mainly to antibiotics.

H. CAIRNS describes the arrangements for neurosurgery in the British Army—a base hospital in Oxford which treated some 13,000 patients during the war, and 6 mobile neurosurgical units overseas which together treated over 20,000 patients. This arrangement, which was economical with medical personnel, was coördinated with neurosurgery in the Canadian Army and the E.M.S. Cairns traces the evolution of surgical methods during the war—increasing thoroughness of debridement, primary closure of the wound with methods borrowed from the plastic surgeons, and the use of penicillin and sulphonamides. In a large series of brain wounds the incidence of fatal infection was reduced below 5%. The success of neurosurgery in the British Army is attributed among other things to careful planning before the outbreak of war, securing important items of equipment before the country's supplies and industry became so largely devoted to destructive weapons, the encouragement by the R.A.M.C. of high professional standards, and early segregation of the wounded, usually by air evacuation. He considers that the neurosurgical experiences of war strongly favour fusion of the medical services of the fighting Services. "In any medical service of the future, military or for that matter civil, services for evacuation of sick and wounded must inevitably include an air arm."

The operative methods employed are illustrated by a series of coloured photographs taken by Mr. HENNELL at Naples during the battle of Cassino; the photographs have been selected and described by J. SCHORSTEIN who performed the operations. The treatment of head wounds in the forward area is described by SMALL, TURNER, and WATT (North-west Europe, 1944–45), GILLINGHAM (Northern Italy), and R. T. JOHNSON (Burma), while the work of the Royal Navy is described by LAMBERT ROGERS, and that of an E.M.S. centre near Newcastle-upon-Tyne by ROWBOTHAM and WHALLEY. These papers with those previously published by Ascroft[1] (Middle East), Eden[2] (Western Desert and Tripolitania), Johnson and Dick[3] (Eastern Bengal), and others provide us with a fairly complete record of the development of a remarkably efficient neurosurgical service.

Special types of head wound receive special consideration. Wounds involving the paranasal sinuses are described by STEWART and BOTTERELL, of the Canadian Neurological Hospital, by CALVERT, and by JOHNSON and DUTT. The authors agree that most of these wounds require repair of the overlying dura to ensure against meningitis, cerebral aerocele, or brain abscess. It is remarkable to what extent the elaborate operations necessary for dural repair could be carried out during the rush of battle-casualties. There are differences of opinion as to what is the best method of operative approach, and this should probably differ from one type of paranasal-sinus wound to the next. An admirable description of the mechanism of fractures and of the means of detecting inconspicuous ethmoidal fractures by means of stereoscopic radiography of the orbit is given by JOHNSON and DUTT.

SCHORSTEIN describes 83 cases of intracranial hæmatoma, and shows the importance of the small penetrating missile of high velocity as a cause of intracerebral clot.

CONNOLLY recounts his experience of old untreated suppurating brain wounds in 113 Yugoslav partisans, among whom with the help of sulphadiazine and local penicillin there were 90 survivors, notwithstanding the fact that the majority of these patients had brain abscess, or brain fungus, or meningitis, on admission to hospital in Italy.

P. B. ASCROFT gives a most interesting survey of the cause of death in over 500 head wounds, in which he shows the importance of associated wounds in other parts of the body and the need in such cases of paying close attention to the general condition of the patient. Among those with head wounds alone, neural damage (41%), intracranial sepsis (40%), and intracranial hæmatoma (6%) accounted for the majority of deaths.

A special complication of wounds of the body of the lateral ventricle is described by CAIRNS, DANIEL, JOHNSON, and NORTHCROFT. In the course of healing the walls of the ventricle may adhere, with the result that the temporal horn of the ventricle is sealed off from the foramen of Monro, and localised hydrocephalus develops, often causing symptoms suggesting brain abscess. The condition is easy to recognise once one is familiar with it; and it is easily cured by excision of the choroid plexus of the temporal horn.

Bacteriological studies of infected head wounds were made in Oxford (CAIRNS, CALVERT, DANIEL, and NORTHCROFT), in the Middle East (ASCROFT and PULVERTAFT), and in Burma (JOHNSON) where a particularly virulent form of ventriculitis and meningitis due to *Escherichia coli* was encountered. In the Middle East (1942) staphylococcus preponderated. In Oxford, brain wounds from north-west Europe in 1944 showed a 14% incidence of major infections, in which clostridia, non-β hæmolytic streptococci, staphylococci, and coliform organisms were the common organisms, in approximately equal proportions. It is remarkable that in 354 brain wounds CAIRNS and others found not a single case of β-hæmolytic streptococcus infection; they attribute this to the use of penicillin and the fact that opportunities for cross-infection of wounds were reduced to a minimum by complete closure of practically all wounds at the primary operation. Clostridial infection did not produce spreading gas-gangrene of the brain or symptoms of generalised toxæmia; it was not particularly virulent, the intensity of the intracranial infection being proportional to the severity of the cortical wound rather than to the presence of clostridia. With modern chemotherapy the most virulent organisms in acute infections after brain wounds were non-β hæmolytic streptococci—organisms which are often relatively resistant to penicillin.

It is too early yet to assess the late results of these brain wounds, but RITCHIE RUSSELL reports the results in 200 cases 14–18 months after wounding. This follow-up shows that 145 of the 200 were working and that only 16% had had generalised convulsions after leaving hospitals. These preliminary results are encouraging; they may be attributed to the low incidence of wound infection and to the excellent methods of rehabilitation, which are briefly described at the end of the fasciculus.

Some unusual cases of brain wound are described at length, and there is a bibliography of literature on gunshot wounds of the head published in Britain between 1939 and 1947.

NEUROSIS IN FACTORIES

A SURVEY, made between 1942 and 1944, of the incidence of neurosis among factory workers, its effects on production, and of the predisposing factors, has now appeared.[1] It was undertaken by a team provided by the Industrial Health Research Board of the Medical Research Council under the direction of Dr. Russell Fraser; his collaborators were Dr. Elizabeth Bunbury, Dr. Barbara Daniell, Miss M. Elizabeth Barling, Miss F. Estelle Waldron, Miss P. Mary Kemp, and Miss Imogen Lee.

Diagnosis was based on clinical appraisal of any recent illnesses; each person questioned was submitted to special investigations, and where necessary to full physical examination; and was, besides, intelligence-tested, interviewed by a social worker, and assessed psychiatrically by one of the three physicians in the team. Over 3000 workers were studied ıg 80% of a random sample from a total of 30,000 employed 3 light or medium engineering factories.

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[1] Ascroft, P. B. *Lancet*, 1943, ii, 211.

[2] Eden, K. *Ibid*, p. 689.

[3] Johnson, R. T., Dick, R. C. S. *Ibid*, 1945, ii, 193.

[1] The Incidence of Neurosis among Factory Workers. Medical Research Council: Industrial Health Research Board. Report no. 90. London: H.M. Stationery Office. Pp. 66. 1s 3d.

FINDINGS

he term "neurosis" was defined as including only se disorders which were clearly illnesses both in the tor's and the patient's opinion, and which were h neurotic in nature and also disabling—they had rly always caused absence from work. In practice, re were anxiety states, mild depressive states, essional states, hysteria, and a few instances of chosis. The term was not used to cover organic ous disease or mental defect. "Minor neurosis" used to cover such things as psychosomatic illness, raine, functional dysmenorrhœa, peptic ulcer, and r-like dyspepsia, as well as abnormalities of person- y sufficiently marked to indicate reduced mental health. n the sample of over 3000 men and women 10% % of the men and 13·0% of the women) had suffered n definite disabling neurotic illness; and a further % (19·2% of the men and 23·0% of the women) from or neurosis during the course of 6 months. Neurotic ess caused $^{1}/_{4}$–$^{1}/_{3}$ of all absence from work due to illness, $^{1}/_{8}$–$^{1}/_{4}$ of all absence from whatever cause. It accounted the loss of 1·09% of the men's possible working days 2·4% of the women's—a loss equal to 3 days' absence rly of every man and 6 days' yearly of every woman died. Neurosis was as common among those in the re skilled as among those in the less skilled jobs: ure to employ those with neurotic illness would thus uce the country's reservoir of skilled labour.

ince people differ in their susceptibility to illness, attempt was made to study their constitutional pre- position at the time of the survey. This was done by iewing the past health record, age, physique, per- ality, employment record, and intelligence level of h worker studied.

hose who had suffered materially from illness before the r were found to suffer similar illness during the six months died. Age was found to have little relation to recent illness; men of 41–60 experienced slightly more physical illness n the younger men. Physique, in the sense of strength l solidity of build, was related to recent experience of ess, those with better physique having less physical and rotic illness and less absence from work than the rest ng the 6 months of the survey. Those of adaptable and ble personality, persistent in the face of difficulty, had a er incidence of neurosis than the rest, while those whose its had become fixed suffered more than the average from ent neurosis. Those with a history of repeated changes of rk, or of more than 6 months' continuous unemployment ore the war, had had more recent physical illness, and bably more neurotic illness too, than others. People of intelligence suffered more physical illness than the rest, sumably because they were not so good at looking after mselves.

FAVOURABLE CIRCUMSTANCES

The team studied circumstances associated with less n the usual incidence of neurosis. First of these, narkably enough, was *more* than average normal mestic responsibilities, coupled with less than 75 hours ekly of industrial duty.

Examples of "average" normal domestic and allied ponsibilities, as judged by the team, are those borne by male householder with a family of 1–3 children of school and under; by a housewife with no children at home t doing her own housework as well as full-time work at the tory; and by a housewife with 1–3 children at home doing r own housework and also part-time factory work. Those th "more than average" responsibilities had similar duties those just given, but had, in addition, to shoulder any one the following: a family of more than 3 children under 14; rtially dependent parents; at least 12 hours' travelling to d from work weekly; (if a mother) sole financial responsi- ity for a child; other significant duties such as another rt-time job, civil defence work occupying more than 7 hours reek, or executive duties in some local organisation.

Other strong defences against neurosis were more than erage social contacts and congenial work. Mere free- m from worry seemed to be of little account beside ese, though a small group with considerable sources worry had more neurosis than the rest.

UNFAVOURABLE CIRCUMSTANCES

More than the usual incidence of neurosis was found among those doing more than 75 hours' work a week in the factory, those taking the least adequate diets, and those with restricted social contacts, recreation, or leisure interests. The incidence was also raised among widows, and among married women with only partial home duties. Those with considerable abnormal responsibilities—such as illness or death in the family, separation from close friends, and special shopping, housing, money, or transport difficulties—also showed a high incidence. Other factors favouring neurosis were boring or distasteful work; very light or sedentary work; work requiring skill inappropriate to the intelligence of the worker; assembly, bench, inspection, or toolroom work; work requiring constant attention, especially if it offered little scope for initiative or technical responsibility; work programmes with little variety; and badly lighted work.

The report notes that more variety and more scope for initiative and interest could be introduced without any fundamental alteration of production programmes. Poor lighting increases strain and makes the surroundings gloomy. Unsatisfactory human relationships inside the factory are also likely to influence emotional health, and therefore output.

PHYSICAL ILLNESS

More physical illness than the average was found among those having their first taste of factory work, those on very light or sedentary work, men doing the heaviest work, those receiving low wages, and those married women who had partial or minimal home duties.

Absence from work was below the average among those who liked their work, and above the average among married women with full or partial home duties, those with abnormal responsibilities, those working more than 75 hours a week, those receiving low wages, and those doing very light or sedentary work.

CONCLUSIONS

The team note that good welfare and social work within and without the factory would probably alleviate and prevent neurosis, as would better facilities for its treatment. Their main finding is that 10% of the workers studied suffered from disabling neurotic illness, and that neurosis caused over a quarter of all absence from work due to illness.

Medicine and the Law

Notifying the Coroner

Dr. Robert Forbes recalled in a recent letter (July 26, p. 153) the opinion of Sir Roland Burrows, K.C., obtained jointly by the Medical Defence Union and the Medical Protection Society, on the duty (if any) of surgeons and physicians to notify the coroner of the death of a patient. The first of the five points enunciated by learned counsel was that "there is no legally enforceable duty resting on a medical practitioner quâ medical practitioner to report any death to a coroner." The opinion was presumably confined to duties at common law; there is a limited and perhaps indirect obligation to notify under statute. Thus under the Habitual Drunkards Act, 1879, where anyone detained in a retreat dies, the principal medical attendant of the retreat must sign a statement of the cause of death, and a copy, certified by the licensee of the retreat, must be transmitted to the coroner. So also if the patient dies while absent from a retreat under licence, a duly qualified medical practitioner must sign a similar statement and the person in whose charge the patient had been placed must notify the death to the coroner, to the registrar of deaths, and to the local authority. It will be remembered too that a person in charge of an institution, hospital, or nursing-home, or of a single patient, must give the coroner notice of the death of a mental patient within the "prescribed time"—i.e., before the expiration of the second day after the death. That obligation was laid down in the Mental

Treatment Rules made under the Act of 1930, replacing section 319 of the Lunacy Act of 1890. Omission to discharge this duty is a misdemeanour. Two other statutory provisions with which the medical profession is not particularly concerned may be added. In the case of a foster-child or an adopted child the person having care of the child must give the coroner written notice within 24 hours of the death. The coroner must then hold an inquest unless, after receiving a certificate of the cause of death from the medical practitioner who has personally attended the child in its last illness, he decides that no inquest is necessary.

Such are some of the inroads which statutes make upon the common law. If these examples mildly qualify the general statement quoted above from counsel's opinion, they do not seriously diminish the importance or authority of the advice. On the other hand, as Dr. Keith Simpson says in our correspondence columns this week, "it is to be hoped that a too rigid interpretation of the Burrows opinion will not have the unfortunate effect of leading doctors to depart from the more practical custom of informing the coroner direct, either through his officer or the police."

Overdose of Carbachol

In our account (July 26, p. 148) of a fatality after an overdose of carbachol it was stated that the drug used was 'Moryl.' This is incorrect. Another preparation of carbachol, made by different manufacturers, was in this case the cause of death.

Public Health

AN OUTBREAK OF STAPHYLOCOCCAL FOOD-POISONING

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BIRKENHEAD

ON June 28 and 29, 1947, there was an outbreak of food-poisoning in Birkenhead and district, involving some 171 persons, 97 of whom received hospital treatment. The symptoms, which appeared $3\frac{1}{2}$–$4\frac{1}{2}$ hours after eating infected food, were vomiting, diarrhœa, and abdominal pain. All the patients recovered, the great majority in two or three hours, but a few were detained in hospital for two days.

The chief sanitary inspector was called out by the Birkenhead police at 9.40 P.M. on Saturday, June 28, and informed that patients with food-poisoning had been taken to hospital from all parts of Birkenhead. He got in touch with the acting medical officer of health and the borough bacteriologist, and a visit was made to a hospital where about 30 persons were being treated. They were guests from three wedding parties. Guests from a fourth wedding party were being treated at another hospital within the borough, and some children from a child's birthday party were detained at the county hospital.

Inquiries immediately revealed that catering for all the parties had been carried out either wholly or in part by one firm. The one food which had been supplied to all the parties was trifle, and such inquiries as could be made under the very difficult circumstances showed that all the persons affected had eaten trifle.

One of us (D. L. M.), who was acting as medical officer of health, contacted the manager of the catering firm and ascertained that the suspected food had been supplied only to special orders. Similar trifles were being served at a dance then in progress at the town hall, and the police confiscated all those not already eaten.

Bacteriological investigations were begun at once, and are referred to in detail below.

On Sunday morning, June 29, a meeting was held of the manager of the catering firm, the medical officer of health, and the chief sanitary inspector. The firm's order books were examined, and a list was obtained of 14 parties at which trifle had been supplied. The sanitary inspectors, working all day on Sunday, obtained complete lists of guests attending the various functions and visited all those living in Birkenhead. At functions where trifle was not served no cases of illness were reported. All the neighbouring local authorities coöperated in obtaining similar information from persons resident in their area. Out of 380 persons traced, most of whom had eaten trifle, the number affected was 171.

Samples of the ingredients of the trifles were submitted for chemical and bacteriological examination. Chemical analysis showed that all the materials were free from poisonous matter, but bacteriological examination produced very interesting results.

BACTERIOLOGICAL INVESTIGATION

The bacteriologist was notified by the chief sanitary inspector at 10.30 P.M. on Saturday, June 28. Outfits were collected, and a visit was made to a hospital to which some of the patients had been taken. Vomit and fæces had been plentiful but were by that time curiously scarce, most of the containers having been washed up for re-use. Only five vomits, and these mere residual fluids, together with three fæces were available for test. These were put on culture forthwith.

At midnight samples of all the foodstuffs involved, consisting of trifles, jellies, meat sandwiches, wedding cakes, and sausage rolls, together with whisky, wines, and lemon squash, were collected from the police. These were also cultured forthwith.

On Sunday, June 29, subcultures were made, and further vomits and fæces were received from another hospital.

By this time it had been established that trifles delivered from a certain bakehouse were the only common factor in all cases. *Staph. aureus* was isolated from several of these, and from a portion of jelly which had formed part of yet another batch of trifles from the same bakehouse. The drinks and all the other foods were clear, as were the ingredients of the trifles, examined separately. No evidences of salmonella infection were found anywhere, though many late lactose fermenters were found in the fæces examined. Biological tests were carried out with the trifle on guineapigs, by feeding experiments, with negative results.

On Monday, June 30, the bakery was visited, and the staff who had dealt with the trifles were examined. Swabs were taken from throat, nose, and ears of all concerned. An almost healed stye on the left eye of one (A.B.) was also swabbed. Cultures gave the following results:

A.B.	(throat)	*Staph. aureus* abundant
A.B.	(nose)	" " "
A.B.	(ears)	" " "
A.B.	(styo)	" " "
C.D.	(nose)	A few *Staph. aureus* (three colonies in all)

The others were all negative.

A.B. gave a history of having been off colour now and again for a considerable time, attributed to having given many pints of blood to the blood-bank. She had had a discharging ear some time previously, which apparently healed.

C.D. gave no history at all of any illness and, beyond being of a pale type, appeared perfectly healthy.

Coagulase tests were made of all the cultures available with the following results:

Trifle (all sources)	++
Jelly from trifle	++
C.D. (nose)	++
A.B. (throat)	+
A.B. (nose)	+
A.B. (ears)	+
A.B. (styo)	+
Vomit	+
Fæces	±

The other staphylococcus cultures gave no coagulase reaction, but the variation in the intensity of the positives gave the first hint of the real cause of the outbreak.

ultures were sent to Dr. V. D. Allison, of the Central blic Health Laboratory, Colindale, London, for typing phage reaction, with the following results :

Trifle	42 D
Jelly from trifle ..	42 D
C.D. (nose)	42 D
A.B. (throat)	52 A
A.B. (nose)	52 A
A.B. (ear)	52 A
A.B. (stye)	52 A
Vomit untypable	
Fæces untypable	

he source of the infection was therefore not the vily infected and clinically obvious A.B., but the er operative, C.D., who was apparently only lightly cted, and in the nose only. The staphylococci being lifferent types proves that there is no question of one rative having infected the other.

n interesting feature, which unfortunately could not proved, was that some of the guests at one of the ctions were reported to have had "boils and a stye" r the outbreak. News of this reached the laboratory a week or more after the occurrence. Though steps e taken to get in touch with all the groups of victims, further cases were noted, and those who had suffered cleared by the time the laboratory was notified, no staphylococci could be obtained. The report is ous, especially as there can be no question of post-hoc gestion, since it was mentioned before any suspicion *taph. aureus* had been made public. It is felt that point might be gone into in future outbreaks.

DISCUSSION

he origin and method of infection are clear. The ges for the trifles were broken up by hand about M. on Friday, June 27. The weather was extremely and steamy—ideal for the proliferation of *Staph. us* and the production of its toxin—and remained ntil the food was eaten next day. The trifles had efore about 24 hours' incubation. That certain parts the trifles were more heavily contaminated than ers (171 persons affected out of over 300 known to e consumed trifle) is a reasonable assumption from method of preparation, the sponge being a solid lium at the time of inoculation.

SUMMARY AND CONCLUSIONS

n outbreak of food-poisoning by *Staph. aureus* toxin due to the consumption of trifle.

he bacteriological evidence shows that infection took e from an operative in the bakehouse where the trifle prepared.

he weather was extremely hot and steamy for at least hours after preparation—right up to the time the l was eaten.

he advisability of adequate refrigerator accommoda- being available to all bakehouses where food has to ept overnight is indicated.

taph. aureus was found in two operatives, one heavily cted and clinically probable, the other slightly cted only and not clinically diagnosable.

he clinically probable operative was proved by ng to have no connexion with the outbreak, whereas lightly infected and otherwise apparently healthy ative was the source of contamination.

horough bacteriological investigation is therefore ortant even when the source seems obvious. The real in of infection was here effectively camouflaged cally, and could easily have been missed altogether less thorough bacteriological technique on the spot.

he danger of destruction of evidence by nurses in reaks of this character should be emphasised in curriculum. The material available in an outbreak his magnitude should have been much more volumi- than it was. Only juice, for example, was available the vomited material, with practically no food.

he problem of prevention of further outbreaks is more serious as the source of this infection was not cally apparent. The warm weather acting as an bator undoubtedly played a major part in the luction of the staphylococcal toxin. A laboratory ice might advantageously be given to places of food luction on the following lines :

) Only those engaged in preparing food which is not to ooked after preparation are concerned.

(*b*) Distributors of finished foodstuffs are not at present being considered. The essential feature in this outbreak is felt to be the long incubation within the material after preparation. Distributors, even if carriers, can under any reasonable conditions infect only portions of the surface and are therefore in a different category as potential sources of infection.

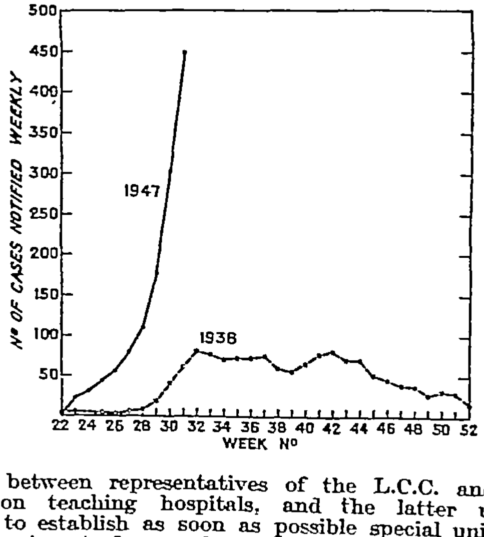
(*c*) As *Staph. aureus* can be clinically unsuspected, the services of the local public health laboratory should be available, so that operatives included under paragraph (*a*) can, during hot weather, be examined as a routine for *Staph. aureus* at such intervals as are practicable, probably monthly. Acute septic conditions, however small, should be reported to managers, who can then send the patient at once for examination. Simple plating is all that is needed ; but, if *Staph. aureus* is found, it can then be typed. No-one need be suspended from duty unless the organism is present. As refrigerators become more generally available, the tendency towards *Staph. aureus* outbreaks may well diminish.

We wish to thank Dr. Allison for typing the strains of staphylococcus isolated ; and Dr. F. G. Foster, medical officer of health, for permission to publish this report.

Poliomyelitis

During the week ended Aug. 2, 448 cases of poliomyelitis were notified in England and Wales. This is an increase of about 50% on the figure for the previous week (302). A rate of increase of this order has now been recorded for the last four weeks, and provisional figures available for the week ended Aug. 9 suggest that it is still continuing. The largest increases in notifications were in the following county areas, which include county boroughs (the figures for the previous week are shown in parentheses): Durham 45 (20) ; Lancs 36 (17) ; Yorks, East Riding, 16 (3) ; Yorks, West Riding, 70 (52) ; and Surrey 32 (15).

During the week ended Aug. 9, 106 cases were removed to hospital from the London County Council area as against 55 the previous week. Consultations have been held between representatives of the L.C.C. and the London teaching hospitals, and the latter undertook to establish as soon as possible special units for the treatment of cases of poliomyelitis in the acute stage occurring in the London area ; these additional beds will be allocated through the Emergency Bed Service (Tel. : Clerkenwell 6571).



PATHOLOGICAL SPECIMENS

As a result of a recent memorandum on acute poliomyelitis by medical officer to the Ministry of Health, which appeared in our issue of July 26, a large number of specimens have reached the Virus Reference Laboratory, Colindale Avenue, London, N.W.9. The laboratory are very grateful for the coöperation of clinicians and pathologists. It is, however, necessary to emphasise that the virus of poliomyelitis has never been isolated from cerebrospinal fluid and that specimens of C.S.F. were requested only from cases where it was possible that some other neurotropic virus might be the cause of the illness. Such specimens of C.S.F. must be packed in ice for transport. Specimens of fæces are not requested at present, since monkeys, which are the only animals suitable for primary isolation of the virus, are not available for this purpose.

In addition to the post-mortem specimens in glycerol saline for the Virus Reference Laboratory, it is also requested that representative specimens of spinal cord, as much as possible of the brain stem, and pieces of cortex, including the motor area, be preserved in formol saline and sent either to Prof. J. McIntosh, Middlesex Hospital, Mortimer Street, London, W.1, or to Dr. J. G. Greenfield, National Hospital for Nervous Diseases, Queen Square, W.C.1.

Beds for Poliomyelitis at Teaching Hospitals

The London teaching hospitals, some of which were already admitting occasional cases, have in the past week made special provision for the reception of acute cases of poliomyelitis. As is announced above, the distribution of cases is being arranged in conjunction with the Emergency Bed Service of King Edward's Hospital Fund for London. The allocations already made, some of which are only a first instalment, are as follows:

Hospital	*No. of beds* *Male*	*Female*	*Children's*
Charing Cross:			
Mount Vernon, Northwood	5	5	—
Guy's	4	4	3
King's College	3	3	4
London	12	12	10
Middlesex	8	6	16
Royal Free:			
Liverpool Road Annexe	6	—	6
Rheumatology unit, North-Western Hospital, Hampstead	4	4	—
St. Bartholomew's		Total of 42	
St. George's	9	9	—
Associated Victoria Hospital for Children, Tite Street	—	—	18
St. Mary's	2	2	2
St. Thomas's	22	—	—
University College		Total of 23	
Westminster	—	12	—

St. Thomas's and Westminster hospitals have a reciprocal arrangement for the transfer of female and male cases.

Some hospitals have established the beds in isolation units with separate medical and nursing staffs; while others, to conserve trained personnel, are admitting cases to the general wards, where they are nursed with "barrier" technique. The teaching hospitals undoubtedly have more nurses at their command than the London County Council institutions; and these dispositions will give welcome relief to the L.C.C. hospitals from a growing strain on their resources, already severely taxed by the continuing prevalence of measles, whooping-cough, and gastro-enteritis.

Diphtheria Prophylaxis

With the aim of getting at least 75% of babies immunised in their first year the Minister of Health is launching a further drive. In a brochure he suggests ways by which local authorities may contribute—through advertising in local newspapers, posters, films and slides, and leaflets; but "local publicity should have as its basis a scheme of personal persuasion."

Infectious Disease in England and Wales

WEEK ENDED AUG. 2

Notifications.—Smallpox, 0; scarlet fever, 803; whooping-cough, 1737; diphtheria, 200; paratyphoid, 19; typhoid, 6; measles (excluding rubella), 6954; pneumonia (primary or influenzal), 271; cerebrospinal fever, 48; poliomyelitis, 448; polioencephalitis, 39; encephalitis lethargica, 2; dysentery, 53; puerperal pyrexia, 145; ophthalmia neonatorum, 80. No case of cholera, plague, or typhus was notified during the week.

Deaths.—In 126 great towns there were no deaths from enteric fever or scarlet fever, 2 (0) from diphtheria, 1 (0) from measles, 8 (2) from whooping-cough, 52 (4) from diarrhœa and enteritis under two years, and 3 (0) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 252 (corresponding to a rate of 27 per thousand total births), including 32 in London.

In England Now

A Running Commentary by Peripatetic Correspondents

My asthma season begins every year during As Week and closes with the St. Leger. Once or twic has for some reason embraced the Cesarewitch, but it usually over by the time the Manchester Handicap has been run. In the meantime I suppose my poor old bronchi are being tormented by some devilish (and so far completely anonymous) pollen, emanating from an inoffens little plant I probably pass ten times a day without s much as a malicious glance. I know I'm too late for the buttercups, though, whose undramatic reproduct activity, given the right climatic conditions, fires of annual army of sneezers and wheezers. They tell me as soon as the fields are speckled yellow there has to be a rainy day followed by a fine morning, and the windows in Harley Street shoot up appreciati as they get ready for the rush.

My asthma has survived all sorts of times and con tions since my first attack was put down by my nur wandering about with wet feet in Skegness at the of four. It is bad in Cornwall, Cambridge, and Cotswolds, while the only spots that seem to do it good are, unfortunately, Paris, St. Moritz, and M Carlo. The colourful sun-drenched English countryside has for me only the dangerous beauty of Borgia. Nothing suits my respiratory tract so nicely a smoke-filled, stuffy, overcrowded, low-ceilinged as conveniently provided by the *innkeepers* England.

I started having treatment shortly after the ori Skegness incident. The family doctor, I suppose in good faith, packed me off to an E.N.T. surgeon who removed m tonsils and adenoids, with half my uvula as an ex They left me alone after that for no less than ten when I was operated upon again (for tonsils and adeno *Nowadays they content themselves with* X-raying sinuses, which remain, thanks be to God, frustra clear.

The next line of treatment I initiated at Reading an advertisement in the papers for some tablets guaranteed "to miraculously stop attacks in 30 seco I bought five bob's worth and swallowed a couple, m watch on the table in front of me. At the end of seconds *nothing* had happened, and I haven't tried the again since. Then I took to smoking herb cigarettes, whi gave me bronchitis and lots of fun when passed along row of friends in the darkness of the cinema. But a therapeutic measure and as a smoke they were eq unsatisfying.

With an increase in my medical knowledge came widening of my circle of treatment. As an undergrad at Cambridge I was skin-tested. A charming phys scratched a pair of tramlines down my left forearm great enthusiasm and no asepsis whatsoever. I found *hard to believe that such* delightfully named p should be the cause of all the trouble—Soft B Vernal and Cock's Foot for example, not to men Yorkshire Fog, Dog's Tail, and Sheep's Fescue. neither, apparently, were they. The only concl reaction was for lobsters and so forth, though I ha eaten *Homard à l'Americain* in midsummer with reprisal. I was *desensitised* against pollens, regardless effect on asthma—nil.

The next step was breathing exercises. These are doubt excellent, but I am one of those unfort people who can never follow *printed* directions for do anything, from blood-sugar estimations to (once upo time) dancing the tango. After getting myself into *sorts of respiratory contortions*, I let them slide.

About this time I qualified, mainly because they me up to a fellow-sufferer in the Conjoint clinical. the summer *sibili* set in again, I reached the sad concl there was but one therapeutic avenue down which had not yet taken refuge. I should have to se psychiatrist.

We had several little chats together, the psychia and I. Every visit convinced me more strongly neurotic I was, as he dug firmly into my past, care shaking the psychopathic worms out of each spad Had I ever any trouble with my sex life? Well, there time I inadvertently asked both staff nurses on my d to the same party on the same night. . . . How about ms? What sort of dreams did I have? I never m, except that someone is waking me up, when they My childhood then—was it unhappy? We even- y got back to Skegness at the age of four. He came ie conclusion my asthma was probably the result of dering about with wet feet.

now I have no alternative than, like Lord Beaver- k and King William III, to live with my asthma. n't worry about diet, but if I'm sharing a room with ne I warn them that the terrifying wheezes likely cur in the dead of night sound much more alarming they actually are. I take ephedrine (which keeps wake), 'Benadryl' (which sends me to sleep), and inophyllin' (diuretic). I've tried atropine, absti- e, alcohol, and adrenaline. Only the last is of any t all, but it's terrifying stuff to take. The injection s like a wasp, you can hear your heart-rate climbing igh, the bottom begins to drop out of your stomach, the top of your head wants to blow off. This is all worse by a concurrent feeling of panic. My rite weapon is an atomiser loaded with adrenaline 0. Carrying this in my pocket all summer spoils hape of my suits, but I'd rather leave my trousers me than be without it. By sneaking off into a quiet r for a sniff, à la Cocaine Joe, I can usually get lerful relief if I catch the attack early enough. I ecommend it, and often have done.

t long ago I saw two other beneficial measures ioned in the literature—boxing and marriage. But e adopting such heroic treatment, I'd like to try a nore cures first. Anyone know any?

* * *

vas interested in your peripat's difficulty in explain- he whereabouts of the Royal College of Physicians taxi-driver, as I had a somewhat similar experience. like my illustrious colleague (quarter of a century R.C.P.) I am an M.R.C.P. of one week's standing, although not in the taxi-rider's group I thought uld celebrate the admission to membership by this extravagance.

n inquiring my destination, the driver's face assumed ank stare. After a few moments' cogitation he enly smiled and said, "I know what you mean, the end of Canada 'Ouse."

* * *

e elderly French colonel from whom we have hired ummer chalet on Lake Geneva arrived this afternoon r back door dripping wet and clad in nothing but a of a cut so ancien régime that, fortunately, it reached knees. After kissing my wife's hand and exchanging sual prolonged compliments, he asked (*a*) if I was) if I had any chloroform, (*c*) if not, could I get ? My wife answered (*a*) that I was paid to sit at sk in the Palais des Nations from 8.30 A.M. to ; (*b*) that not, therefore, being a practising doctor, d no chloroform; and (*c*) that, being a foreigner, were doubtless regulations which would prevent etting any; and riposted by asking what he wanted ? It seemed that the old lady—also French—with n he was now lodging some 500 yards up the shore allen and cut her head, and, he greatly feared, broken rist.

wife at this point dragged him indoors—for the her was cool—and administered brandy, which he ved with many compliments on "ce vhisky déli- :" and a long story of how he had once had some Scottish regimental mess. He had come as quickly ssible for the chloroform in his boat, he explained, his elderly dog, wishing to accompany him and y falling into the water, he had fallen in himself ving her. But fortunately, Madame, I had pre- ly removed my coat, and (with a modest glance wards) it suffices. My wife then asked if the doctor sent him for the chloroform. But, no, it was not ssary to call in the doctor; only he feared that the lady would not sleep tonight without chloroform! r further compliments and hand-kissing, he took elf off, chloroformless but cheerful, leaving my dazed but clear at least on the causes of French pulation and why age is so respected in that try.

Letters to the Editor

INFORMING THE CORONER

SIR,—The opinion of Mr. (now Sir) Roland Burrows on reporting deaths to the coroner, which has once more been quoted in your columns, this time (July 26) in a letter from the secretary of the Medical Defence Union, however correct in law, is capable, if rigidly applied in practice, of bringing about one very unfortunate consequence.

While the doctor may have no "enforceable duty" to report to the coroner, very valuable time may be lost if he refrains from at once reporting a case that he *knows* will ultimately reach the coroner by way of the registrar of deaths. If, in such a case, he is content merely to drop his certificate in the post-box, two to four days may elapse before the pathologist can make his autopsy on the coroner's instructions. In hot weather this delay may be fatal to a useful autopsy owing to decomposition.

The remark attributed to Mr. Bentley Purchase on p. 147 of your issue of July 26 "that the coroner's desire to be promptly informed of cases in which an inquest may be necessary is based on the convenience of the relatives, not of the coroner himself" perhaps understates the urgency of the matter. It is no less important to the coroner that the pathologist whom he requests to perform an autopsy shall have the best facilities that can be offered: if the body has been allowed to decompose for two to four days the one really important "facility"—good fresh material for examination—will have been lost. Prompt autopsy is more important than prompt burial.

It is to be hoped that a too rigid interpretation of the Burrows opinion will not have the unfortunate effect of leading doctors to depart from the more practical custom of informing the coroner direct, either through his officer or the police.

Guy's Hospital, S.E.1. KEITH SIMPSON.

NUTRITION IN PREGNANCY

SIR,—It is generally accepted that the vital statistics of pregnancy and infancy are sensitive indices of the health of populations, and war-time experience in this country suggests that of all the environmental factors concerned, nutrition is probably the most important. The chief medical officer of the Ministry of Health[1] writes that "the national provision of milk and vitamin supplements . . . together with rationing and the greatly improved quality of the national loaf has contributed to the gradual decline in the maternal, neonatal and infant mortality and stillbirth rates" during the war. Baird[2] has pointed out that prematurity and stillbirth are more than twice as common among hospital as among nursing-home confinements, despite equivalence of medical care, and has given reasons for believing that nutrition is the most likely cause of the difference. Sutherland[3] has shown statistically that the stillbirth-rate is associated with nutrition and antenatal care, but not with overcrowding and its concomitant social handicaps.

In the light of such evidence some of Prof. C. A. Smith's findings[4] in an inquiry into events in north-west Holland during the winter famine of 1944–45 are unexpected. His facts were obtained from the records of a maternity hospital in Rotterdam and from other sources, several months after the famine ended. National statistics and data supplied to him by the Oxford Nutrition Survey indicated that during the early months of 1945 pregnant women in the affected Dutch cities were consuming less than 1000 calories daily, their diet having been reasonably adequate before the German blockade started in September, 1944, and again becoming fairly adequate soon after the liberation in May, 1945. That there was in fact severe undernutrition is supported by the statement that about 50% of women suffered from amenorrhœa, and that there was a fall in the birth-rate to about one-third of normal. The average birth-weight of

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1. On the state of the public health during six years of war, 1939–45. H.M. Stationery Office. 1946.
2. Baird, D. *J. Obstet. Gynæc.* 1945, 52, 217, 339.
3. Sutherland, I. *Lancet*, 1946, ii, 953.
4. Smith, C. A. *J. Pediat.* 1947, 30, 229.

infants born in hospital fell to about 90% of normal, but the weight attained or exceeded normality within two months of the liberation, indicating that the effect was produced by underfeeding during the last part of pregnancy. Prematurity (defined as birth-weight of 5 lb. or less) was not significantly increased in "hunger" pregnancies. Stillbirths actually decreased, according to hospital, municipal, and national statistics; and there was no increase of neonatal mortality (defined as deaths in hospital during the first 10 days of life). The proportion of infants who were breast-fed, and the duration of breast-feeding did not show any significant abnormality.

Considering the amount of famine in the world recently, there are surprisingly few parallel accounts in the literature. Antonov [5] has described experience in the Leningrad State Pædiatric Institute during 1942, when amenorrhœa became "widely prevalent" among women; and the average birth-weight of infants at the height of the siege fell to about 85% of normal. The hospital stillbirth-rate doubled, and prematurity (defined as length at birth less than 47 cm.) became very common. There was a high neonatal mortality (21·2%; no definition of neonatal mortality is given). Capacity for breast-feeding was never abolished, but less milk was produced and the period of breast-feeding became shorter. Struthers,[6] whose writing reflects considerable scientific scepticism, says that in the large German cities in 1945, when starvation seemed imminent, there was no change in birth-weights, but prematurity and missed abortions were more common than usual, and breast milk tended to fail after about six weeks. Amenorrhœa was very common among women in the Ruhr; this he attributed to emotional factors. Middelhoven [7] reports that in Amsterdam during the famine many infants, though not premature, were underdeveloped, had very poor temperature control, and were prone to an obscure and deadly gastro-enteritis. French and Stare [8] say that in Rotterdam the infant-mortality rate rose from 126 in 1944 to 319 in 1945. (Incidentally, the 1944 rate is extraordinarily high; in 1938 it was 30.) On the whole, Smith's surprisingly negative findings are not in harmony with these parallel observations, but there is little or no information which contradicts him conclusively.

It is not easy to find a loophole in Smith's evidence, but certain theoretical possibilities should be considered, especially since studies of human famine cannot be repeated at will. One must assume that the Rotterdam clinical records, on which his main conclusions were based, referred to severely undernourished women. There is, however, no direct evidence on this point, though one would have expected clinical data to have been available, since women consuming considerably less than their basal requirements would be expected to show clear signs of starvation. Famine undoubtedly existed in the area [7–11]; but that women were less severely affected than men is suggested by the report [8] that the male death-rate in Rotterdam was 248 and the female rate 69% above the 1944 levels. The possibility that some pregnancies occurred without being reflected in the birth-rate does not seem to have been fully considered. While the incidence of amenorrhœa was about 50%, births fell to about one-third of normal. The presented evidence on abortions, which shows a decreased incidence, is admitted to be unsatisfactory. And although "stillbirth tends to be reported with some accuracy (as compared with the unsatisfactory information concerning abortions)" notifications may have been incomplete during a period of comparative civil disorganisation and widespread starvation, with its resultant apathy, especially since nothing could be gained by such reports. Established pregnancy, on the other hand, would probably be reported in all cases, in order to establish priority for rations; and hence it is disappointing that numbers of rationed pregnancies were not equated with numbers of births plus stillbirths. Such an equation might have revealed numbers of surplus pre which presumably would have ended in unrecorded carriage or stillbirth. Finally, in an account of kind it is desirable to know something of the condit under which hospital records were compiled by originators. Clinical accounts such as that of M hoven [7] indicate that at least some hospitals were exactly cases of calm routine, but shared in the ordinary hardships suffered by the population at Would statistics collected under such conditions entirely comparable with those of normal times, or the Rotterdam maternity hospital unusually fortunate? Though Smith doubtless considered this point, his on comment is that the records were "presumably accurate.

Other reports on the Dutch famine are said to be publication. They will be read with interest. while, Smith's findings underline the need for f study, but do not mean that statistics of mo connected with reproduction and infancy have little no bearing on the social and nutritional well-being populations.

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5. Antonov, A. N. *Ibid*, p. 250.
6. Struthers, R. R. *Canad. med. Ass. J.* 1946, 55, 152.
7. Middelhoven, A. *Ann. Pædiat.* 1945, 165, 225.
8. French, O. E., Stare, F. J. *J. Nutrit.* 1947, 33, 649.
9. Cardozo, E. L., Eggink, P. *Canad. med. Ass. J.* 1946, 54, 145.
10. Burger, G. C. E., Sandstead, H. R., Drummond, J. *Lancet*, 1945, ii, 282.
11. Dols, M. J. L., Van Arcken, D. J. A. M. *Milbank mem. Fund Quart.* 1946, 24, 319.

DISTRIBUTION OF STREPTOMYCIN

SIR,—Your leading article of June 14 states that are some 2000 cases of tuberculous meningitis a and that the Government hope for a production perhaps 250 g. of streptomycin a month by next J enough to treat at most 50 of these 2000 cases. Y complacency, and the Government's, in the face of abject failure of nationalised medical care, does however, end there; for it is repeatedly suggested your columns and in Mr. Bevan's statements in House of Commons that the value of streptomycin pulmonary tuberculosis is still unproved, and that would therefore be unjustifiable to embark on expense of full production until the M.R.C. trials been completed. Yet it has already been shown competent American investigators that strepto will save the lives of most patients who have disease of the lungs or acute exudative disease. As that there are three times as many deaths from disease as from tuberculous meningitis, and a like n of deaths from acute exudative disease, there will some 10,000 or more deaths from tuberculosis next which could have been prevented by an adequate of streptomycin. Moreover, streptomycin is of greatest value as an adjunct to surgical procedures pulmonary tuberculosis, making for greater safety quicker healing; and even as a palliative measure it invariably be relied upon to lessen cough, reduce fe and improve well-being.

This complacency in all aspects of tuberculosis con- is of course of long-standing: thus in noting (in the issue on p. 837) the great success of the Minnes scheme in lowering the incidence of infection, you that it "is not as a whole applicable to centres in country." Why on earth not? Likewise, after 40 y of Government administration for tuberculosis, almost as long a period of Government control of production, we still have thousands of children inf and crippled by the bovine bacillus every year. If United States can eliminate tuberculous dairy c so that tuberculosis of bone and joint in children practically unknown, why cannot England do the s

Lest you should wonder why a cancer specialist sh write to you on tuberculosis, may I briefly recount following case?

In April last year a thoracoplasty was done for a cavity in the left upper lobe. Unfortunately the day the first-stage operation, atelectasis of the left lower ensued, and then tuberculous bronchopneumonia, began to stabilise some weeks later. In July, how after several attacks of unexplained pyrexia, a sk showed a hæmatogenous spread throughout the right On August 6, when the patient was practically mor- streptomycin was started; by the 16th cyanosis had appeared, fever had subsided, and appetite returned. 3 g. daily for 120 days the sputum became negative.

ear later, it would be impossible to tell from the skia- ns that the lungs had ever been infected with tuberculosis, omplete is the resolution not only of the right-sided ury disease and the exudative disease in the left lower , but even of the caseo-cavernous disease in the left r lobe.

you publish this brief case-history, it would be ng not to acknowledge with gratitude the extra- nary generosity and kindness which our American Canadian colleagues have shown to the stranger in their gates.

RALPH PHILLIPS.

mmit Park Sanatorium, Pomona, N.Y., U.S.A.

* Complacency about any side of the campaign nst tuberculosis would certainly be out of place. n sufficient expenditure, the disease is one that is rollable and ultimately preventable; but at present not being controlled. So long as this is so, there be some hesitation about diverting any large ortion of our limited resources to the development a expensive remedy which is promising rather than en. Our correspondent is, we believe, overstating incidence of the miliary and acute rapidly fatal lative forms of the disease, neither of which perhaps ommoner than tuberculous meningitis. As for ionary tuberculosis in general, caution will remain ssary until the merits of streptomycin have been demonstrated in an organised investigation. If eem to be carrying caution too far it is only because implications, and the hopes aroused, are so tre- dous. The largest possible trials are required, and a relief to learn that the amount of streptomycin produced in this country by next summer, though in relation to American output, is likely to be y greater than the 250 g. a month which was formerly aoned.—ED. L.

VISITING THE SICK

R,—I write in connexion with Miss Olive Matthew's r, published in your issue of Aug. 2.

r some years friendless inmates of public-assistance tutions and chronic-sick cases in hospitals under the C. and a few other authorities have enjoyed the ces of the Pen Friends Guild, whose members spond with old or sick folk who have no other act with the outside world. The pen friendships have resulted have been so greatly appreciated I am anxious to see the service extended, and should ery glad to hear from anyone who might be willing rganise a county branch of the guild. The work be undertaken even by busy people, since it can egulated in accordance with the time that can pared.

M. A. PRATT
Hon. Secretary, Pen Friends Guild.

view, Bryants Bottom, Great Missenden, Bucks.

LEUCOPLAKIA

R,—Leucoplakia vulvæ and kraurosis are very rare. oplakia is a precancerous condition, in which diagnosis is important. Leucoplakia, kraurosis, many of the maladies described in gynæcological ooks are usually vulvar dermatitis, associated with nplicating factor such as uterine, vaginal, or urethral arge. The whitish, macerated, horny epithelial seen with many of the dermatological conditions ting the anogenital region and surrounding area too often in the past been called leucoplakia. If word is retained, a better term would be "leuco- c vulvitis." In the late stage of vulvitis a degree ontraction occurs which has been mistaken for rosis.

me years ago[1] I described in detail several cases ved over many years, and at the request of omyns Berkeley I wrote an article[2] on the diagnosis treatment of these maladies, in which the work of ent dermatologists of Britain, France, Germany and ica was summarised.

uring twenty years the cases sent to me by gynæ- ists labelled leucoplakia could be placed under these headings—lichenification, eczema, intertrigo, tinea cruris, seborrhœic dermatitis, and eczematised psoriasis; or, less commonly, erythema multiforme, scleroderma, pemphigus, dermatitis herpetiformis, and lichen sclerosus.

I was interested to see from your annotation of July 26 that œstrin therapy has fallen out of favour; I long ago came to the conclusion that more rapid and enduring results were obtained by pelvic diathermy (Cumberbatch technique). Vitamin A is certainly of value, but with war-time diet it is difficult to appraise its effect when other remedies are also employed.

London, W.1. AGNES SAVILL.

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[1] Brit. J. Derm., 1940, 52, 321, 353.
[2] J. Obstet. Gynæc. 1942, 49, 310.

A HYGIENIC FORK

SIR,—Dr. Gordon is doubtless bacteriologically right in condemning the present design of forks (Aug. 9, p. 220), but he cannot blame it on our ancestors. I happen, as I write, to be finishing my breakfast with an 18th-century fork. It has three prongs, no ridges of any kind, and the business part glides into the handle with a rounded smoothness which knocks spots off Dr. Gordon's bevelled *edges.* Also, a small point, it looks beautiful, which is more than can be said for Dr. Gordon's drawing.

Oxford. E. M. VAUGHAN WILLIAMS.

BOARDS AND MANAGEMENT COMMITTEES

SIR,—The regional hospital boards must soon decide the principles which are to guide them in the appointment of hospital management committees and their officers. The sources from which any bodies are renewed —or, in the Churchillian phrase, "refreshed"—determine their strength and vitality; and future membership of the boards, at least on the lay side, will no doubt go to those who distinguish themselves on the hospital management committees. When we come to the actual recruitment of the management committees, however, we have less grounds for confidence.

It seems to me that your leader of July 12 hardly goes far enough. It is in effect a powerful plea that the management committees should have a dominant voice in the selection of their members. The committees of voluntary hospitals are at present largely composed of those who work or pay, or perhaps do both. Justification by works is an excellent credential for any man, but will this method of selection necessarily prove adequate in the new conditions? Some hospital committees seem to be out of touch with the broad currents of local life, and while this was a serious enough defect under the old system it may prove disastrous under the new. The regional boards of the future will require to be broad-based on the hospital management committees, and the proper manning of these may ultimately make or mar what the Minister is the first to admit is an administrative innovation. It is to be hoped therefore that both regionally and locally there will be a sustained effort to keep the membership of the committees in full and continuous contact with the life of the communities they serve.

And what of regional administration? You speak of global budgets instead of itemised control. So far so good; but what is to be the guiding principle in determining the size of the regional budget? Will this be based on the population of the region, or on the number of existing hospital beds; and will the development budget be determined on the bed deficiencies? Having determined the size of the regional budget, how is this to be apportioned by the board? The boards have responsibility for the acts of the hospital management committees to which they delegate many of their powers. What will happen to the management committee which overspends its appropriation? The only remedy for wilful default in this matter appears to be the supersession of the committee.

The regional boards will no doubt set out determined to afford the widest degree of autonomy possible to the management committees. But the committees are to appoint and dismiss staff, not in their own name, but in that of the regional board, which will be in a contractual relationship with the staff concerned. Is it fanciful to see in this arrangement a potent source of difficulty and embarrassment?

Complaints are of first-class importance in any organisation. From them administrators learn the day-to-day lessons of their job. Failure to deal adequately with complaints is probably the greatest source of irritation to the consumer, and much of the impatience displayed in dealing with large institutions arises from the apparent lack of satisfaction given to complainants. A hospital management committee is the agent of a board. *A justified complaint against a hospital may be* the measure of the committee's failure adequately to discharge their responsibilities. Are they always to be judge and jury in their own case, and is a board to deprive itself of the educative value of handling complaints? Sooner or later the Minister must be involved, as he is at the present time—but with the cardinal difference that in the future he will have the final responsibility to the public. The regional boards cannot be content to act merely as a channel of communication between the central authority and the hospital management committee, nor to accept, without question, explanations which may ultimately reflect on the manner in which their obligations have been discharged.

When the boards become responsible for the hospital finance of the region there will fall to them the invidious task of attempting to iron out inequalities of wages and salaries and conditions of service generally. Moreover in times of general shortage of both goods and services the boards cannot allow the individual institutions to compete with each other and to compel a rising scale of costs at the expense of the regional budget.

The chief criticisms against the existing hospital services, apart from the inequalities of provision and lack of overall planning, are to be found at either end of the scale. The larger hospital authorities have been criticised for their bureaucratic tendencies and the smaller hospitals for having parochial outlook and being in some cases a vested interest. It seems that there will be an impetus towards compelling the regional boards, in sheer self-protection, to limit the degree of delegation which every fair-minded observer would like to see granted to the hospital management committees.

The whole success of this great venture may therefore depend firstly on securing that the committees attract and recruit their members from the widest field, and in their administration strike a nice balance between centralisation and devolution. To do this will require their unceasing vigilance, and they will have the right to expect that the *management committees are* sympathetic to the great difficulties with which they will be confronted.

Southend-on-Sea. J. STEVENSON LOGAN.

ÆTIOLOGY OF DISSEMINATED SCLEROSIS

SIR,—Your annotation on July 19 contained a quotation from the paper of Kabat, Wolf, and Bezer on the production of brain lesions by injections of heterologous brain tissue with "adjuvants" into monkeys. The lesions are described as perivascular polymorphonuclear infiltration associated with œdema, degeneration of myelin, and occasionally fresh hæmorrhages.

In my experimental work on heat-stroke I found lesions similar to these, except that hæmorrhages were absent, in the brains of many rabbits after subjection to hyperthermia. My experiments are referred to very briefly in the *British Encyclopædia of Medical Practice*, Cumulative Supplement, 1947, p. 127; I have not yet had time to publish them in full. Microscopic *hæmorrhagic* lesions in the brain after hyperthermia have been described by Hartman [1] and others.

It is possible that the brain plus "adjuvants" injected by Kabat et al. may act as foreign protein and cause the animal to become pyrexial, even hyperpyrexial. I was puzzled to explain the lesions in my experimental material: I thought the changes might be due to a combination of hypoxia and ischæmia; an immunological explanation did not occur to me. The blood of hyperthermic animals inclines to a relatively low pH due to outpouring of lactic acid from the heated and oxygen-starved tissues, principally muscles. Many years ago Suzman (in a paper in the *British Journal of Experimental Pathology*) showed that emulsions of brain tissue added to saline suspensions of *killed bacterial cultures* produced agglutinins of very high titre in the blood of rabbits after subcutaneous injection. The explanation then given was that the brain emulsion caused rhythmical contractions of the spleen. The brain emulsions used were highly diluted and autoclaved before injection.

Under the circumstances it is rather curious that the effective treatment employed by Prof. P. O. P. Clarke should be repeated T.A.B. pyrotherapy.

Epping. FRANK MARSH.

ELECTRONARCOSIS

SIR,—The report by Dr. Spencer Paterson and Dr. Milligan (Aug. 9) holds out hope that electronarcosis may prove another useful treatment in psychiatry. I have just returned from a visit to the U.S.A., where I found opinion still much divided on its value. It probably be some time yet before we know its p use in relation to the present established methods treating schizophrenia.

Meanwhile there is a real danger to be guarded When electric convulsion therapy was first introd *it was too rapidly suggested as* a possible simpler stitute for insulin. This had unhappy results for patients who were given it instead of insulin in the recoverable stage of their illness. Findings now s that some drifted into chronicity as a result.

I do hope therefore that electronarcosis will not used too widely as a substitute for insulin till fin as to their relative values are fairly certain. Now machines are becoming more easily available for our we do not wish for a repetition of the E.C.T. tr. To allow a schizophrenic to drift into avoidable c may mean thirty years' suffering for the patient and large financial burden to the relatives or the State.

Sutton Emergency Hospital. WILLIAM SARGANT.

ACTINOMYCOSIS OF RECTUM

SIR,—In connexion with an investigation which I making into the incidence and symptomatology actinomycosis involving the rectum and anus, I be greatly obliged if any of your readers would let have details of any such cases which may have under their observation.

20, Rosecroft Avenue,
London, N.W.3.

V. ZACHARY CO

ADMINISTRATIVE RESPONSIBILITIES OF TH MATRON

SIR,—May I correct the statement of your spondent of July 26 (p. 147)? The Association of H Matrons drew up, in 1945, "suggested standing for matrons" which were intended to help indi hospitals to compose their own, as the first p stated. It has been no part of the policy of the A *tion to lay down regulations or* standing orders hospitals; we have merely offered helpful su Contrary to the impression of your correspondent, association had in mind every kind of hosp voluntary, municipal, and private. Since these different practices, main principles only were set for adaptation and amendment to suit the require of each. Suggestions were also made for procedure be followed when the office of matron became vacant

This association does recognise that the h governor, secretary, or medical superintendent, as case may be, is the chief executive officer of the h and that the closest liaison on administrative is necessary between himself and the matron at all t Professionally she is head of the nursing staff, but problems arise she should consult with the chief ex officer. There are still, however, hundreds of hos in this country where the matron carries out the d of the chief executive officer as well as her own; difficulties have mainly arisen in such hospitals whe chief executive officer has been appointed, and, wit any explanation on his part or the part of the com has taken over the duties, and has totally disregarded proper professional standing of the matron.

Certainly the matron should be capable of cooperation with the other departments of the hos that is one of our recommendations.

E. COCKA
Hon. Secr

Association of Hospital Matrons.

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[1] Hartman, F. W. *J. Amer. med. Ass.* 1937, 109, 2116.

[2] See *Lancet*, July 143.

Parliament

ON THE FLOOR OF THE HOUSE

HE crisis turned what was to have been a short k with an adjournment motion for the recess into a long week. On Bank Holiday Monday after an iustive debate on Germany and Austria we went on inish with the Agriculture and the Transport Bills did not rise till 6.45 A.M. on Tuesday.

ie Government have stated that after the end of current period Great Britain cannot continue to in dollars for supplies to the German people. They also been forced to impose heavy taxation on ywood films. It is hard, concrete, ungetoverable ulties of this kind which may be part cause of the ig out of the original Marshall "plan" into a nebu- Marshall "suggestion." The original proposal was cted to bring help to Great Britain by the end of and before the adjournment of the American ress. But, as Mr. Attlee made clear in his speech ie Commons, it is impossible for this country to ne permanently dependent on the U.S.A.; and ress has adjourned till January, 1948, with no offer is country.

ie programme of austerity announced in the debate ednesday and Thursday on the state of the nation price of British freedom, and the Battle of the Gap i. Many expedients for reducing our expenditure considered, including a heavy cut in our Armed es. A reduction by half was in the minds of many ibers. And some bigger reduction than at present ested may have to be made, because expenditure iem is one of the biggest items of our budget. We ot cut down essential basic foods, although we can must cut luxuries. We must produce more and rt more, and this we cannot do if the workers are well enough fed.

is expected that the Paris consultations on the hall offer will consider the possibility of an economic ration of the western European countries there sented. In the crisis debate it was suggested that integration should extend to the agricultural countries astern Europe—in particular Hungary, Roumania, oslavia, and Czechoslovakia—and beyond that to Soviet Union. It is significant that arrangements since been announced with Hungary for supplies acon, eggs, and fats. Those M.P.'s who are also omists think the days of the old free multilateral is over and that regional arrangements must ce them. The North and South Americas make such region. The British Commonwealth with the nies makes another. Add to the resources of the h Commonwealth those of continental Europe and Soviet Union and you have a region potentially as s the two Americas. It is considerations such as these are the daily bread of Parliament at present. And o vast economic changes in production and trade that vernments must look forward. The crisis is not that itain alone; it is the growth of a new world out of ld, and the new forces are at work under our eyes.

MEDICUS, M.P.

FROM THE PRESS GALLERY

Tribute to the Indian Medical Service

the House of Lords on Aug. 7 the Earl of OWEL, in the course of moving an appreciation ie work of the civil and military Services of the n in India, said that the Indian Medical Service, gh its primary function had been the care of these ices, had also contributed substantially to the nce of medical science and had played a leading in building up a modern system of applied medicine dia. Its research into the cause of malaria resulted liscoveries about the malarial mosquito which led the Panama Canal to be built. In the applica- of medicine it reduced the death-rate from cholera dia by two-thirds, and its mastery of the diagnosis treatment of many tropical diseases had brought to thousands of victims. It was the pioneer, for many years the only source, of medical education, the father of the three medical colleges which were ded in British India in the nineteenth century. The result of the pioneer work done by the I.M.S. was that India now possessed a well-organised medical profession of more than 50,000 practitioners. The PRIME MINISTER, moved a similar resolution in the Commons.

Medical Practitioners and Pharmacists Bill

In answer to a question, Mr. H. MORRISON stated that this Bill had been published in order that the House and the country should be aware of its proposals. It was not proposed to proceed with it this session.

School Medical Services

In introducing the estimates for the Ministry of Education in the House of Commons on July 31, Mr. TOMLINSON said there were some 5 million children in the schools, but among that large family there were 75,000 handicapped children—only $1^1/_2\%$ it was true, but the nation would be judged as much by what it did for the $1^1/_2\%$ as by what it did for the $98^1/_2\%$. Therefore, he was pleased that in dealing with the problem of the handicapped child some progress had been made in the Ministry's specialist organisations and services.

The rise in the number taking milk in schools had been remarkable. In June, 1946, it was 3,370,000, or 72%; in June, 1947, when milk was free, it was 4,300,000, or 92%. Of all milk given in schools, 94% was either heat-treated or tuberculin-tested. About 50% of the school-children today were receiving meals in school: more progress could have been made but for the decision to put the provision of huts in preparation for the raising of the school-leaving age before the feeding of children.

QUESTION TIME

Consumption of Foods in 1946

Mr. P. FREEMAN asked the Minister of Food what was the total weight and value of all principal foods consumed in this country in 1946; and the corresponding details for foods supplied to restaurants and canteens, separately—Mr. J. STRACHEY gave the following figures:

	Total food		*Catering establishments*	
	Quantity '000 tons	Value (*a*) £'000	Quantity (*b*) '000 tons	Value (*c*) £'000
Bread	4,415	101,638	503	10,941
Flour	1,753	33,887	89	1,946
Cakes and biscuits ..	1,113	150,104	107	13,201
Meat and offal (*d*) ..	1,814	211,347	182	21,140
Canned meat	172	32,229	15	2,667
Bacon and ham (*e*) ..	306	57,255	21	3,416
Fresh fish	1,072	81,591	—	—
Butter	229	40,957	20	3,337
Margarine, lard, and cooking fat	504	39,877	58	4,292
Fresh milk (*e*)	6,700	207,798	959	28,799
Canned milk	166	14,026	17	1,337
Dried milk	42	8,205	3	224
Cheese	218	25,983	20	2,118
Eggs in shell (*e*) ..	201	27,054	—	—
Dried egg	37	17,719	5	2,274
Tea	191	63,328	32	10,129
Sugar	1,254	49,506	92	3,155
Jam and marmalade..	283	33,591	28	2,801
Chocolate and sugar confectionery ..	232	49,529	24	4,136
Potatoes	5,502	60,225	—	—
Vegetables	2,265	116,844	—	—
Canned and dried vegetables	349	25,660	—	—
Fresh fruit	985	95,518	—	—
All other foodstuffs..	—	178,875	—	69,582
	—	1,722,746	—	185,495

(*a*) These values are the totals of the estimated expenditure in the following five categories:

(i) Domestic purchases of food by households at retail prices, together with the value at farm prices of produce consumed on farms, and the value at the cost to the consumer of welfare foods provided under the National milk, milk-in-schools, and vitamin schemes.

(ii) Purchases by category A catering establishments (restaurants, hotels and all residential establishments, together with institutions such as Services hospitals, orphanages, and hostels, and school canteens and feeding centres, war-time nurseries, and public and private day schools) valued at the prices paid by these establishments.

(iii) Purchases by category B catering establishments (voluntary services canteens, fire and police canteens, industrial A and B canteens, youth service centres, workers recreational clubs, and all other cadet clubs, &c.) valued at the prices paid by these establishments.

(iv) Purchases by the Services of food for the Armed Forces in the U.K. valued at the prices paid by the Services.

(v) The quantities of ingredients used for the production of manufactured foods and their value at the prices paid by manufacturers are included against the ingredients where these are given separately in the above table. The value of other ingredients and the added value resulting from manufacture are shown against all other foodstuffs.

(*b*) The quantities of unrationed foods consumed in catering establishments are unknown. An estimate of their value is included in the total. (*c*) These values represent the totals of groups (ii) and (iii) noted in (*a*) above. (*d*) Including canned corned meat and pork self-suppliers. (*e*) Including self-suppliers.

Poliomyelitis

Asked by Mr. E. FLETCHER whether any general direction has been given for closing swimming-baths in districts where poliomyelitis occurs, Mr. A. BEVAN, Minister of Health, said: I am exceedingly anxious not to create an atmosphere of panic. It must be remembered that sad and calamitous though the consequence of this infection often is, there are very many other epidemics which are very much more serious, and we must keep a sense of proportion. I believe that the psychology of panic would be far worse than the advantage of any directions that I would be able to give.

Mr. G. NICHOLSON: While I accept and agree with what the right hon. gentleman has said, does he not think it would be advisable for his department to make such statements on the disease in order to allay anxiety and to tell parents how best to try to avoid sources of infection? Surely a little guidance is needed.—Mr. BEVAN: I have already given guidance, and general information has been given from the beginning. I must warn the House against frightening parents unnecessarily.

In further answers Mr. BEVAN said there was no evidence whatever of the slightest connexion between malnutrition and infantile paralysis. Research on this, as other virus diseases, was at present a matter for the Medical Research Council.

Colonel M. STODDART-SCOTT asked the Lord President of the Council what public money was being spent on research into the causes, prevention, and treatment of infantile paralysis.—Mr. H. MORRISON replied: Research on virus diseases, of which infantile paralysis is one, forms an important part of the programme of the Medical Research Council, and over £10,000 is being spent upon it in the present year. The proportion of this represented by the salaries of workers devoting most of their time at present to studying infantile paralysis is about £2000.

Homes for Aged Persons

Mr. F. MESSER asked the Minister of Health if he was aware that some voluntary organisations were deferring the setting up of homes for old sick people owing to their doubt as to whether such homes would come under the regional hospital board; and if he would make clear the position of such non-profit-making establishments.—Mr. BEVAN replied: I know that doubts have been expressed. The position is that if a non-profit-making home exists to provide medical or nursing care for old sick people it in future becomes the responsibility of the hospital service, unless specially disclaimed by me. This does not mean that a home existing for the aged non-sick is precluded from arranging minor facilities for minor ailments, or, for example, the periodic visiting of a doctor. But if it becomes a place whose function is essentially the care of the sick the position is as above.

Penicillin for Germany

In answer to a question, Mr. C. P. MAYHEW stated that in May, 1947, the issues of penicillin to the British zone from official sources in mega units were: for venereal-disease cases, 1271, and for non-venereal-disease cases, 100. An additional 2000 were issued from non-official sources for non-venereal-disease cases. In August 5000 mega units will be available from official sources.

Recruitment of Nurses

Mr. A. L. SYMONDS asked the Minister of Health if he had now given consideration to the practical effect on recruitment to the nursing profession, on the Rushcliffe scale of salaries, of recent judgments of magistrates at Clerkenwell and Wealdstone.—Mr. BEVAN replied: I understand that this matter is being taken to the High Court.

Health Education Films

Mr. G. COOPER asked the Minister if he would consider sponsoring a British film through the Central Office of Information, for use in senior schools and for the education of the public in childbirth and maternal and child welfare including the work of antenatal clinics.—Mr. BEVAN [illegible] The Ministry of Health has already produced, through Central Office of Information, a series of films on the of young children. Others on various aspects of m and child welfare are in production or planned.—Mr. COOPER: Does the Minister realise the extraordinary [illegible] human interest taken in an American film which being shown at a cinema in the Charing Cross which has attracted very great crowds? Does he not t that it is important to show the public of this country British practice as distinct from the American practice? Mr. BEVAN: We are indeed showing a large number English films. I would resist any inclination to believe the Americans in this matter are more forward than we are.

Colonel STODDART-SCOTT: Will the Minister p the House that he will not have shown in senior schools film which shows a detailed, factual and faithful repro of the operation of childbirth, which can only have a det effect, ultimately, on the birth-rate? Mr. BEVAN: I am that the Minister of Education and I will bear in mind technical advice we have on this subject, but the effect on psychology of the child seems to be a matter upon laymen have as much information as specialists.

Fruit Content of Jam

Sir E. GRAHAM-LITTLE asked the Minister of whether he would make it clear to the public that full fruit standard of English jam contained only 10% the fruit specified on the label, the other contents extraneous matter.—Mr. STRACHEY replied: hon. Member is mistaken in thinking that any full standard jam contains only 10% of the fruit specified on label. In no case may the fruit content be less than [illegible] The only other ingredients that may be used are sugar, and, where necessary, traces of colouring matter and servative. I do not regard any of these ingredients as the normal meaning of the term "extraneous matter," they are essential to the best manufacturing processes.

Obituary

JOHN SCOULER BUCHANAN

M.B. GLASG., F.R.F.P.S.

Mr. Buchanan's death, on July 23, at the age of came as a shock to colleagues and friends. Last mo apparently in his usual good health, he attended Oxford meeting of the Association of Surgeons; on his return to Glasgow he developed a mild c attack which was followed in a fortnight by a recurrence.

A son of the late Dr. John A. Buchanan of Ruth he qualified at Glasgow in 1912 and served as h surgeon and house-physician in the Western Inf Having decided on a surgical career his next step to spend some months in general practice. War b out soon afterwards, and apart from a short period home service in 1915 he was in France and from the autumn of 1914 until 1918, serving as a surgical specialist. When hostilities ceased he transferred to Glasgow as orthopædic surgeon to Bellahouston Red Cross Hospital, and in 1919 he elected to the staff of the Western Infirmary wh joined the clinic of the late Mr. Archibald Young 1925 the death of Sir William Macewen led to Yo promotion to the regius chair of surgery, and Buch became his university assistant. A few years later became senior assistant to the late Mr. Farquhar Ma in the Western Infirmary, and after Macrae's retire he held a similar position with Mr. W. A. Camp In 1936 he was promoted visiting surgeon and two later became hon. lecturer in surgery in the univers Thus throughout his professional career he held app ments in the Western Infirmary; but in his ye days he was also for 10 years assistant surgeon to Royal Hospital for Sick Children, and for the la years of his life he was consulting surgeon to Ayr C Hospital. A devoted fellow of the Royal Facu Physicians and Surgeons of Glasgow, he was c visitor in 1946, in which year he was also elected to council of the Association of Surgeons of Great Br and Ireland. He did more than his share of public and at the time of his death was a member of the anagement of the Western Infirmary and of the l Maternity Hospital and was chairman of the sory committee of the staff of the Western Infirmary. vas a good committee-man and his advice was highly ed.

ichanan excelled as a general surgeon and had a private consulting surgical practice. Patients ed him without reservation; for here, they knew, a man full of human sympathy yet master of the tion. He was thorough in the pursuit of an accurate perative diagnosis, and, having taken his decision, ld operator. He taught and practised meticulous and post-operative treatment, and he was rewarded brilliant results in very diverse fields of surgery. a teacher, too, he achieved outstanding success. had an inquiring and critical mind and an nsive knowledge of surgical literature; he pre- d carefully; he delighted in the giving of instruction he understood students and their difficulties. With ergraduates and postgraduates alike he was one of nost popular surgical teachers in the West of Scotland. erved for a term of years as examiner in surgery to University of Glasgow and as examiner for the wship of the Royal Faculty. In this he was thorough conscientious, and many a candidate has had occasion e grateful for his unexpected patience. He did not ve in writing unless he had something of real value ut on record. His few publications are marked by clarity of expression and careful preparation which e characteristic of the man.

Scouler" was an asset at any gathering whether ical or lay. He was a "good mixer" and had a of friends. He was a keen sportsman, a good shot, an enthusiastic angler, and he greatly enjoyed a on the golf-links. He was kindly and courteous ever ready to help those in trouble. He was taking ncreasing place in the councils of the profession in land and his untimely death at the zenith of his er is a loss which we can ill afford. His wife, a ghter of the late Mr. John H. Hair, of Lossiemouth, his most devoted helper in all his many activities, of their two children his son is a recent Cambridge lical graduate.

W. W. G.

Births, Marriages, and Deaths

BIRTHS

N.—On Aug. 6, in London, the wife of Dr. E. H. Allen—a son.

Y.—On Aug. 7, the wife of Dr. Charles Carey—a son.

KMAN.—On Aug. 1, at Johannesburg, the wife of Dr. Jonathan Gluckman—a daughter.

RISON.—On Aug. 7, at King's Lynn, the wife of Mr. John O. Harrison, F.R.C.S.—a daughter.

Y.—On Aug. 6, in London, the wife of Dr. R. A. Hoey—a daughter.

HES.—On Aug. 8, the wife of Dr. W. Hughes—a son.

S.—On Aug. 1, in Singapore, the wife of Dr. D. N. Keys—a son.

UEEN.—On Aug. 4, at Sydney, Australia, the wife of Dr. E. G. McQueen—a son.

RENSHAW.—On Aug. 2, at Esher, the wife of Dr. Gerald Ollerenshaw—a daughter.

LS.—On Aug. 1, at Ipswich, to Dr. Dorothy Wells, wife of Dr. J. M. W. Wells—a daughter.

MARRIAGES

RIDGE—RADCLIFFE-WILSON.—On Aug. 2, at Crondall, Reginald Aldridge, M.R.C.S., to Anne Margery Radcliffe-Wilson.

KETT—CHALMERS.—On Aug. 7, at Northants, David John Crockett, M.B., to Anne Baillie Chalmers.

STER—WATT.—On Aug. 4, at Aberdeen, John Scott Inkster, M.B., lieutenant, R.A.M.C., to Helen Milne Watt.

RIS—GARLAND.—On Aug. 10, in London, David Morris, M.R.C.S., to Netta Garland.

—TUNSTALL-BEHRENS.—On July 23, in Cornwall, Kenneth Till, M.B., to Morwenna Tunstall-Behrens, M.B.

DEATHS

TS.—On Aug. 6, at Worthing, Claude Alexander Birts, M.B. Lond.

WOOD.—On Aug. 3, 1947, at Lagos, West Africa, Dorothea Elsa Garwood, M.R.C.S.

INGTON.—On Aug. 4, at Bristol, Cyril Claude Lavington, M.B. Durh., aged 67.

EY.—On Aug. 4, at Penzance, Reginald Oliver Sibley, M.D. Lond. D.P.H., D.T.M., aged 75.

TKIN-WILLIAMS.—On Aug. 5, at Padstow, Penrose Lanyon Watkin-Williams, D.S.O., F.R.C.S., aged 79.

D.—On Aug. 7, at Cheltenham, Oliver Hilton Wild, M.B. Edin., aged 63.

OD.—On Aug. 9, at Bournemouth, Charles Wood, M.R.C.S., J.P., aged 90.

Notes and News

TRANSITIONAL ARRANGEMENTS FOR HOSPITALS

When the National Health Service comes into operation on July 5, 1948, the day-to-day management of hospitals, other than teaching hospitals, will rest with the hospital management committees. These committees, however, are unlikely to be appointed until the early part of next year, and in the few months before they assume responsibility they may find it hard to arrange for certain services—such as supply, accounting, and the maintenance of premises and land—which are at present provided by local authorities for large groups of institutions. The Ministry of Health therefore proposes (circular 134/47) that where such an arrangement seems desirable, the local authorities should be asked to continue such services for an interim period (initially nine months), acting for this purpose as the agents of the regional hospital boards. Officers engaged in such work would be transferred to the regional boards as provided by the Act, but would remain for the time being with the local authorities now employing them.

BETTER PAY FOR PART-TIME NURSES

The rates of pay of part-time nurses, and especially those offered to volunteers who have had previous nursing training or experience, have been widely criticised. Some authorities are paying them 1*s.* 5*d.* an hour, according to the Rushcliffe scale; but the Ministry of Health note (circular 124/47) that these rates will need to be reviewed in the light of the report of the working party on the recruitment and training of nurses. In the meantime, the Ministry suggests, 1*s.* 9*d.* an hour might, in many cases, be appropriate. A woman who holds a certificate of three years' training issued by a hospital before July, 1925 (and who therefore might have been put on the State register had she applied in time) might be offered 2*s.* an hour.

These increases indicate that the poor pay of nurses generally, and of part-time nurses in relation to that of other part-time workers, is beginning to receive serious consideration in the proper quarters.

STREPTOMYCIN IN ITALY

In Italy, Fontana and Roversi[1] have treated four cases of tuberculous meningitis with streptomycin and they give a preliminary report on the results. The first patient was a man of 26, admitted to hospital on Jan. 27 with the typical cerebrospinal fluid (C.S.F.) and clinical picture—neck-rigidity, photophobia followed by optic neuritis, and paresis of urinary bladder and lower limbs. He was given nine injections of streptomycin 50 mg. intrathecally and three-hourly intramuscular injections of 50 mg. to a total dosage of 7 g. He gradually improved, and after 35 days in bed was discharged from hospital on March 3 with slight residual paresis and almost complete blindness of the left eye. The C.S.F. was then "almost" normal. The second patient, admitted seriously ill on Feb. 16, was showing considerable improvement with streptomycin when the supply of the drug failed; he died $2^{1}/_{2}$ months later. In this case streptomycin was injected in small doses, usually 50 mg., both intrathecally and intramuscularly, but with interruptions (probably due to irregular supplies) which are said to have clearly shown the beneficial effects of the drug over a period of a few weeks. In the third case streptomycin was started on April 1, and the patient at first showed considerable improvement, but two months later he was getting worse. The fourth patient was admitted unconscious and delirious on May 14. With streptomycin he made a remarkable recovery and is still progressing well. Fontana and Roversi conclude that the small doses they used have given results not inferior to those of the large doses used in America. Their cases certainly deserve to be reported in detail, with a follow-up record of the two which seemed to respond favourably to this very low dosage.

School of the Royal Free Hospital

The title of the London (Royal Free Hospital) School of Medicine for Women has been changed to the Royal Free Hospital School of Medicine. In the coming session men students are to be accepted at the school for the first time.

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1. Fontana, L., Roversi, A. *Minerva med.* 1947, ii, 29.

University of Cambridge

A bequest of £1000 for research in pathology has been received by the university under the will of the late Dr. Louis Cobbett, formerly University lecturer in pathology.

A secretary is to be appointed to the medical school; the general board recommends that his salary should be £600–800 a year.

University of London

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.—The following students from the school were successful in the recent examination of the Conjoint Board for the D.T.M. & H.

G. M. Abraham, J. F. Britto, J. H. Cater, K. H. Cheung, S. Childs, L. M. B. Copland, M. A. C. Dowling, A. J. F. Eberle, E. N. Emmerson, Z. A. Fazelbhoy, S. K. Ganguli, V. T. H. Gunaratne, M. T. Gyi, V. W. D. Hall, W. D. Hughes, J. P. F. Hummel, M. P. Hutchinson, F. C. Kerr, S. Khayatt, S. N. Kothare, N. W. Low, P. C. Mahanty, B. K. Naik, A. A. Odler, A-H. A-R. Omar, C. P. Patel, D. N. Patel, A. J. Patterson, R. A. O'G. Pearson, J. G. Salter, J. P. Satterwhite, R. S. Saxton, J. C. Shee, R. P. Shields, K. G. B. Stork, R. Symons, S. W. W. Terry, W. F. J. M. Thom, E. Tuckman, H. W. Wheate, H. H. Wozniak, G. B. Wright; and, in part B under old regulations, K. P. Hare. The Lalcaca medal and the William Simpson prize, awarded to the best student of the year, have been won by Dr. Henry S. Fuller.

University of Manchester

Dr. Andrew Topping has been appointed professor of preventive medicine and director of the department of preventive medicine. He will take up his duties in November.

Dr. Topping was educated at Robert Gordon's College and the University of Aberdeen, where he graduated M.A. in 1911, M.B. in 1915, and M.D., with commendation, in 1923, when he also obtained the diploma in public health. He became M.R.C.P. in 1942, and was elected to fellowship last year. From 1914 to 1919 he served with the R.A.M.C. in France, Gallipoli, and Mesopotamia, and was mentioned in despatches. After a period as senior medical officer and port health officer at Abadan in Persia, he was successively R.M.O. at the Aberdeen Fever Hospital, assistant M.O.H. for Woolwich and for Lancashire County Council, M.O.H. for Rochdale, medical superintendent of the London County Council Southern Fever Hospital, and deputy M.O.H. for the County of London. In 1944 he was appointed director of the health division of UNRRA, European office, and later he became deputy chief of relief services in the same office, from which post he has lately retired. He has been a lecturer in public health for five years at Charing Cross Hospital medical school. He has published papers on smallpox, maternal mortality, hospital administration, and European health problems, and with Sir Archibald Gray made the Regional Hospital Survey of London.

Royal College of Surgeons of England

The first meeting of the board of the faculty in dental surgery of this college was held on July 31. The members of the board are as follows:

Sir Alfred Webb-Johnson, Sir Cecil Wakeley, and Mr. L. E. C. Norbury (as president and vice-presidents of the college), Mr. H. A. Mahony, Prof. H. F. Humphreys, Prof. H. Stobie, Prof. F. C. Wilkinson, Mr. Alan Shefford, Mr. W. Kelsey Fry, Mr. V. A. F. Greenish, Dr. E. W. Fish, Major-General A. B. Austin, Prof. T. Talmage Read, Surgeon Captain J. T. Wood, Mr. W. G. Senior, Mr. H. T. Roper Hall, Mr. Edward Samson, Mr. A. C. Deverell, Air-Commodore G. A. Ballantyne, Mr. F. S. Warner, Prof. R. V. Bradlaw, Mr. W. Leslie Boness, Mr. A. C. McLeod, and Mr. C. L. Endicott. Professor Bradlaw was elected the first chairman of the board.

The board expressed its appreciation to the council of the college in creating the faculty of dental surgery and establishing the fellowship in dental surgery (F.D.S.).

The following surgery lectures will be delivered in October, at 5 P.M. on each day: 1st, Prof. Ernest Finch, The Cancer Problem; 2nd, Mr. Harold Edwards, Treatment of Hernia; 3rd, Prof. R. Milnes Walker, Surgery of the Pancreas; 6th, Mr. N. R. Barrett, Neoplasms of the Lung and their Treatment; 7th, Mr. Lawrence Abel, Surgery of the Œsophagus; 8th, Mr. G. F. Rowbotham, Head Injuries; 9th, Mr. A. M. A. Moore, Surgery of the Tendons; 10th, Prof. J. R. Learmonth, Surgery of Portal Hypertension; 13th, Prof. Ian Aird, Surgery of the Biliary System; 14th, Mr. C. E. Shattock, Appendicitis; 15th, Mr. Grant Massie, Neoplasms of the Colon; and 16th, Sir Stanford Cade, Cancer of the Mouth.

The following lectures in anæsthesia are to be delivered at 6.15 P.M. on dates in October: 6th, Dr. H. J. Brennan, Endotracheal Anæsthesia; 7th, Dr. A. D. Marston, Pro-anæsthetic Treatment; 8th, Dr. C. Langton Hewer, Anæsthesia for Thoracic Surgery; 9th, Dr. T. Cecil Gray, *d*-Tubocurarine Chloride and its Use in Anæsthesia; 10th, Dr. John Gillies, Present Status of Volatile Anæsthetic Agents; 13th, Dr. W. W. Mushin, Signs of Anæsthesia; 14th, Dr. Mushin, Spinal Analgesia; 15th, Dr. E. A. Pask, Resuscitation; 16th, Dr. Bernard Johnson, Intravenous Anæsthesia; 17th, Dr. Massey Dawkins, Epidural Analgesia; 20th, Dr. Robert Cope, Anæsthesia for Babies and Children; and 21st, Dr. Vernon Hall, Postanæsthetic Treatment.

University College, London

Two lectures on the Structure of Peripheral Nerve and Nerve Endings are to be delivered by Prof. J. Z. Y— F.R.S., in the physiology theatre of the college at 5.15 on Tuesdays, Oct. 7 and 14. A course of six lectures Transmission of Excitation in Nerve and Muscle w given by Dr. Bernard Katz at 5.15 P.M. on Tuesdays Oct. 21 to Nov. 25. A further course of six lectures is t given at 5 P.M. on Wednesdays from Oct. 8 to Nov. by Mr. M. H. Pirenne, D.SC.; his subject will be Physiological Mechanisms of Vision.

Future of Stracathro Hospital

Stracathro Hospital, near Brechin, which was set up by Department of Health for Scotland to deal with war ca is to remain a general hospital with special provisi orthopædic and rheumatic cases, cases from the school service, and children suffering from debility and malnut The hospital is not to be used at present for cases of pulm tuberculosis.

The Society of Radiographers has applied for a c incorporation.

Dr. H. W. Wade, *president of the International* Association, has arrived here to make arrangements the International Leprosy Congress which is to be held Cuba between April 3 and 11, 1948. The last congress held in Cairo in 1938.

The third edition of the *National (War) Formul* to come into operation for National Health Insurance p on Oct. 1.

REGISTER OF DIETITIANS.—The third edition of this has now been published by the Board of Registratio Medical Auxiliaries. Copies may be had, free of charg the registrar, Tavistock House North, Tavistock London, W.C.1.

Appointments

ANDERSON, L. G., M.D. Lpool, D.P.H.: M.O.H., Exmouth, Salterton, and St. Thomas, and asst. county M.O.H.,
BOARDMAN, D. L., M.B. Manc.: asst. pathologist, Bolton Infirmary.
BROWN, J. K., M.B. Glasg., D.P.H.: deputy M.O.H., Stepney.
DRUMMOND, J. C., M.B. Lpool, F.R.C.S.E.: surgeon, North County Hospital.
ELLIOTT, T. K., M.B. Lond.: divisional M.O., National Coal W. Midland division.
*HADLEY, G. D., M.D. Camb., F.R.C.P.: director of depart medicine, Canadian Red Cross Memorial Hospital, Tapl
HAYES, C. A., M.R.C.S., D.A.: anæsthetist, City General H Stoke-on-Trent.
HOOKEN, M. E., M.B. Glasg., D.P.H.: senior school M.O. and M.O.H., Rotherham.
JACKSON, S. H., M.B. Manc.: pathologist, Bury Infirmary.
KILLPACK, W. S., M.R.C.S.: pathologist, King Edward V Hospital, Ealing.
KLUKVIN, B. N., M.B. Durh.: asst. radiologist, Radcliffe In- Oxford.
LUMSDEN, KENNETH, M.B. Edin., F.R.C.S., D.T.M. & H.: seni radiologist, Radcliffe Infirmary, Oxford.
SNELL, BERNARD, L.R.C.P.E.: asst. M.O.H., Hove.
THOMAS, F. B., M.B. Camb., F.R.C.S.: county orthopædic Hereford.
WALKER, J. V., M.D. Birm., M.R.C.P., D.P.H.: asst. county Northumberland.
WATSON, R. H., M.B. N.U.I., D.P.H.: asst. county M.O. divisional school M.O., Bridgwater, Somerset.
WILSON, D. E., M.D. Aberd.: pathologist, Winterton E Hospital, Sedgefield, co. Durham.

* Amended notice.

St. Thomas's Hospital, London:

Chief Assistants:

BOWERS, R. E., B.SC., M.B. Lond.: skin department.
CHOPPING, P. T., M.B. Lond.: radiotherapy.
COFFEY, P. B., B.M. Oxfd: rectal surgery.
HEYCOCK, J. B., M.C., M.R.C.S.: children's medical dep
MASON, H. A. C., M.B. Lond., D.P.M.: psychological medi
MILLING, P. F., M.B. Camb., F.R.C.S.: ear, nose, and department.
PARKER, G. E., D.S.O., M.D. Camb., F.R.C.S.: genito department.
POOLEY, R. S. F., M.B. Lond.: obstetrics and gynæcology.
REIDY, J. P., M.B. Camb., F.R.C.S.: plastic surgery.
SIMMONDS, F. A., M.B. Camb., F.R.C.S.: orthopædics.
VAUX, PHILIPPA, M.R.C.S.: diagnostic radiology.
WOODHOUSE, M. C., M.B. Camb.: electrotherapy.

Colonial Service:

BROWN, KATHLEEN, M.R.C.S.: M.O., Northern Rhodesia.
DAVIDSON, D. C., M.R.C.S.: M.O., Northern Rhodesia.
FALCONER, DORA, F.R.C.S.E.: M.O., Nigeria.
GEORGE, BRYCHAN, M.R.C.S.: M.O., Sierra Leone.
INNES, J. R., M.D. Edin., D.T.M.: leprosy specialist, East
ROCHESTER, W. R., M.B. Durh.: M.O., Sierra Leone.
SMITH, J. F., M.B. Glasg.: M.O., Uganda.
WYLIE, H. W., M.R.C.S.: M.O., North Borneo.

FECTIVE ENDARTERITIS OF THE PULMONARY ARTERY

Rae Gilchrist
din., F.R.C.P.E., F.R.C.P.
PHYSICIAN

Walter Mercer
M.B. Edin., F.R.C.S.E.
SURGEON

THE ROYAL INFIRMARY, EDINBURGH

ECTIVE endarteritis of the pulmonary artery is the onest and most serious complication of persisting y of the ductus arteriosus; yet many experienced ns and competent pathologists are unfamiliar t. In a series of 60 consecutive cases of patent observed during the past six years, infective eritis developed in 6 patients. The rapid develop- of successful methods of treatment of this hitherto uniformly fatal disease justifies the consideration n as small a group of cases as this. It is with the ion of clarifying the diagnosis and with the hope ablishing principles of treatment adaptable to lual requirements that the following remarks are ted.

NATURE OF THE LESION

an isolated defect the patent ductus is one of the common congenital malformations, often appar- harmless but liable at all ages to give rise to mary endarteritis, which is the local manifestation eneral septicæmia, similar in its ætiology, pathology, course to the better-known subacute bacterial arditis commonly engrafted on an old rheumatic lar flaw. In each instance the broken, roughened, agged endothelial surface forms a nidus for the ient and growth of thrombi and a suitable site ne development of the inflammatory reaction to *ococcus viridans*, which flourishes in the blood and boured in the resulting vegetations. The picture of ns of irregular vegetations along the edges of the cusps in bacterial endocarditis is well known. As nplication of the patent ductus, similar clumps of ations develop in the pulmonary artery closely ent to the intima from which they spring and st invariably thickest opposite the mouth of the us (fig. 1). Libman (1920) pointed out that this form ngenital heart disease was particularly prone to a ute bacterial infection.

d from the higher pressure system of the aorta, the us throws into the pulmonary artery a continuous f blood at right angles to the main venous flow. double blood-supply, the rapid mixing of the arterial venous streams, the constantly swirling blood cur- , and the increased pulse pressure within the onary artery, all combine to stretch and injure the l wall. With the passage of time local degenerative ges gradually develop. Deposition of cholesterol, ening of the intima, and the gradual development of chy atheroma in the wall of the artery immediately site the entrance of the ductus are the result of the nuous buffeting to which this portion of the vessel is sed. On the damaged surface the infective process lops (Hamilton and Abbott 1914, Schlaepfer 1926). getations form on the atheromatous plaques and spread along the artery to involve the cusps of the onary valve in a bacterial endocarditis, or the ess may extend in circular fashion round the artery each the mouth of the ductus and, in the most nced cases, involve the intima of the ductus. Emboli ched from the fungating vegetations are shed into pulmonary circuit. Lung infarcts are therefore to be cted. Peripheral infarcts are less common, occur in the disease, and, when massive, suggest extensive lvement of the pulmonary artery, with a spread of the mmatory process up the wall of the ductus even to ortic inlet. *Strep. viridans*, the commonest causal organism, can usually be recovered repeatedly from the blood.

CLINICAL FEATURES

It is remarkable that this infective complication of a distinctive form of congenital heart disease should not be better known. The triad of persisting septicæmia, recurrent pulmonary infarcts, and local signs of a patent ductus readily establishes the diagnosis.

The evidence of septicæmia presents no great difficulty, the swinging temperature, the tachycardia, the progressive weakness, the increasing anæmia, and the discovery of splenic enlargement being as a rule substantiated by a succession of positive blood-cultures.

Experience proves that the gross evidence of lung disease may so overshadow the clinical picture as to obscure the recognition of the underlying cause. Bouts of coughing, with some transitory respiratory distress, patches of pleurisy, minor hæmoptyses, and recurrent attacks of "pneumonia," are manifestations of scattered lung infarcts, seldom so dramatic or overpowering as that denoted by the usual conception of the term "pulmonary embolism." It is characteristic of infective endarteritis of the pulmonary artery that the lung infarcts are small, multiple, and repeated. Recurrent atypical pulmonary signs should direct attention to the heart as a possible source of mischief.

The slight handicap imposed by the patent ductus, the absence of the cruder signs of congenital heart disease —cyanosis and clubbing—and the strict localisation of the distinctive continuous murmur to a small area below the inner end of the left clavicle account for the ease with which evidence of this congenital defect may be overlooked, at least in the earlier stages of the infection. With the passage of time, and particularly in older patients, after weeks or months of fever with increasing anæmia and loss of flesh, the cardiac signs alter in character. They become more obvious. The heart enlarges further to the left, the neck vessels develop a bounding pulse, and the Corrigan pulse quickens and grows more striking. The diastolic pressure falls further. The Gibson murmur becomes louder and booming. As the pulmonary artery dilates, the site of maximum intensity of the murmur is displaced more to the left than in the non-infected case. For these reasons the cardiac manifestations, so important in the establishment of the diagnosis, should seldom pass undetected or uninterpreted. When the distinctive triad is present, the diagnosis is readily established.

For success in treatment it is, however, very desirable to make the diagnosis before exhaustion develops from protracted septicæmia and before lung involvement has taken place. In the presence of a patent ductus, continued fever without some obvious cause should at once arouse suspicions and suggest the desirability of repeated blood-cultures. By this means the condition will be recognised promptly and curative measures adopted even before pulmonary infarcts occur.

A clearer conception of the diagnostic problem may be obtained by the consideration of case 6, selected as representative of the whole series. The course of the illness, the complications, and the problem of adequate care as faced by the doctor in country practice are illuminatingly summarised in the letter with which he referred his patient to hospital and which is quoted below:

Case 6.—A shepherd's wife, aged 27, the mother of three children, arrived in hospital on Sept. 17, 1946, with eight months' history of increasing exhaustion. She looked gravely ill, sallow, drawn, anæmic, wasted, and a little dyspnœic as she lay at rest.

In recommending her for hospital care her doctor wrote as follows: "Mrs. F. has suffered from endocarditis since childhood, but I have only had her under my care since July, when I took over this practice. My predecessor thought she had tuberculosis, as she has been going downhill since the birth of her last baby $7^1/_2$ months ago. She has had evening fever, sweating, loss of weight, and cough; but it has been difficult to make a thorough examination of the chest, because the heart condition made it difficult to hear other sounds properly. She was notified as tuberculous, but the Public Health Department radiographed her and reported that the plate showed only signs of congestion due to the heart. A series of sputum examinations was negative. She has been having rigors recently, and her temperature in the afternoon often goes up to 102°F; so I think she has a bacterial endocarditis and would be glad if you could do something for her, though it can only be a patch up at best, I am afraid."

History.—As a child she received no education, since the school medical officer considered her unfit to attend school. She was then at most a trifle breathless on heavy exertion, insufficient to prevent her entering domestic service at 15 years, and later working on her father's smallholding. She felt fit and well. The work was hard and the hours long. Her only illness of note was diphtheria at 8 years of age.

She married at the age of 21, and had three successful pregnancies and normal deliveries without cardiac distress. Her housework and her children, now aged 5 years, 3 years, and 9 months, have been her entire responsibility and have not overtaxed her strength. She was perfectly well until January, 1946.

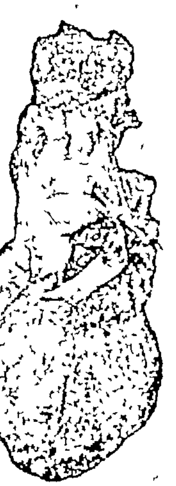


Fig. 1—Infective endarteritis of pulmonary artery (case 3). A marker has been inserted behind ductus, which has shrunken greatly as a result of ligation 3 days before death. Pulmonary artery, opened in its long axis, contains a mass of luxuriant vegetations, most profuse opposite orifice of ductus.

Her third child was born in December, 1945—a normal labour and puerperium. About the end of January, 1946, four upper premolars were extracted by her doctor without simultaneous sulphonamide medication.

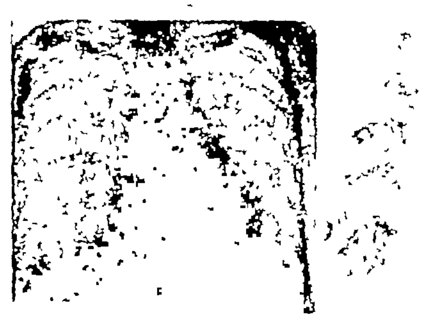
Since that time she had complained of being "tired and done." About June she became weaker and was admitted to the local cottage hospital, where she had a course of sulphonamide and a total of 20 injections of penicillin—actual dosage unknown. She felt temporarily better, but on returning home after a month's care she soon relapsed and had been confined to bed ever since, because of evening fever, sweating, loss of strength, loss of 21 lb. in weight, occasional bouts of coughing, and increasing anæmia.

Examination revealed evidence of septicæmia, her temperature fluctuating between 97° and 104°F and her pulse-rate between 76 and 130. Her respirations ranged from 24 to 48. She weighed 78 lb. (standard weight for her age and height being 129 lb.). Anxious, wasted, and anæmic (Hb 70%), her spirit was excellent and she made light of her distress. Spleen palpable, enlarged by two finger-breadths below costal margin. Five consecutive blood-cultures made during her first three days in hospital were positive. The successive counts were 43, 14, 23, 19, and 14 colonies of *Strep. viridans* per c.cm. of blood. Coefficient of penicillin resistance = 2/3. Erythrocyte-sedimentation rate (E.S.R.) 23–26 mm./hr. White cells 9200–5400 per c.mm.

The most striking signs on physical examination were confined to the circulatory system. Bounding neck vessels, and a Corrigan pulse (blood-pressure 110/50), an enlarged heart (fig. 2), a left basal thrill, and the typical loud booming Gibson murmur maximal in the 2nd left space 2–4 cm. from the midline, with an accentuated second pulmonary sound, justified a diagnosis of a patent ductus. There was no evidence of any other cardiac defect.

No petechiæ about the root of the neck or conjunctivæ, or elsewhere. No splinter hæmorrhages, Osler's nodes, or tender finger-pulps. No clubbing. Urine contained albumin 0·25 g. per litre, a few granular casts, and occasional pus cells. No signs of congestive failure.

Though there was a history of recurrent coughs, examination of the lungs did not reveal signs of infarcts. A little moisture was detected at both bases. Radiography showed a dilated pulmonary artery and engorgement of the lung fields. No infarcts.



(a) (b)

Fig. 2—Size of heart (case 6): (a) before operation; (b) ligation of ductus. Reduction in size affects chiefly "waist" due to shrinkage of pulmonary artery. Transverse diameter is appreciably less, and lung fields are clearer.

Diagnosis.—In spite of the absence of conclusive lung we diagnosed infective endarteritis of the pulmonary with patent ductus arteriosus.

Course of Illness.—Her general condition was so p 9 months of continued septicæmia, her emaciation so and her exhaustion so advanced, that we judged i surgical interference inadvisable. A course of pe 500,000 units daily was begun on Sept. 20 and continued Oct. 20—31 days.

A series of embolic incidents was observed soon after st penicillin: on Sept. 21 a single petechial spot at outer of left conjunctiva; on Sept. 22 a small pulmonary i with pain and friction in left axilla and minor hæm next day; on Sept. 26 bright red blood in stools; on pain in right renal angle and red cells observed in urine first time; on Oct. 5 very severe pain in right side of and shoulder with pulmonary infarct of right lower Weak and exhausted. Critically ill. Temp. 104°F, p 120–130, respirations 30–40 per min.; Hb 50%; 100 mm./hr. Rallied after a blood-transfusion (Oct. 5) 2 pints, which corrected shock and restored Hb to No further infarcts were observed after Oct. 4, the 15th of penicillin treatment, which was continued 4-hourly w interruption until Oct. 20. Ten days after her tran her general condition had so far improved as to ligation. Her temperature had settled, her pulse rate 80–100 per min., the lungs were clear of gross signs, and successive blood-cultures since starting penicillin negative.

Ligation of Ductus (Oct. 15).—Through an antero approach the ductus was found lying far back and over by some large glands. On the posterior aspect adhesions fr than usual made the dissection more than usually diff With the help of cystic-duct forceps a burrow was made close to the aorta as possible. The ductus, almost 1 cm diameter, was doubly ligated with silk ligatures. Immediately after ligation, with a sterile stethoscope placed lightly on pulmonary artery distal to the ductal orifice, a systolic murmur was heard, but not elsewhere. Blood-cultures taken 10 m before ligation, immediately before and after, and $^1/_2$ hr after, were all negative.

Postoperative Course.—The patient was nursed in an oxy tent for the first 24 hours. She rapidly gained strength small effusion collected at the left base, 45 c.cm. of blood stained fluid being aspirated on Oct. 22. Her diastolic pres stabilised between 70 and 80 mm. Hg. She had no furth infarcts.

At the time of her discharge from hospital on Dec. 12 h weight was 102 lb., Hb 90%, E.S.R. 5 mm./hr., and h general condition entirely satisfactory. She had, howev a residual pulmonary diastolic murmur strictly localised t a small area and interpreted as evidence of incompetence the pulmonary valve. Six months later she was in excell health, fit for a full day's work, but the murmur was lo and longer, suggesting incomplete ductal occlusion. diastolic pressure was 70 mm. Hg before and after a vigor exercise test.

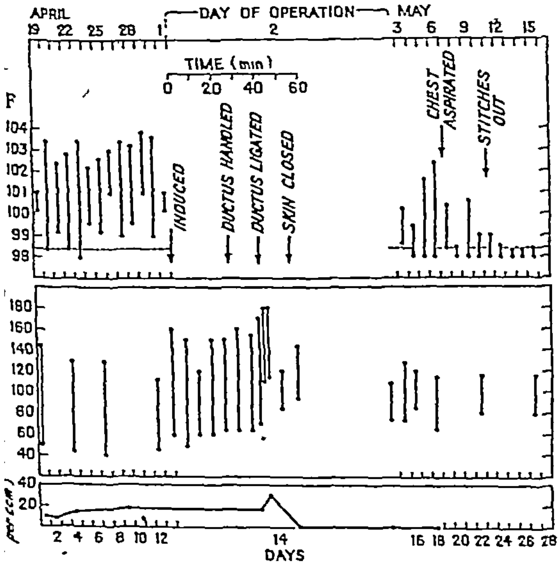
This case emphasises certain features common many of these patients. Worthy of consideration particular are the long period of invalidism before the dia nosis of septicæmia was established, the not uncom n with pulmonary tuberculosis, the failure to e the signs of congenital heart disease with the e process, and finally our decision to postpone interference until an *adequate* course of penicillin n put to the therapeutic test. Admittedly, the t of embolic phenomena, coming immediately nicillin was started, cast a doubt on the wisdom policy, but the patient's remarkable recovery and o a life of full activity justified the postponement ion to the first favourable opportunity.

nvenient comparison of the leading features of cases under consideration is presented in the anying table. There was only 1 male in the series, e youngest patient was aged 6 years.

nosis.—Except in case 5, a respiratory-tract on was the original diagnosis in each instance, onia causing the greatest confusion. Case 3 had than six pulmonary episodes, each characterised e development of local signs of consolidation, n November, 1943, and June, 1944, before the ature of the infection was first recognised. The ce of a patent ductus was detected by the doctor, s relation to the septicæmia and the recurrent s of "pneumonia" was overlooked. Indeed, in e of the series were the physical signs adequately ted and the clinical picture assembled as a distinct

et.—All the patients could mark the onset of their definitely enough, though only in one instance 5) did the disease start with a rigor. Loss of strength, f energy, and fever and sweating, with temperatures 101–102°F, were common in this series even for hs at a time before energetic measures or even -cultures were taken. In a corresponding series of ses of subacute bacterial endocarditis an average d of six weeks elapsed before the patient was tted to hospital. As many months may pass before patient with the infected pulmonary artery reaches ward, perhaps because "pneumonia" appears an uate diagnosis until it has recurred several times.

ripheral emboli are not a striking feature. They obvious only in 2 patients (cases 2 and 6), in both of m the disease had run a long course, 13 and 8 months ectively. In case 3 the presence of an "embolic" nephritis was confirmed at necropsy, but its origin and nature are rendered obscure by the fact that the vegetations were strictly confined to the pulmonary artery (fig. 1). There were no vegetations in the ductus or the aorta. It is difficult to believe that emboli could travel against the main stream through the ductus; therefore the absence of vegetations near the aortic orifice of the ductus supports the view of Bell (1932), who considers that the renal lesion, in bacterial endocarditis, is toxic and not embolic in origin. The success achieved in case 6, who had numerous though small peripheral emboli, indicates the importance of perseverance with penicillin, even in desperate cases, in the hope that surgery may be successfully undertaken.



3—Effect of ligation of ductus on course of septicæmia (case 5). om above downwards chart records maximal and minimal daily mperatures, blood-pressure, and quantitative blood-cultures for days. Day of operation shows closure of ductus is followed by nmediate rise in diastolic pressure from 70 to 110, and by sterilisation blood within 16 min.

Pulmonary emboli are so frequent as to form a distinctive feature. Indeed, when pulmonary infarcts are repeated, the changing pattern of the heart and lungs in successive radiograms throughout the course of the disease may suggest its recognition to the radiologist (Gilchrist 1945). Ideally, the diagnosis of infective endarteritis should be established before the occurrence of pulmonary infarcts, which exhaust the patient, add greatly to the severity of the illness, and at a later date, by preventing collapse of the lung, may interfere with the surgical approach to the ductus. This difficulty was encountered in case 1, a large infarct involving the left lower lobe. The demonstration of a persisting septicæmia, particularly the repeated recovery of *Strep. viridans* from the blood, in the presence of a patent ductus, justifies the diagnosis. For example, case 5 had been ill only nine days when the diagnosis was made on the basis of a succession of positive blood-cultures (*Strep. viridans*) with clinical signs of a patent ductus. She had no pulmonary symptoms or signs and escaped the embarrassment of lung infarcts both before and after surgical ligation. She was not treated with sulphonamides or with penicillin. She has made a complete and lasting recovery.

Causes of Death.—Of the 3 fatal cases, 2 deaths were attributed to massive pulmonary collapse three days after operation in each instance. The third patient (case 2), gravely ill with congestive heart-failure, died without effective treatment.

LIGATION AND CHEMOTHERAPY

Dating from the work of Bourne et al. (1941) and Tubbs (1944, 1946) in this country, Touroff and Vesell (1940) and Touroff (1942a, b, and c, 1943) in America, the tendency has been to emphasise the absolute necessity for prompt closure of the ductus as soon as the diagnosis of infection is established. Touroff (1942a, b, and c) demonstrated that within a few minutes of ligation the blood, which had previously yielded profuse growths of streptococci, became sterile—a fact confirmed by Tubbs (1944) and by the findings in cases 4 and 5 of the present series treated exclusively by surgery. For instance, in case 5 (fig. 3) the blood before operation gave a growth of *Strep. viridans* varying between 8 and 18 colonies per c.cm. With the ligatures in position, 3 min. before the knots were tied, cultures yielded 16 colonies; 3 min. after, 30 colonies; 16 min. after, no growth; 85 min. after, no growth; and four days after, no growth—very remarkable proof of the prompt influence of closure of the ductus on the bacteræmia. Case 4, already briefly reported (Gilchrist 1946), made a dramatic response to ligation (fig. 4), the abrupt subsidence of fever, temporarily interrupted by a pulmonary infarct on the fourth day, and the rapid improvement in her nutrition being striking features of an illness which had lasted six months (fig. 5). Both patients continue to keep in excellent health.

There is therefore no doubt that surgical occlusion is extremely effective. Ligation can sterilise the peripheral blood more quickly and more effectively than can penicillin, probably because the abrupt exclusion of arterial blood from the pulmonary artery provides a venous environment of such low oxygen tension that the streptococcus cannot survive. Boldero and Bedford (1924) offered this explanation for the infrequency of subacute bacterial endocarditis on the right side of the heart. The shrinkage of the pulmonary artery throughout its entire distribution ensures a more effective filter, and the cessation of injury within the main vessel must promote healing (Touroff 1942a).

Shapiro (1947), by collecting *information from surgeons* throughout the world, finds that the mortality after ligation in infected patients has fallen from 50% five years ago to 28% now. Further improvement in results will be brought about chiefly by earlier diagnosis. The shorter the course of the disease, the greater the freedom from pulmonary and peripheral emboli; and the more strictly the vegetations are confined to the pulmonary artery, the greater are the prospects of surgical success.

The recent proof of the remarkable efficacy of a 28-day course of penicillin in the treatment of subacute bacterial endocarditis (Christie 1946) suggests the use of similar methods in pulmonary endarteritis. If the causal *organism recovered from the blood is penicillin-sensitive,* on a theoretical basis it appears desirable to eradicate the blood-stream infection and improve bodily nutrition with penicillin before recommending surgery. Pathological experience indicates that the infective process, originally confined to the pulmonary artery, commonly *spreads to involve the heart valves in a bacterial endocarditis.* Clinically, in the presence of an infected pulmonary artery, it may be difficult, because of the intensity of the local physical signs, to exclude with certainty the added complication of a bacterial endocarditis of one or more of the valves. Surgery can arrest the local endarteritis, but it cannot be expected to cure *when a valve is also involved. The use of penicillin is* justified by its unique ability to heal the valvular lesion, which, unaffected by ligation of the ductus, would otherwise adversely influence the course of the disease.

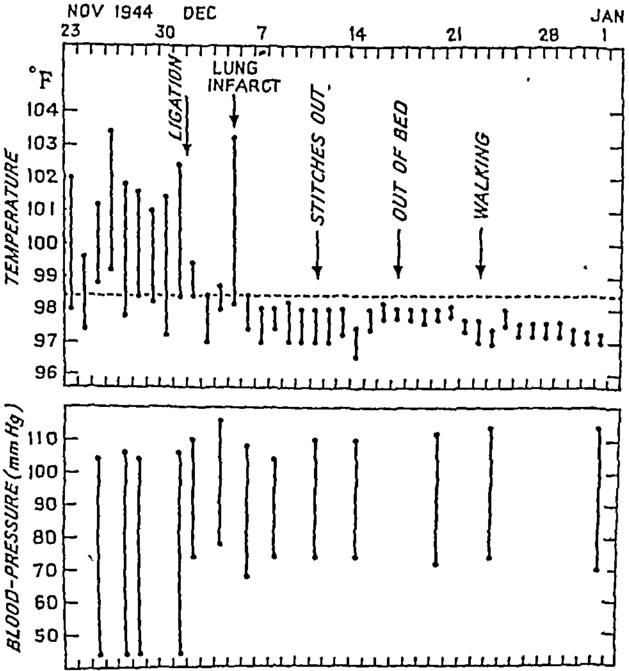


Fig. 4—Effect of ductal ligation on course of fever is shown by change in form of patient's chart, which depicts maximal and minimal daily temperatures and blood-pressure readings. Prompt subsidence of fever, which had persisted 6 months, is temporarily interrupted on fourth day after operation by a single pulmonary infarct. This child (case 4) made a complete recovery. (See also fig. 5.)

The limitations of penicillin therapy must be nised. In the early case there are powerful ar against its preoperative use. To postpone closure of ductus until a penicillin cure is established ex the patient to the continued risks of embolism d the first few weeks of treatment. Even in successful r of subacute bacterial endocarditis peripheral e may occur up to 17 days or more after the start of penicillin course. Serious complications, pulmonary peripheral, may therefore develop during pen therapy. These disadvantages may offset any gain i patient's strength and resistance. Further, the ef of penicillin in the streptococcal complications of various forms of congenital heart disease has not yet fully assessed. The attempted cure of an infected monary artery with penicillin may not prove su and delay may lead to death before or after oper Though the infection may be cured with penicillin patent ductus persists and the endarteritis may r or recur. If penicillin is used with success to combat *the infection and* an interval is allowed to elapse between the end of the course of treatment and *before surgery is* undertaken, the amount of fibrosis will probably increase near the ductus and make dissection more *difficult.* For these reasons it may not be wise to postpone surgery.

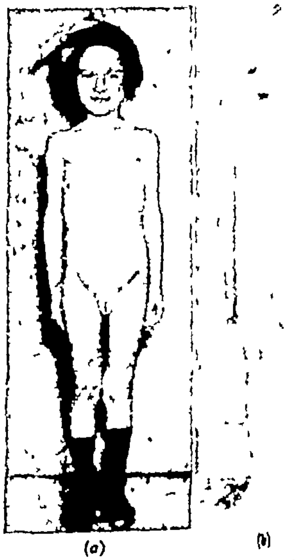


Fig. 5—Bodily nutrition and physical being of case 4; (a) after 6 month refractory to sulphonamides and c ised by recurrent attacks of "p and persisting septicæmia; (b) after ligation of ductus. (See also fig. 4

On the other hand, cases will occur from time to time where the diagnosis has been missed, the infection has in consequence run a protracted course, and the exhaustion of the patient, complicated perhaps in ex instances by respiratory distress and con heart-failure, preclude immediate operation. We faced with this problem in two instances: case 2 too ill for surgery, penicillin was not available. she died a few days later; and case 6, almost recovered with the help of a preoperative course penicillin, though recurrent infarcts in the lung elsewhere during the month of chemotherapy ca anxiety—she stood operation well and made a remark recovery.

It may be concluded that, provided the patie general nutrition is reasonably good, exhaustion toxæmia not extreme, and congestive failure ab closure of the ductus should be undertaken at once implies that, in the treatment of the infected pulmon artery, surgery takes precedence of chemotherapy. full 28-day course of penicillin should be used in more gravely ill patient, judged too weak for sur in the hope of overcoming the infection and com exhaustion. It must be borne in mind that, w penicillin therapy is in progress, there is no satisf criterion of cure (Hunter 1946), and therefore sur ligation, which is more certain in its results, should be long delayed. In gravely ill patients, by comb

ANALYSIS OF CASES

ge ears) nd sex	Original provisional diagnosis	Duration of infection	Peripheral emboli	Congestive heart-failure	Date of operation	Result
9 M	Influenzal pneumonia	$4^{1}/_{2}$ months	None	No	Oct. 12, 1940	Death Oct. 15, 1940; massive pulmonary collapse
2 F	Recurrent pneumonia	13 months	Osler's nodes right foot and forearm	Yes	Not attempted	Death April 17, 1942, 17 days after diagnosis first established
8 F	Recurrent "sulphonamide-refractory pneumonia"	6 months	"Embolic" nephritis	Yes	May 30, 1944	Death June 2, 1944; massive pulmonary collapse
6 F	Recurrent pneumonia	6 months	None	No	Dec. 2, 1944	Complete recovery without penicillin; in perfect health 29 months after ligation
6 F	Acute pericarditis	9 days	None	No	May 2, 1946	Complete recovery without penicillin; in perfect health 12 months after ligation
7 F	(*a*) Phthisis (*b*) Bacterial endocarditis	8 months	1 petechia, "embolic" nephritis, mesenteric infarct	No	Oct. 15, 1946	Complete recovery after full preoperative course of penicillin; residual pulmonary diastolic murmur; in good health 7 months after ligation

herapy with surgery *appropriately undertaken.* success will be attained in the future. It is wise e the ductus as soon as the patient is judged fit d the operation, even before the completion of the course of penicillin.

OPERATIVE TECHNIQUE

s (1939) has recommended the anterior approach through the second left intercostal Because of the greater control of the ductus in hæmorrhage, the wider operative field, and the accessibility, Harrington (1943) has used a lateral incision, but the anterior approach has sed by one of us (W. M.) because of the reduced cy to shock. A flap method is used, the skin n extending from the second right space curving ards below the left breast and up into the left The reflexion of a flap of skin and then a flap of provides later for a valvular type of closure of cond interspace, which is opened up as far as the al mammary artery. The rib above and the rib are divided in front, and access is obtained by etraction.

he older patient the ductus lies further back, as rta gradually assumes a more posterior position. uctus accordingly is found running almost vertically ards in the adult, whereas in younger children its on is more lateral. In infected cases there are y adhesions between the lungs and the mediastinal but it is unusual for these to cause difficulty. they are divided, the mediastinal pleura is palpated e exact site of the ductus located. It usually lies the phrenic nerve, and an incision about 3 in. and parallel with the nerve is made behind it. exposes the area in which the operation will be cted.

eral factors which may give a little trouble have to nsidered. There are often glands in this region, dark, sh, fleshy structures, which often overlie the area which is to be dissected. In the older patient ulmonary artery is often considerably dilated and rs to overlie the ductus. It has to be reflected wards to give a good exposure. A large thymus extending for about $2^{1}/_{2}$ in. from the midline and lly overlying the ductus, recognised by its greyish- appearance and the fact that it seems to lessen ntensity of the murmur when palpated, may be ntered. It is dissected forwards and, in spite of ge size, in neither of the two cases in which it was did it produce any postoperative trouble. When uctus is located by palpation, its junction with the is carefully noted. As recommended by Johnson et al. (1942), *most of the dissection takes place in this* region—i.e., as near its aortic end as possible. In at least one case it was possible to make an incision into the adventitial coat of the aorta, as suggested by Touroff (1942*b*), and burrow under and round the ductus by *closely adhering to the aorta during the dissection.* This manœuvre is not always possible in the older cases through an anterior approach, because of the very posterior location of the ductus.

In the last 3 patients (cases 4, 5, and 6), the technique developed by one of us (W. M.) has been employed. This consists in the use of special cystic-duct forceps. They should have a blunt nose, have no teeth on the end, and have various curves to enable one to burrow at the appropriate angle round the ductus, so that eventually a fully curved pair can be used to place the ligatures in position. They are extraordinarily useful and much safer and less likely to do damage than any of the other methods which have been described. The forceps are insinuated first in the angle between the ductus and the aorta at *the distal attachment of the ductus to the artery.* By gradually pushing them in and opening them it is not difficult gradually to find a way round at this site. After a certain distance has been reached in one direction, a start is made from the more proximal part of the aorta in the opposite direction until the way is clear. In the infected cases this dissection is slow, demanding patience and perseverance, because there is naturally a firmer type of areolar tissue in this region and the ductus is often more adherent to the bronchus behind.

Two pieces of silk are now taken, one being marked with brilliant green at each end to distinguish it from the other. Both are gently drawn round the ductus by the encircling cystic-duct forceps, care being taken not to pull them too quickly or against the ductus. When they are in position they are carefully identified and *tied as close to the aortic end of the ductus as possible.* The knot used is a real surgical knot, not a "granny," and when the surplus lengths are divided they are left rather long. 'Cellophane' as an obliterative agent is unnecessary. *A little sulphonamide* is sprayed into the cavity of the mediastinum. The mediastinal pleura is left open. The chest is now closed in layers and, before the encircling circumcostal ligatures are pulled tight, the anæsthetist *reinflates the lung.* With the flap method of dissection a very good valvular type of closure is obtained without leakage. No drain is inserted.

In no case has the whole length of the ductus been *completely dissected.* Such a procedure increases the difficulties and hazards of the operation and in our opinion is unnecessary. To reduce the liability to recanalisation, which occurred in 8·7% of uninfected ductus after simple ligation (Shapiro 1947), Gross (1944) practises surgical division. When the dissection is confined to the aortic end of the channel, and with the ligatures applied immediately adjacent to the aorta, the procedure is safer and recanalisation unlikely. The most probable cause of this unfortunate complication is the overflow of the ductus walls on either side of the ligature. Fracture of the media by a knot too tightly tied encourages adherence of the overlapping ductus walls and the re-establishment of the channel.

PREVENTION OF INFECTIVE ENDARTERITIS

Infective endarteritis of the pulmonary artery, which is liable to occur at all ages but is less common in childhood, can be prevented by closure of the patent ductus. This is one good reason for recommending that all children in whom this congenital defect is known to persist should undergo surgical ligation, preferably, we believe, between 7 and 10 years of age. Children stand the operation well, and the mortality should be less than 5%.

A second factor in the production of the disease is the development of a streptococcal septicæmia. *Strep. viridans*, an organism of low virulence, is a normal inhabitant of the mouth and commonly gains entrance to the blood-stream as a result of a dental or throat infection. Tooth extractions are a common source of the original bacteræmia (Okell and Elliott 1935, Elliott 1939). By ensuring an adequate sulphonamide content of the blood before oral surgery is undertaken the streptococcus can be rapidly destroyed and septicæmia prevented. All patients with valvular or congenital heart lesions in whom oral surgery is contemplated should be treated before and after operation with full doses of sulphathiazole—doses comparable to those used in lobar pneumonia. The sulphonamide should be begun 8–12 hours before the operation and continued for at least 48 hours thereafter. Penicillin can be used in addition to the sulphonamide if thought necessary. Immediately before dental extractions an injection of 100,000 units, followed by two or three further doses of the same quantity at 4-hour intervals thereafter, may be administered along with oral sulphathiazole in the interests of prevention. There is no doubt that routine prophylactic measures such as these will do much to prevent the development of these serious conditions (Budnitz et al. 1942, Northrop and Crowley 1944). The full coöperation of dental and oral surgeons when handling these cardiac patients will be most welcome.

SUMMARY

A series of 6 consecutive cases of infective endarteritis of the pulmonary artery is described in the hope that increasing familiarity with this serious complication of the patent ductus arteriosus will lead to its earlier recognition. The diagnosis should be made before lung infarcts occur.

Of the 6 patients 3 recovered, including 2 treated exclusively by surgery and 1 with penicillin preparatory to ligation.

In successful treatment surgical closure of the ductus is of outstanding importance and takes precedence of chemotherapy. Penicillin 500,000 units daily for 28 days may be used in the more gravely ill patient judged too exhausted for immediate surgical intervention, in the hope of overcoming the infection and thus preparing the way for ligation of the ductus, but the risks of further pulmonary infarcts in the first few weeks of penicillin therapy are very real. Early ligation should be urged.

The operation is described. The dissection and ligation are facilitated by the use of cystic-duct forceps adapted to this particular purpose. To reduce the tendency to recanalisation the ligatures should be applied to the ductus close to its aortic orifice.

The development of a *Strep. viridans* septicæmia be prevented by the routine use of sulphonamides operations on the mouth and throat. The coö of dental surgeons in the care of patients with and congenital heart disease will reduce the incid bacterial endocarditis and infective endarteritis.

The most effective step in the prevention of endarteritis of the pulmonary artery is to k children known to harbour a patent ductus *observation until the age of 7–10* years, about time surgical ligation should be performed.

In the surgical treatment of the patent ductus we to acknowledge the pioneer work of Sir John Fraser, kindly placed at our disposal his operation notes of and 3 included in the present series.

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LOW BACK PAIN

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Cases of low back pain are commonly divided the organic, which are labelled fibrositis, rheum lumbago, &c., and psychogenic (Halliday 1935, Dunbar 1938, Ellerman et al. 1942, Jackson Boland and Corr 1943, Heaton 1944, Flind and 1945, Le Vay 1947). The question of backache investigated at a military general hospital in in 1944, in 25 cases in which no organic was found. The average age of these patients 32·5 years and their average length of Army years, showing that some belonged to the Regular Territorial Army. In 15, transferred from other units, the previous diagnosis was fibrositis in some form of rheumatism in 6. In those de "rheumatism," "arthritis," "myalgia," &c., the sedimentation rate (B.S.R.) was normal, there was fever, and there was no involvement of joints.

CLINICAL PICTURE

A dull ache or an oppressive or tight feeling had been present for years; it was never severe. T were, however, bouts of severe jabbing pain, commonly arose spontaneously but were som precipitated by slight movement such as turning and straightening up after stooping, but this effect of movement was inconstant. Appre often accompanied the pain, especially when it on at night in bed.

There were periodic relapses lasting 2 or 3 weeks the dull ache would be pronounced and the jabs and crippling. During remissions a residuum aching pain could often still be felt, with occ

of the jabbing pain. The average period since
, onset of pain was 3 years 5 months.

vating Factors.—The patients often blamed
, fatigue, and the wearing of equipment as the
f their trouble; but no relief had followed their
xcused the offending duties; on the contrary,
essation or limitation of normal duties their
ity had increased.

veather was often irrationally blamed for causing
avating the illness. Though rain, fog, and damp
leged to have caused rheumatism in the United
m, in Italy sun, dust, and heat were blamed.

was always gradual. Many patients could not
er when their trouble had started. In only
e was the onset sudden and dramatic. It was
r any traumatic or other event to be clearly
ed with the onset.

ological State.—The accompanying table gives
ificant details of each case. Four patients had
ature personality; they were shy mother-fixated
ally adolescent male virgins.

ess, though truly an intellectual rather than a
lity defect, is included here for the sake of
ence; its presence was determined arbitrarily
atients, none of whom had reached top standard
entary schools.

e 25 patients, 20 had an inadequate personality.
who habitually interpret their failures as due to
tances unjustly thrust upon them, may reach a
aranoid state, losing the self-criticism that is
l for social harmony.

commonest signs of anxiety state were tremor,
ve sweating of the hands, and cutaneous or peri-
vasoconstriction. Exaggerated tendon-reflexes,
respiration, casual (non-basal) hypertension,
overacting heart were also noted. In 12 there
oth psychosomatic symptoms and signs; 1 had
igns but no symptoms; and 8 had more than one
m but no signs. Psychosomatic features were
in 21 cases. Of the remainder, 2 patients were
ost profoundly psychopathic personalities in the
The absence of somatic signs and symptoms of
ic tension does not preclude psychological disorder.

ochondriasis was present in 19 cases. Though
ondriasis is common in anxiety states, it was
ronounced and consistent than is usual in anxiety
presenting as such. This is not surprising, since
neurotics had been treated many years for a
ed organic disorder. An attempt to re-educate
long the lines that their symptoms were a bodily
se to fear met with an aggressive reaction which
cted the treatment.

0 there was a history of neurotic traits in childhood;
15 a history of psychological disability in parents,
s, or offspring. In 14 the patients had spent their
ood in industrial slums.

PHYSICAL EXAMINATION

eneral examination was negative, since patients
organic disorders had been excluded from the
As already mentioned, 13 of the 25 had physical
of autonomic disturbance consistent with anxiety
Some showed various degrees of limitation of
of the lumbar spine; but this appeared to be
ely proportional to the will to flex. There was no
nt muscle spasm, no orthopædic deformity, and
itation of movements involving the sacro-iliac joint.
normal character of muscle texture on palpation
vestigated by examining 50 men who had never
ibrositis. In the rhomboid and scapular regions
ands of tissue were felt, the dimensions of which
be compared with the undulations in corrugated
oard. Fine nodules suggesting surgical emphysema,
oarser nodules of "millet seed" proportions, were commonly found in the trapezius and erector spinæ muscles. The glutæi felt like a flock mattress, some of the lumps being discrete. These nodules, which have been described by Copeman and Ackerman (1944), tended to merge from one variety to another, and were not strictly limited to the sites mentioned as their commonest seat.

In the majority one or several of these variations of muscle texture were discovered, whereas in the rest the muscle appeared to be of uniform consistence. In sparse men anatomical borders of muscles could be palpated as ridges, whereas in the more obese the subcutaneous fat was sometimes lumpy. These effects were not considered significant.

Each patient with low back pain was submitted to an exhaustive examination of all the great muscles of the pectoral, pelvic, and lumbar regions. Attention was paid to tenderness, muscle consistence, and muscle tone, both in the region of the spontaneous pain and elsewhere. The findings are summarised as follows:

(1) Each patient had an area of muscle tenderness close to the spontaneous pain. There were sometimes more than one of these areas which varied in the degree of sharpness of their localisation.

(2) No muscle spasm was found which could not be voluntarily relaxed.

(3) In 8 cases no nodules were found. In 6 cases nodules like those in normal men were found, though none was in the area of muscle tenderness. In 11 cases nodules like those in normal men were found, some of which were in the

PSYCHOLOGICAL STATE OF PATIENTS WITH LOW BACK PAIN

Case no.	Age (years)	Service (years)	Duration of symptoms	Personality			Anxiety state		Hypochondriasis	Neurosis in childhood	Family history of neurosis	Poor social background	Massouse
				Immature	Dull	Inadequate	Signs	Symptoms					
1	30	5	1 month	..	..	+	2	4	+	..	+	+	+
2	20	1	3 years	+	+	..	5	5	+	+	+	+	..
3	38	8	2 "	..	..	+	3	3	..	+	..	+	+
4	28	4½	1 year	..	..	+	2	5	+	..	..	+	+
5	25	4½	2 years	..	..	..	2	2	+	+	+	+	+
6	38	3	3 "	..	+	+	0	3	+	..	+	+	..
7	29	4½	3 "	..	+	+	0	5	+	+	..	+	+
8	38	5	8 "	..	+	+	0	4	+	..	+	+	..
9	31	13½	6 months	..	..	+	0	2	+	+	+	..	+
10	20	2	2 "	..	..	+	3	0	..	..	..	..	..
11	30	5	16 "	..	..	+	0	1	+	..	+	..	+
12	40	4½	10 years	..	+	+	2	6	+	..	+	..	..
13	21	2½	7 "	+	..	..	0	6	+	..	+	..	..
14	37	12	2 "	..	..	+	0	4	..	+	+	+	+
15	31	13	3 "	..	+	+	4	5	+	+	..	+	+
16	38	3½	2 "	..	..	+	0	5	+	..	+	..	..
17	38	4	2 "	..	..	+	6	3	+	+	+	+	..
18	34	17	4 months	..	..	+	2	3	+	..	..	+	..
19	33	11	5 years	..	..	+	5	3	..	..	..	+	+
20	40	2	7 "	..	+	+	0	0	+	..	..	+	..
21	37	3	15 "	..	+	+	0	3	..	+	+	..	..
22	36	1½	6 "	..	+	+	6	3	+	+	+	..	..
23	36	4	6 months	+	+	+	0	0	+	..	..	..	+
24	34	4	16 "	..	..	..	6	3	+	..	..	..	..
25	27	4½	2 weeks	+	..	..	0	0	..	..	+	..	+

tender area; but in all of these similar nodules unrelated to tenderness were found elsewhere, both on the side of the lesion and on the opposite side.

The examination was made with the help of a masseuse who had considerable experience in palpating fibrositic nodules. She was therefore invited to say which cases were fibrositic; these have been marked positive in the final column of the table. The 12 cases she selected differed in no respect from the other 13 and bore no special relationship to any other factor tabulated or described.

It is concluded that any relationship between nodules and muscle tenderness is fortuitous.

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Considerable spasm and tenderness were promoted at the site of the injection. For 4 or 5 days painful spasm prevented full movement of the lumbar spine. Tenderness and spasm on palpation persisted a short time after cessation of spontaneous pain and after full movement had returned.

There was some constitutional disturbance as a result of the injection, but this was slight and limited to the first 48 hours. Temperatures did not rise above 101°F. The B.S.R. was temporarily elevated (15–25 mm.).

Ten normal men received these injections. They were patients admitted for some minor organic disorder. Psychological examination showed that they all had normal personalities. The average duration of the three major symptoms and signs were as follows:

Aching pain	5·0 days
Limitation of flexion of lumbar spine ..	4·5 days
Local tenderness and spasm	6·3 days

Concurrently 9 neurotic personalities were given injections. So far as could be judged by interrogation and examination, the neurotics behaved like the normal man:

Aching pain	4·8 days
Limitation of flexion of lumbar spine ..	5·4 days
Local tenderness and spasm	6·4 days

No nodule was ever palpated at the site of the injection. Local spasm and tenderness were the last to disappear. While palpation of the tender area continued to promote muscle spasm, the fingers could learn nothing of the muscle texture, as this examination necessitates complete muscular relaxation. After tenderness and spasm had disappeared, the muscle differed in no way from its uninjected fellow of the opposite side.

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TREATMENT

Physiotherapy.—These patients expect and
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lures are numerous (Hurst 1943). In the event of the condition, which has been regarded so long eed of hospital treatment, must now be minimised egarded if the patient is to be discharged. But ould have impressed the patient with the seriousf his disability more than the physiotherapy ment. It is hard for a simple-minded hypoiac to adopt any other attitude than that he has njustly accused of malingering. If he had no logical disability before this event, he would ly have one after it.

ction.—When an attempt is made to remove pain ection of local anæsthetic, success or failure at the f the injection can only be judged by the effect dull aching type of pain; the jabbing pain is constant and unpredictable for profitable study. theless, during the period of relief from aching pain ing an injection patients experienced no jabbing

vas observed that low back pain could be success though usually but temporarily, abolished by the on of local anæsthetic into the area of tender e. It was established further that this could also hieved by injecting normal saline, and even by eedling.

technique used was first to localise by palpation ender area from which the pain appeared to be g. A fine needle, 5 cm. long, was then pushed gh the skin and run in several directions through ubcutaneous tissue. This procedure was painless the needle pricked the skin from below, or the fascia from above. The needle was then witha, and the patient questioned about the effect of injection" on his pain.

the pain was still present, the needle was reintrol, this time piercing the deep fascia and entering uscle. Again the needle was run in several directions withdrawn, and the patient questioned about the on his pain. Should the pain still persist, the le was reintroduced and the tender area of muscle rated with 10 c.cm. of procaine. No effect was uced by running the needle through subcutaneous e.

most cases running the needle through muscle shed the pain. As the needle passed painlessly ugh the muscle the patient would experience a en severe jab of pain, indistinguishable from the taneous type. The needle was pulled back and pushed forward again along the same path, wherethe patient experienced a second jab of pain when needle point reached the depth that had evoked the If this procedure was repeated several times, the cle appeared to grow insensitive to the needle.

here were usually several places in the muscle which ld give rise to pain if needled. The jab of pain so ced was accompanied by reflex spasm of the lumbar cles. But this spasm could be voluntarily relaxed re the induced stab of pain had disappeared. It concluded that the jab of pain was not due to painful m.

those few cases in which this procedure failed to lish pain, infiltration with local anæsthetic also failed.

he operation was performed in a case of referred bar pain from a renal lesion. All manipulation, cutaneous, intramuscular, and local anæsthetic, ravated the pain. The success of intramuscular lling could hardly have been an effect of suggestion, use subcutaneous needling was a consistent failure. urther, the results of this form of therapy did not end on any particular relationship between muscle derness and the nodules described.

t had been noted that pyrexia appeared to re-establish back pain after it had been dormant (Copeman 1943). ravenous T.A.B. was therefore given to reproduce a temporary pyrexia. The subject chosen was a patient cured by intramuscular needling. By alternating artificial pyrexia and therapeutic needling the pain could be made to relapse and remit indefinitely.

PRECORDIAL PAIN OF DA COSTA'S SYNDROME

It will be conceded that inframammary pain of Da Costa's syndrome (Wood 1941) has the same qualities as low back pain. The dull ache, with its oppressive quality, and the spontaneous jabs related to trivial movement are both described. Heaton (1944) observed inframammary pain in 14 out of 26 cases of rheumatic pains unassociated with organic disease.

The behaviour of this pain when subjected to injection is known. It is not affected by local cutaneous or subcutaneous anæsthesia, but is abolished by intramuscular procaine or saline. Several patients with anxiety state and precordial pain were subjected to the same injection as that used in low back pain. Local anæsthetic or simple needling in skin and subcutaneous tissue did not influence the pain. The introduction of the needle into muscle in the region of inframammary tenderness precipitated a jab of pain just like the spontaneous jab. This was followed by abolition of pain. After the procedure had been repeated in 8 consecutive cases with uniform results, it was concluded that inframammary and low back pain behaved similarly both to needling and to injections.

It has also been noted that many patients with Da Costa's syndrome have low back pain also. Of the 25 cases reviewed here 13 also had the inframammary pain of Da Costa's syndrome; indeed, some had originally presented as Da Costa's syndrome and had been previously investigated as such elsewhere. Again, a pain like that of Da Costa's syndrome may be encountered in anxiety states in sites other than the lumbar region.

A gunner, aged 32, with four years' service, had pain in the upper abdomen, on the right side, lasting ten days, with spontaneous remission, in December, 1943.

In May, 1944, a similar attack occurred. He was admitted to 96 General Hospital, where no gastro-intestinal lesion was found.

After three weeks the pain disappeared, and patient was discharged.

In September, 1944, patient had a third attack and was admitted to 22 General Hospital; again no gastro-intestinal lesion was found.

Patient was transferred to 103 General Hospital, where repeated barium radiography, sigmoidoscopy, and examinations of stools did not reveal any lesion.

Patient was referred for psychiatric assessment. He described the pain as a continuous diffuse ache in the upper abdomen, sometimes associated with sudden severe shooting jabs. These exacerbations were apt to come on after meals.

On examination patient was tense and his hands cold, tremulous, and sweaty. In the right upper rectus muscle there was a tender area in which the "shooting" pain originated.

Personality. timid, shy, immature, without adult sexual experiences, and with life handicapped by phobias. He was afraid of darkness, water, and outdoor games. He had had enuresis until the age of 14 years. The subjective symptoms of an anxiety state were also present.

Low back pain and Da Costa's syndrome were diagnosed.

Subcutaneous needling had no effect. On intramuscular needling an exquisitely tender point in the right upper rectus was located, which caused him to experience the shooting jabs of pain. This procedure completely relieved him of his pain.

Ten days later the patient, having had no relapse, was discharged from hospital.

DISCUSSION

The view that low back pain is due to fascial or muscular fibrositic inflammatory lesions is largely based on the existence of so-called fibrositic nodules (Kellgren 1938, Kelly 1945, 1946). The investigations described here tender area; but in all of these similar nodules unrelated to tenderness were found elsewhere, both on the side of the lesion and on the opposite side.

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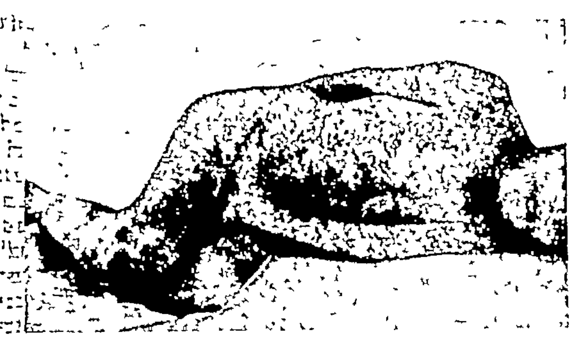

Eruption on body.

-pink erythematous rash, coalescent on face and neck, scanty on chest, profuse on thighs, arms, and palms, bsent from lower legs and feet. Superimposed on this round were dull red *blotchy patches about the size of* ling. There were also large bullæ and vesicles round on front of chest, and on arms and ankles (see figure). oat congested and full of muco-pus. Tongue dirty and d with thick brown fur. Lips cracked and surrounded ordes. Buccal mucosa covered with grey bloodstained te. Considerable marginal *gingivitis.*

h eyes swollen, pus welling from palpebral fissures. a of lids, conjunctivitis, subconjunctival hæmorrhages. st full of coarse râles; *urine loaded with albumin.*

atment.—General attention was given to eyes and a, and the patient was given a fluid diet with plenty of e. Atropine gr. $^1/_{100}$ and sulphadiazine 1 g. were given hourly, and penicillin 30,000 units three-hourly.

rse.—At 10.30 P.M. the same day temperature 103·4°F, -rate 126, respirations 36 per min. Chest much drier, he patient appeared more comfortable, sleeping peace- most of the night.

v. 24: extremely restless; heart sounds poor; cough ssing; temperature 102°F, pulse-rate 128, respirations r min. Large bullæ had appeared on face and had burst. on chest had also burst, leaving large denuded areas in. Eyes literally dripping pus, in spite of constant tion by nurses. Restlessness made sedatives (morphine iate gr. $^1/_{20}$, and 'Soneryl' gr. $1^1/_2$) necessary.

sults of Pathological Investigations.—Blood-count: red 5,500,000 per c.mm., Hb 100%, colour-index 0·9; e cells 13,600 per c.mm. (polymorphs 68%, lymphocytes , monocytes 3%). Blood-culture: *B. subtilis* only. sermann reaction negative.

ained films from bullæ showed a moderate number of e cells, mainly lymphocytes; no red cells or organisms . Fluid from bullæ contained red cells and a few nerate leucocytes; no organisms; cultures sterile.

rebrospinal fluid heavily bloodstained, with small clots; rnatant fluid just perceptibly yellow: protein 160 mg. 100 c.cm.; globulin + + +; sugar 0·112 mg. per c.cm.; leucocytes not in excess; no organisms; cultures le; Wassermann reaction negative.

ose and throat swabs negative for Klebs-Löffler bacillus.

ov. 25 and 26: little change in general condition. Fresh e and vesicles appeared and burst, leaving raw areas of rent sizes over face and body. Restlessness could only be rolled by frequent doses of 'Sodium Amytal' gr. $1^1/_2$. perature started to subside, but pulse-rate remained at 116 and respirations 40 per min.

ov. 27: at 5.30 P.M. general condition became worse. patient was cold and cyanosed; temperature 96°F. gical emphysema involving all subcutaneous tissues of k, trunk, and abdomen.

n electric resuscitation cradle was applied and, as it was impossible to get him to take anything by mouth, the ent was given glucose and protein hydrolysate by gastric and retained them satisfactorily. Nevertheless he went dily downhill. It was impossible to register his temperature feel his pulse. Heart sounds became almost inaudible, o was suppressed, and gangrene of right foot was starting.

he patient died on Nov. 30, seven days after admission.

ecropsy.—Body emaciated; epidermis desquamating n lower half of face, ears, and forehead (face looked as if ad been scalded). Numerous discrete and confluent areas desquamation, 1–4 cm. in diameter, on chest over sternum. ddish-brown rash. Larger elements on chest and shoulders were ring-like, about 1 cm. in diameter, some confluent. Centrifugally the elements became smaller, and on the limbs were small brown macules, pleomorphic, mostly polygonal. Blebs containing opaque bloodstained fluid on terminal phalanges of fingers and right heel. No hæmorrhages. No icterus. Subcutaneous emphysema palpable over abdomen. Glands just palpable in both axillæ but not enlarged.

Heart small and rather wasted. Emphysematous bubbles in mediastinum round roots of lungs and pericardium.

Air Passages.—Wall of bronchial tree from larynx to bronchioles lined with yellowish-white membrane, rather like thrush—thin, friable, and easily removed, but too friable to be picked up with forceps. Mucosa deep to it slightly roughened and pink. This membrane was very evident in smaller bronchi and bronchioles, where it was more inspissated and appeared to block most of the smaller bronchi completely. No membrane in pharynx or on vocal cords.

Lungs.—Lower third of both lungs deep purple, airless, and rather dry, with plugs of yellowish material in bronchioles, but no pus. Pleural surfaces showed bright pink slightly raised patches which showed up clearly against bluish-grey background. Upper portions normal, except that air could be moved easily from one part to another. No obvious emphysematous blebs. No free fluid in pleural cavities. Thyroid and thymus glands normal.

Liver normal in size; colour dark, with lighter "dappling" in parts. *Spleen* normal; rather small. *Kidneys* of natural size; pale except for a line of congested vessels between cortex and medulla: capsules stripped easily, leaving a smooth surface. *Suprarenals* showed some blurring at junction of cortex and medulla; rather soft; no hæmorrhages; size normal. *Pancreas, stomach, intestines, bladder* normal. Culture of *heart blood* sterile. *Urine* clear; microscopy showed granular casts and leucocytes in moderate numbers; no red cells; cultures gave *Staph. albus* and *Bact. coli. Brain and meninges* heavy but dry; a little pitting in end surface of basal ganglia; vascular points in the cut surface generally rather prominent.

Lung sections: plugging of bronchioles with fibrinous exudate containing a few leucocytes; very little desquamation; no pus; patches of collapse surrounded by acute emphysema, some being interstitial; no evidence of infection or consolidation.

COMMENTS

This was an extremely puzzling case on admission to hospital. Several experienced physicians saw the case but could not give any clue to the diagnosis until similar cases were reported in THE LANCET. This at least illustrates the importance of publishing unusual cases.

The cause of the subcutaneous emphysema was not demonstrated at necropsy, but the severe cough and restlessness may have been a contributory factor in rupturing a small emphysematous bulla at the hilum of the lung, or causing a small perforation in an already damaged trachea or bronchus.

Neither penicillin nor sulphonamides had the slightest influence on the course of the disease.

I wish to thank Dr. T. Peirson, medical officer of health, Plymouth, for permission to publish the case-note; Dr. W. Lister for his interest in the case; and Dr. M. Thomas for investigating the pathology. It is regretted that permission to publish fuller photographs could not be obtained.

"... Government has become increasingly paternalistic, its actions being based upon the assumptions that the people do not know what is good for them and that, even if they did, they are not in a position to secure it by their own efforts.... And so it is that government has increasingly become concerned with the translation of the discoveries and recommendations of the scientist and technician ... into plans and projects having for their object the provision of an optimal physical and social external world. ... It is not ... enough ... to provide by legislation the means for the satisfaction of human needs ... health and the means for its attainment cannot be forced upon an uninterested community ... they must be taught to want and to value it.

... The very best and best-intentioned measures will be fruitless unless they are welcomed by a population eager to coöperate."—Prof. F. A. E. CREW, F.R.S. (*J. R. sanit. Inst.* 1947, 67, 235).

suggest that nodules palpable in muscle are not necessarily pathological but bear a fortuitous relationship to muscle tenderness in low back pain.

Another view of this pain, especially when it occurs in psychoneurotics, postulates hypersensitivity to painful stimuli (Gordon 1939). The experiments described here revealed no such hypersensitivity. Normal persons and neurotics reacted very similarly to the painful stimulus.

Muscle spasm has been considered to be the cause of pain in this and allied syndromes. Ellerman et al. (1942) state that "the muscle spasm is dependent upon an increase in muscle tension arising from the inhibition of aggression." Elliott (1944), investigating lumbar pain in cases of prolapsed nucleus pulposus, demonstrated with an electromyograph an increased irritability of muscle in the tender areas. The cases described here had no palpable muscle spasm; any spasm provoked by palpation could always be relaxed, even though the patient was experiencing pain.

The muscle spasm of experimentally induced pain behaved in a way clearly distinct from that of the spontaneous pain. Specific movements of minimal vigour constantly aggravated pain associated with muscle spasm. So different were the unpredictable inconstant exacerbations of spontaneous low back pain. Further, in the last 24–48 hours of the induced-pain experiment spasm persisted, though the patient had no pain. Even if muscle spasm can be demonstrated as in Elliott's experiments, it is not safe to conclude that this spasm is causing the pain.

What is certain, however, is that these patients are psychoneurotic, and that their psychological state closely resembles that in Da Costa's syndrome. The pain may occur in the inframammary region, in the low back region, or elsewhere—e.g., in the rectus abdominis muscle. Its pathology is probably the same irrespective of its site.

The pain is not hysterical, imagined, or non-existent. It has simple and clear characteristics. It arises either in, or is closely related to, muscle tissue. It can be abolished with equal success by the intramuscular injection of procaine or of saline, or by dry intramuscular needling. It is not affected by cutaneous anæsthetic. It tends to be remittent, and relapses are precipitated by natural or artificial pyrexia.

There is reason to believe that low back pain, when not due to organic disease, is a psychosomatic manifestation and should be treated as such. The mechanism of low back pain, like that of inframammary pain remains obscure. Nevertheless it appears probable that some local disturbance is responsible, and the discovery of its nature would provide yet another clue to the relationship between psychological disorder and somatic disease.

SUMMARY

An unselected series of 25 cases of low back pain in soldiers without organic disease was investigated. These cases would ordinarily be diagnosed as fibrositis.

The average duration of the disorder was $3^1/_2$ years, indicating that it was chronic or relapsing.

The pain was uniformly described as a dull ache, acutely sharpened from time to time by sudden jabs arising spontaneously or precipitated by trivial movement.

There was abundant evidence of psychoneurosis or of a personality defect in all cases.

It was impossible to establish any relationship between pain and fibrositic nodules. Evidence is presented which suggests that these nodules are innocent variants of normal muscle tissue.

By the artificial production of lasting low back pain with 0·2 c.cm. of a 10% silver-nitrate solution, it was proved that these psychoneurotic subjects with low back pain were not hypersensitive to painful stimuli, that their spontaneous backache was not due to painful muscle spasm, and that it was not perpetu conversion hysteria.

Low back pain may be temporarily abolished by muscular injections of procaine or of saline, or by dry needling, but not by cutaneous or subcu injections or needling. Pyrexia, either natural artificial, caused the pain to relapse.

Low back pain has the same clinical and e characteristics as has the inframammary Da Costa's syndrome, and both occur in the of person. Evidence is presented that these and pains occurring elsewhere in such subjects differ in their sites and represent the same psych manifestation.

Low backache of the kind described should diagnosed as fibrositis, but may conveniently be functional backache.

The mechanism of low back pain remains obscu

I am indebted to Lieut.-Colonel Paul Wood, for his interest in this work, his helpful criticism, revision of the text.

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FATAL CASE OF STEVENS-JOHNSON SYNDROME

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IN the case reported here the illness presented unusual features that, in spite of several other opini it remained undiagnosed until after publication Murray[1] and Nellen[2] of their cases of Stevens-Jo syndrome. It was then realised that this was certainly yet another case of this rather rare di Unfortunately the outcome was fatal, but the r of the necropsy findings may be of interest.

A slim but well-built boy of ten years was admitted City Isolation Hospital, Plymouth, on Nov. 23, 1946, two days' history of general malaise and sore throat. viously he had always been in good health, except for an of measles some years ago. He had been fully imm against diphtheria.

On the day after he first felt unwell he sweated profu felt cold and clammy, and had repeated shivering at His doctor found a blotchy erythematous rash just app on the face and trunk and diagnosed incipient measles.

The patient was put to bed and treated on general but his condition got worse, the rash became more p and he seemed so ill that his parents asked the doct see him again first thing next morning—i.e., three days the onset of his first symptoms. The doctor was so st by the rapid deterioration in his condition that he sent into hospital immediately.

On admission the boy was gravely ill and comatose. perature 104°F, pulse-rate 120, respirations 30 per Severe cough, dyspnœa, and cyanosis of lips. Slightly

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1. Murray, J. O. *Lancet*, 1947, i, 328.
2. Nellen, M. *Ibid*, p. 326; see also annotation, *Ibid*, p.

ropsy findings.—The brain and stomach only were ied; they showed Wernicke's encephalopathy and oma respectively.

in showed petechiæ in the wall of 3rd ventricle to a of 0·2 cm., corpora mamillaria, grey matter lining n aqueduct, and floor of 4th ventricle as far as lower f pons. Sections showed characteristic symmetrical rrhages with early microglial reaction. Lesions oldest pora mamillaria, where there were plenty of fat and areas of parenchyma loss and vascular hyperplasia.

nach showed diffuse leathery thickening of lower third mach wall, maximal at pylorus, where lumen was icted. Microscopy showed diffuse infiltration of wall undifferentiated spheroidal-cell carcinoma.

DISCUSSION

npbell and Biggart (1939) published an excellent x of Wernicke's encephalopathy. All 3 cases ibed above showed the characteristic focal areas of chyma loss, vascular dilatation and hyperplasia, hæmorrhages and glial reaction, distributed sym- cally throughout the corpora mamillaria and the matter in the walls of the 3rd and 4th ventricles the aqueduct of Sylvius. The hæmorrhages were ly obvious to the naked eye on coronal section of the , but some needed very close inspection, and some only be demonstrated histologically.

e clinical signs of this disease fall into two groups. e of the first group can be explained by the localised ts just described. Thus ocular palsies of every type ommon, and glycosuria, drowsiness, hyperpyrexia, ting, and respiratory disorders have been described.

he second group, more difficult to explain on an omical basis, are mental changes, such as dis- tation in time, confabulation, and mental con- n deepening into coma. The condition may also ssociated with peripheral neuritis.

ie syndrome was first described by Wernicke (1881), 2 out of 3 of his patients and most of those in the equently recorded cases were chronic alcoholics. bürger (1936), however, reported a series in ents with carcinoma and chronic gastritis. Since it has been described in a wide variety of medical surgical conditions, the most common being those ciated with gastritis and vomiting.

vidence is accumulating that Wernicke's disease is iarily due to a deficiency of vitamin B_1. De Wardener Lennox (1947), reviewing 52 cases in prisoners-of- conclude that Wernicke's encephalopathy was ed in those cases solely by acute thiamine deficiency; treatment with thiamine injections produced rapid complete cure. Similar lesions have been produced rimentally in pigeons on a diet deficient in vitamin B_1 xander et al. 1938). According to Alexander (1940) lesion can only be produced in pigeons if other mins are fed. In Chastek paralysis, a disease of s fed on a diet composed of 10% fresh fish, there are ns identical with those found in Wernicke's encephalo- ly, and the disease is curable with vitamin B_1 (Evans l. 1942). Wortis et al. (1942) reported survival in consecutive cases of Wernicke's encephalopathy in after treatment with thiamine. Since the ophthal- legia always responded to thiamine therapy but the ital symptoms often did not, they considered the ase to be a deficiency of several nutritional factors, of which was probably nicotinic acid. Vitamin B_1 s a part in the katabolism of carbohydrates, and t of the symptoms of deficiency only develop if the , contains abundant carbohydrates.

his holds for Wernicke's encephalopathy, and the hanism of development of symptoms is well illustrated he 3 cases described here. Case 1 lived for years on iet deficient in vitamin B_1. This alone might have sed her gastric atony and vomiting. A crisis was hed when her diet became restricted to milk puddings ng to extraction of teeth. Case 2 had access to a diet containing an adequate quantity of vitamin B_1, but she developed pyloric stenosis and habitual vomiting, which brought general starvation. This alone did not cause Wernicke's encephalopathy, but in hospital she was induced to retain a high-carbohydrate diet, whereby coma was precipitated. Case 3 was on a full diet until a carcinoma of the stomach caused vomiting. She also was persuaded to retain her food in hospital, and this was rapidly fatal.

Untreated, this disease is usually rapidly fatal. The ophthalmoplegia is curable with vitamin B_1, but the mental symptoms are very resistant to treatment. It must therefore be emphasised that the condition should not be allowed to develop. Patients with alcoholic gastritis, carcinoma of the stomach, or pyloric stenosis should be given a high-vitamin diet especially rich in vitamin B_1.

SUMMARY

Three cases of Wernicke's encephalopathy are described, illustrating how the condition may arise in surgical cases. Patients with a history of dietary insufficiency or prolonged vomiting should be given vitamin B_1. Otherwise the high-carbohydrate hospital diet may prove fatal.

My thanks are due to the honorary staff of the Sheffield Royal Hospital for their kindness in allowing me access to their cases and reports, to Prof. H. N. Green for help and criticism, and to Mr. D. Bradey for his neurohistological preparations.

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PERINEPHRIC ABSCESS TREATED WITH SULPHADIAZINE AND PENICILLIN

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We are prompted to present the following case-record because of the cure, reported by Ockuly et al.,[1] of a perinephric abscess with penicillin in a man, aged 30, the subject of recurring attacks of malaria. Four days' treatment with sulphadiazine had not produced any improvement; so continuous intravenous penicillin therapy was adopted, at the rate of 60,000–125,000 units every twenty-four hours for ten days, a total of 925,000 units being administered. The temperature gradually dropped to normal in eight days. Five months later the patient was still free from symptoms. Ockuly and his co-workers state that, so far as they know, this is the first example of this disease which has been treated and cured with penicillin therapy alone. We have not been able to trace any further reported examples.

CASE-RECORD

A man, aged 34, was admitted to Lennox Castle E.M S. Hospital on July 10, 1945, with pain in the right hypo-

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1. Ockuly, E. A., Barnhart, W. T., Egbert, H. L. *J. Amer. med. Ass* 1945, 129, 274.

WERNICKE'S ENCEPHALOPATHY
IN SURGICAL PRACTICE
REPORT OF THREE CASES

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IN 1940, among 5949 medical and surgical inpatients 3 cases of Wernicke's encephalopathy came to necropsy. *This summary of them emphasises that the syndrome* may come within the surgeon's province.

CASE-RECORDS

Case 1.—A married woman, aged 46, was admitted in January, 1940, with the tentative diagnosis of pyloric obstruction, and ten years' history of frequent attacks of abdominal pain immediately after food.

In 1935 she had had a small hæmatemesis. There had been no free HCl in a test-meal. Radiography had shown atonicity of stomach, with delay in emptying, but no organic lesion. After six months' treatment with olive oil and alkaline powders she had remained free from symptoms for the next three and a half years. Her diet had contained very little vegetable, potato, or meat, and consisted mainly of white bread, butter, fried fish, and cheese.

In November, 1939, she had had all her teeth out and had then eaten nothing but milk puddings. After ten days she had had numbness in the legs up to the knees and had started *to vomit after food. Vomit had been copious, not associated* with epigastric pain or nausea. She had become "queer," repetitive, and confused about the time, and had had difficulty in seeing. Legs had become weak and completely numb.

On admission she was semicomatose, unable to give a history, but able to obey simple commands, and had headache and a pain in the base of her back. She was flushed, with dry skin. Respirations rapid and sighing. Blood-pressure 86/54. Bilateral ptosis. Pin-point pupils. Weakness and flaccidity of all limbs. All tendon-reflexes absent. No appreciation of pinprick, vibration, or joint movement over legs up to thigh. Bladder distended. Optic disks not seen. *Lumbar puncture produced clear normal fluid at 180 mm.* pressure.

Urine: faint cloud of albumin, pH 6·3, specific gravity 1·020. The deposit contained a few hyaline and cellular casts and a moderate excess of pus-cells.

Blood: non-protein nitrogen 79 mg. per 100 c.cm., blood-chlorides 363 mg. per 100 c.cm., Hb 75%, red cells 4,200,000 per c.mm., colour-index 0·94, white cells 17,000 per c.mm.

Progress.—She became more and more confused and then comatose. Her temperature rose, over three days, to 103°F, and she died five days after admission.

Necropsy findings.—Atrophy of stomach, purulent cystitis, collapse of lower lobe of right lung, and Wernicke's encephalopathy.

Brain showed slight flattening of convolutions; no pressure cone; numerous red petechiæ in upper half of floor of 4th ventricle, extending round Sylvian aqueduct, and in walls *of 3rd ventricle to a depth of 0·8 cm. as far forward as* anterior commissure; lower halves of corpora mamillaria rather gelatinous and injected. *Stomach* dilated, mucosa atrophic; otherwise no visible organic lesion of alimentary tract.

Histology.—The lesions in the brain were restricted to the grey matter surrounding the 3rd ventricle, aqueduct of Sylvius, and 4th ventricle. The most recent changes were *small pericapillary ring and ball hæmorrhages, most of which* were invaded by microglia. The oldest lesions were little patches up to about 1 mm. in circumference, where the brain substance had been completely replaced by fat *phagocytes and hyperplastic* vessels and surrounded by a zone where microglia and astrocytes were abundant and hypertrophied.

Case 2.—A married woman, aged 63, was admitted with the tentative diagnosis of pyloric *obstruction and a history that* ever since childhood she had been subject to periodic attacks of vomiting, when she brought up all her food. Attacks had developed two or three times a year and lasted from three days to a week. They were not precipitated by emotional though she was of a nervous disposition. Never p For three months she had had what was regarded as a bout of these attacks and had become progressively and more dyspnœic, with the result that for the last ten she had been unable to get up. No pain, paresis, or p thesia. Very restive. No incontinence of urine. headache. Continuous vomiting. She was almost tee her diet was stewed meat, lots of potatoes, margarine, brown bread.

On admission.—Cataract in the left eye; lens of right removed eight years before. She appeared to be n *Skin very dry and lax. Generalised* weakness. All present but weak. Almost complete loss of sensation pinprick and vibration over legs to mid-third of Radiography showed hypertonic stomach with much res fluid, delay in emptying, and deformity in the pyl region.

Progress.—In hospital she retained her food, which co of milk puddings, bread, tripe, and mashed potatoes. two days she suddenly became dull and very forgetful, on the third she was comatose. Temperature 1 pulse-rate 138, with attacks of fibrillation. Well Cheyne-Stokes breathing. Complete flaccidity of all Plantar reflexes absent. Slight papillœdema of right left disk not visible because of cataract. Alkali 66 c.cm. per 100 c.cm. CO_2. Blood-sugar 0·22 g. per 100 Blood: non-protein nitrogen 38 mg. per 100 c.cm. C spinal fluid (C.S.F.) normal.

She improved slightly on treatment with intrav glucose and 'Betaxan.' She had lucid intervals but downhill slowly, developed cystitis, and died ten days admission.

Necropsy findings.—Pyloric ulcer, pyloric stenosis, mortem digestion of œsophagus, bronchopneumonia, c. *and Wernicke's encephalopathy.*

Stomach very dilated; gastric mucosa reddish, thic and covered with excess mucus. Small shallow scar in m of lower wall of pylorus; sphincter thickened with m pearly-grey tissue which took the place of most of the m This and the swollen mucosa occluded the lumen, but stretching with a probe could dilate the lumen up to 0·4 diameter.

Brain showed slight atrophy of convolutions; excess C.S.F.; dura adherent to vault; *deep pink* diffuse injection of white matter; purplish flecks in interventricular septum and corpora mamillaria.

Histology.—Chronic pyloric ulcer with fibrosis of sphincter no evidence of malignancy. Brain showed ring hæmor rhages in grey matter of floor of 4th ventricle, surrounding aqueduct of Sylvius, in corpora mamillaria, and in ependymal region of wall of 3rd ventricle, associated microglial reaction, ranging from stumpy migrating mic to fat phagocytes.

Case 3.—A married woman, aged 66, was admitted with diagnosis of carcinoma of the stomach and pyloric obstruction and six months' history of upper abdominal pain, usually immediately after food, and loss of appetite; vomiting at first *infrequent and later frequent and* copious. She had recognised previous meals in vomit. For three months she had had recurrent attacks of diarrhœa and had lost 1 st. in weight. For a week the vomiting had been incessant and *copious. Eleven years ago she had had* a cholecystectomy. Before her vomiting started she had taken a full and varied diet. She was teetotal.

On admission.—Wasted cheerful woman. Tender in le *hypochondrium.*

Progress.—She retained her food well in hospital. After a day she developed diplopia owing to bilateral external rectus palsy, incomplete on the right side. Slight nystagmus *greater on looking to the right.*

Radiography showed a filling defect in prepyloric region and considerable residue in stomach five hours after meal.

Blood: *non-protein nitrogen 33 mg. per 100* c.cm., white cells 16,000 per c.mm., alkali reserve 56 c.cm. CO_2 per 100 c.cm.

Wernicke's encephalopathy was diagnosed; but, before treatment could be instituted, a severe air-raid caused dispersal of all patients. She was transferred to an outlying hospital, where after two days she became completely disoriented and died in coma.

Preliminary Communication

'MIADONE'

AN ANALGESIC DRUG

IADONE' (*dl*-2-dimethylamino-4 : 4-diphenyl hep- -one hydrochloride) was introduced as an esic during the war in Germany, where it was . 'Höchst 10820' or 'Amidone.' Thorp et al.) found that its analgesic action in rats was about owerful as that of morphine and 7–10 times that thidine. Pharmacological and preliminary clinical tigations have also been reported in America, e the drug has been named 'Dolophine.'

s have compared the analgesic potency of miadone those of morphine and of pethidine in ourselves and student volunteers. Pain has been induced very y by working the muscles of the forearm under tions of complete ischæmia (produced by disten- of a sphygmomanometer cuff applied to the arm pressure of 220 mm. Hg), until a definite aching pain ght or moderate severity is felt in the region of the r muscles. If the contractions are then stopped ischæmia maintained), the pain at first diminishes, after 2–3 min. it begins to rise again, continuing ow steadily until in 10–15 min. it becomes intolerable. experience it becomes possible to distinguish the s of pain quite clearly, and figures can be given over the range from the first development of pain e point of intolerance. From eight to ten stages of lopment are usually distinguishable.

this background of a steadily increasing pain the to be tested is injected intravenously, usually nin. after the end of the period of ischæmic muscular ractions, when the pain is of moderate intensity units on our scale). The drug begins to act either rds the end of the injection (which takes 1–1½) or within a minute of its completion. Central ts, such as light-headedness, giddiness, and dis- ances of vision, appear at the same time as relief of pain, all these actions being proportional e dose.

compare the analgesic potency of miadone, phine, and pethidine, the aim has been to find the dest dose of each which completely relieves moderate (4–5 units). The following approximate equi- gesic doses (the smallest to relieve pain completely) found :

mg. of miadone=7·5 mg. of morphine=75 mg. of idine—i.e., miadone is about as potent as morphine and imes as potent as pethidine.

iadone produces at least as much euphoria as mor- e and pethidine, and therefore must be considered ssible drug of addiction. Other side-effects, such as iness and blurred vision, are less with miadone with pethidine, and observations on 12 other nal subjects suggest that nausea and vomiting are frequent with miadone than with morphine.

e are grateful to Mr. R. M. L. Dry and Mr. J. W. tham for their coöperation as subjects in this work, and Messrs. Burroughs Wellcome & Co. (The Wellcome ndation Ltd.) for supplies of miadone.

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Reviews of Books

An Integrated Practice of Medicine

HAROLD THOMAS HYMAN, M.D. Philadelphia and London: W. B. Saunders. 1947. Pp. 4621. Set of 4 vols. £12 10s.

COMPREHENSIVE understanding of the diagnostic and therapeutic problems of the individual patient depends on mastery of the basic doctrines in clinical medicine. There is no other short cut to the integration of specialised knowledge into common medical care. The "compleat physician," we infer, is bred from the marriage of the "science of practice" with the "art of medicine." In this ambitious work of 25 sections, each a textbook in itself devoted to a particular clinical specialty, and written jointly by a general practitioner and a specialist, a complete survey of general medical practice is undertaken, including obstetrics, minor surgery, and laboratory methods. Emphasis has been placed on the patient rather than on his disease, on the beginnings of disease rather than on necropsy findings, and on the coördinated recognition of clinical possibilities. Over 300 tables of differential diagnosis by presenting symptoms and signs punctuate the text; and the index alone forms a separate volume of 300 pages.

Written to meet the requirements of the general practitioner, and reviewing the potentialities of the specialties in any given clinical problem, this work has much to recommend it, but the bounds of general practice are widely conceived: the doctor is expected in his routine physical examination to discover biliary or renal calculi, to include in his diagnostic procedure electrogastrography and the exclusion of causes of "hyponatremia" and "hyperuricemia," and to be capable of performing the operation of paravertebral nerve-block for intractable pain without preliminary practice on the cadaver. But, no doubt to lighten his task, a list has been included of over 200 medical reference books for his library (though these are almost exclusively American), as well as a number of suitable novels for the shelves of his waiting-room. Administrative instruction on the running of his practice does not omit the problems of income-tax, the telephone, and how to deal with impetuous callers.

The general attractiveness of the publication is enhanced by many illustrations. Some of the vividly coloured photographs fail, however, to portray clearly the condition which they represent; examples of skin diseases, often venereal, predominate, and some appear in more than one place in the text. The pictures of vitamin deficiencies, on the other hand, are particularly accurate. Many of the radiograms and the electrocardiograms suffer from reduction.

In an up-to-date and practical work of reference discussion is proper of dicoumarol, thiouracil, folic acid, radioactive phosphorus, and the antibiotics; but the omission is unfortunate of any detailed reference to specific therapy in syphilitic cardiovascular disease, 'Paludrine' in malaria, penicillin in colon diseases, continuous narcosis in anxiety hysteria, and surgery in hypertension and Banti's syndrome. Some useful examples of diets are given for a variety of conditions, from old age to ileocolostomy: and a little ingenuity will transpose the American diets into English equivalents.

The statements that hyperthyroidism cannot be produced by thyroid feeding, that penicillin for bacterial endocarditis is best given by the drip method, and that the X-ray contour of the heart in Lutembacher's syndrome is unaltered, require amendment; while the assertions that gold therapy in tuberculosis should only be used inside an institution and that bile-salts are valueless in the treatment of gall-bladder disease may be questioned. The clinical descriptions of chronic amœbiasis, subarachnoid hæmorrhage, and sciatica are inadequate, and the chapter on neoplasms and the "precanceroses" seems to serve little purpose. But in a work of this size and compass errors are inevitable. On the whole, Dr. Hyman preserves a mature and level balance, and he goes a long way towards achieving his object of demonstrating that the outcome of specialisation is clinical myopia.

chondrium and right lumbar region posteriorly. Eight weeks before admission he had had a furuncle in the neck, which was now healed. The pain was acute, throbbing, and constant, and had been present three weeks. It was uninfluenced by diet, coughing, or deep respiration. The patient also had excessive sweating, but had had no rigors; he had lost a stone in weight since the onset of his illness.

He was well built but pale and anxious and looked ill. Temperature 100°F, pulse-rate 107 per min., and respirations 18 per min. Tenderness and rigidity were elicited over the right side of the abdomen. The lumbar region on the affected side showed a red swelling which felt hotter than the left loin, and the slightest digital pressure over the swelling caused great intensification of his pain. The white-cell count was 14,000 per c.mm.; Hb 65%; blood-sedimentation rate (Westergren) 78 mm. in the first hour, 116 mm. in the second hour; Wassermann reaction negative. The urine contained no chemical or microscopical abnormalities and was sterile on culture. Radiography of the chest and lumbar spine yielded negative results.

Penicillin was started on July 12. Intramuscular injections of 16,000 units were given every three hours for ten days, a total dosage of 1,280,000 units. At the end of this time there was much improvement in his general condition, the pain had decreased, the temperature returned to normal levels, and the pulse-rate was 85 per min. The leucocyte-count had dropped to 10,000 per c.mm., but there was little change in the signs in the right lumbar region.

The patient was then given sulphadiazine by mouth, an initial dose of 2 g. being followed by 1 g. four-hourly, with the usual routine of abundant fluid intake and an alkaline mixture. This therapy was continued for a week. Little change in the patient's condition was noted at the end of this period, and a further course of penicillin of the same dosage as the original was then instituted. The second course extended over six days—a total of 768,000 units of penicillin. Again definite improvement was noted, but the physical signs were unchanged.

During the next few days there was no diminution of the swelling or local tenderness. He was referred for surgical opinion on Aug. 10, and Mr. W. Beattie advised against immediate operation. Subsequent progress was satisfactory, and the swelling gradually subsided and disappeared by the 30th, when the tenderness over the right costophrenic angle had also disappeared.

The patient was discharged at the end of September. He was free from symptoms and had more than regained the original loss in weight. He reported for re-examination on Oct. 28, when his general condition was satisfactory, and there were no clinical signs of his previous illness. Intravenous pyelography revealed no abnormality.

COMMENT

One of the great advantages of penicillin over the sulphonamides is that its action is unimpaired by the presence of pus. Cruickshank[2] has reviewed the place of penicillin in infections of the urinary system. He divides them into two groups. In the first he places staphylococcal infections occurring either as a parenchymatous infection of the kidney secondary to some focus elsewhere in the body or as a staphylococcal cystitis. The organisms responsible for the larger second group of urinary infections—the *coliform group, B. proteus, Ps. pyocyanea, Strep. fæcalis*—are largely resistant to penicillin. We have no proof that free pus was present in the perirenal tissues in our case, but the clinical features seem unmistakable.

The importance of the satisfactory outcome of this conservative treatment is that a condition which formerly required surgical intervention may now respond to chemotherapy alone. Since the perinephric inflammation developed after a furuncle, the infection was probably staphylococcal, and treatment should be continued for several days after apparent clinical recovery in staphylococcal infections because of their tendency to relapse. Such a feature was noted in the present instance, two courses of penicillin (2,048,000 units in all) being necessary before the patient could be said to be cured.

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[2] Cruickshank, R. *Proc. R. Soc. Med.* 1945, 38, 650.

MYOMA OF THE SMALL INTESTINE CAUSING INTESTINAL OBSTRUCTION

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MALIGNANT tumours are generally regarded as a little more common than benign ones in the intestine (Rankin and Newell 1933), and of the tumours the most common is the adenoma, followed by the myoma (Cohn et al. 1939).

Myomata are classified, according to their relatio the intestinal lumen, into inner and outer (Steiner 1898), and the symptoms of the two group quite different. Outer myomata are more li cause intestinal hæmorrhage, the mechanism of is well explained by Smith (1937), whereas inner m usually give rise to intussusception (Rankin and 1933, Fiske 1937). When an outer myoma causes tinal obstruction it usually does so by producing vol

The following case is recorded as an examp a large outer myoma causing obstruction in an way.

A rather frail old lady of 69 was first seen on Jan. when she gave a history of colicky abdominal pa vomiting for three days. For about three years she had constipated, with vague lower abdominal pain, mucus in motions, and moderate loss of weight.

A hard mass was felt in the lower abdomen, rising from pelvis, and rectally this could be felt in the pouch of D where it seemed to be hard and fixed.

Some improvement took place after enemas, b further attack of pain and vomiting, accompanied by a distension, made it necessary to open the abdomen on Ja 1944.

At operation the cæcum and large intestine were mod distended, and the small intestine was of about normal. A firm lobulated mass occupied the whole of the pelvis, which it fitted so closely that it was dislodged with difficulty, though it was not adherent. The mass was at to a loop of lower ileum, which was stretched at this so that its lumen was much wider than normal. The tu was removed with a short section of the anti-mes border of the intestine, after division of a single co adhesion. The bowel at this point being much wider t normal, it was easily reconstructed without narrowing.

Postoperatively the course was smooth; and, when 16 months later, the patient, now aged 71, said that she better than she had done for some years, and had ga weight. There was no sign of recurrence.

The histological report, for which I am indebted to Dr. Gartside, leaves no doubt that the tumour was an inn myoma. The section shows some areas of necrosis and formation, which, however, had no connexion with the of the bowel. There was no evidence of malignancy.

COMMENT

The interest in this case lies in the size of the tu which unfortunately was not weighed but occ practically the whole of the pelvis, and the unusual in which it caused intestinal obstruction. There ca no doubt that it had compressed the pelvic colon at brim of the pelvis.

Preoperatively it had been regarded as an ext carcinoma of the colon, and the case illustrates a p sible disadvantage of performing a blind cæcostomy colostomy in these circumstances.

I am indebted to Dr. J. F. Hackwood for his k comments and his permission to publish this case.

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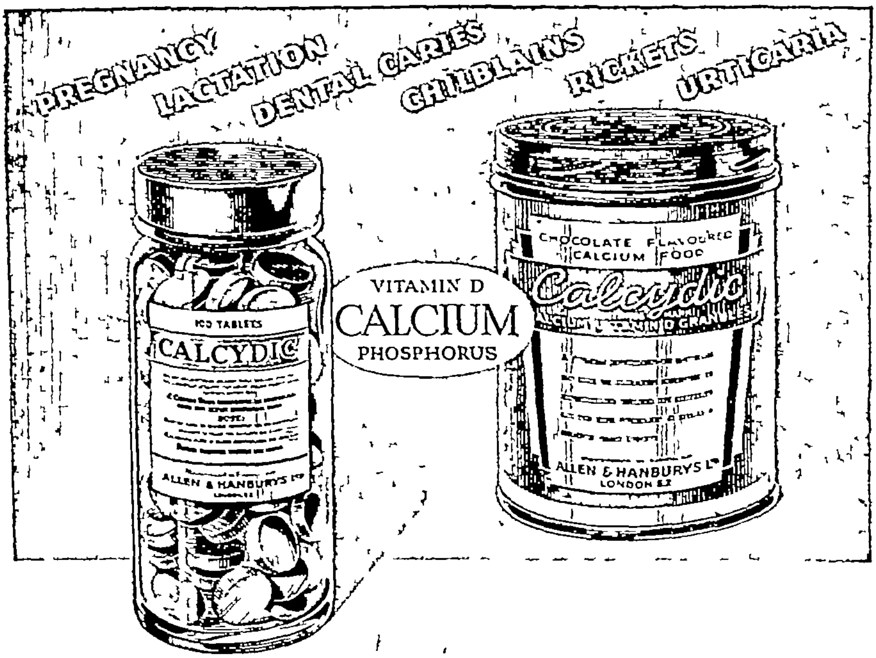

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Skin Diseases, Nutrition, and Metabolism

ERICH URBACH, M.D., F.A.C.A., associate in dermatology, University of Pennsylvania; with the collaboration of EDWARD B. LE WINN, M.D., F.A.C.P., associate in medicine, Jewish Hospital, Philadelphia. London: W. Heinemann. *1946. Pp. 634. 50s.*

THIS book is sure to be widely read, and can be recommended for study even in countries where, if a diet of any complexity is prescribed, there is little hope of the patient being able to buy the ingredients. In reading it, however, the postgraduate student should keep a sense of perspective: other authorities are less impressed than Dr. Urbach with dietetic and metabolic theories of ætiology. For example, while a few cases of circumgenital and axillary dermatitis may be due to intestinal putrefactive dyspepsia, there are (as he is careful to emphasise) many other causes of eruptions in these delicate areas.

The book has a large scope, dealing with the influence of nutrition on the physiology of the skin, nutritional causes of dermatoses, the influence of diseases of the liver, pancreas, and intestinal tract on the skin, and the nutritional therapy of skin diseases. The sections on cutaneous glycohistechia, malnutrition (including vitamin deficiencies), *allergic reactions to food*, seborrhœic dermatitis, psoriasis, and neurodermatitis deserve special attention. Dr. Urbach and his colleague have avoided the pitfall of stating that because, in 8 out of 10 cases of some rare disease, von Reckless found low initial levels of vitamin x in the blood, and because the malady gradually responded to the oral administration of a billion units daily of the vitamin, the disease was therefore a manifestation of "avitaminosis x." On the contrary, in almost every case they have been careful to emphasise important corollary details.

The chapter on cutaneous tuberculosis deals chiefly with the Gerson and Sauerbruch-Herrmannsdorfer diets, and the outstanding recent work on treatment by vitamin D_2 is only noted in two paragraphs at the end of the chapter. This, however, is the only important defect in a valuable work of reference.

The Management of Fractures, Dislocations, and Sprains

(4th ed.) JOHN ALBERT KEY, M.D., clinical professor of orthopedic surgery, Washington University; H. EARLE CONWELL, M.D., F.A.C.S., orthopedic surgeon to Tennessee Coal, Iron and Railroad Company. London: H. Kimpton. 1946. Pp. 1322. 63s.

IF only for the fine monograph on spinal fractures, this book is needed by all traumatic surgeons. Sections on fractures of the skull by Fincher, and of the face and jaw by Barrett Brown, supplement the chapters by Key and Conwell. The work is large in scope, and lays emphasis on methods found acceptable by the authors; but where these differ from common methods the text declares it. Conservative British methods are described in this American work, just as the more radical American methods which we have absorbed into practice are now given in our textbooks. Study of end-results has at last shown the way to sound standard methods for almost every fracture. The book is well produced, though some of the X-ray photographs are indistinct and unworthy of the text.

Genetics

EDGAR ALTENBURG. New York: H. Holt. London: Constable. 1947. Pp. 452. *16s.*

Altenburg's textbook contains much useful information, and—compared with other books on genetics—very few factual mistakes. Its weakness lies in his unequal way of presenting the material. Some parts, such as the chapter on abnormal chromosome rearrangement, seem to be written for fairly advanced specialists, and would have gained by the inclusion of a few references; others, like that on vertebrate hormones, barely reach high-school standards. The author's conscious attempt to lay emphasis on modern genetics, and "to make the student feel that genetics is a growing science and that important developments are now taking place," has not been very successful, since numerous omissions mar the value of the work: chemical mutation is dealt with in ten lines and Hadorn's important results are not mentioned at all; nucleic acid is not in the index; pleiotropism is not discussed in real examples, but only superficially and in a general way; and genetics of fungi and bacteria are not mentioned at all, nor are sterility mechanisms in plants. There are many other such examples.

On the positive side, a good and thorough discussion of higher chromosome mechanics forms the bulk of the book. *Of those the author acquired first-hand* knowledge while occupying a laboratory desk in the former "drosophila room" at Columbia University between 1911 and 1913. The book is thus a useful introduction for the student interested in chromosome theory; genetico-developmental problems are treated adequately, and the discussion of genic balance is informative and clear. Human genetics are dealt with rather cursorily, and hereditary diseases and defects in man and other mammals hardly touched on. Hæmophilia, chorea, and the rhesus factor do not occur in the text, and no mention is made of any actuarial or statistical methods in dealing with human material, such as the determination of gene-frequency and consanguinity rates in human populations. The efficiency of twin comparison seems to be somewhat overrated, but the methods employed are sufficiently described. Recent work of non-American origin has been largely neglected, and this is probably the main reason for the book's failure as a general introduction to modern genetics.

Law Relating to Hospitals (London: H. K. Lewis. 1947. Pp. 400. *22s. 6d.*).—The law relating to hospitals straggles over a very wide field, but *it falls* roughly under four headings: constitution and management of hospitals and the administration of their funds; relations with and of the members of the staff inter se; relations with patients; and relations with third parties as in contracts *for supplies and services.* Mr. S. R. Speller, who is not only a barrister but also secretary of the Institute of Hospital *Administrators, addresses his book primarily* to the staffs of hospital administration, but the subject matter of the second and third headings is of equal importance to hospital *doctors. He sets out to cover the* whole of a wide field, and succeeds in doing so simply, clearly, and adequately.

Science Advances (London: Allen and Unwin. 1947. Pp. 253. *10s. 6d.*).—These are reprints of essays by Professor J. B. S. Haldane, F.R.S., which appeared mainly in the *Daily Worker* in the earlier years of the war. (The preface is dated 1944.) They were worth reprinting, though the price of the book will render them unavailable to most of the people to whom they were originally addressed. It is a book to be read, for however much Professor Haldane's habit of tagging Marxism on to scientific discovery may irritate and annoy the orthodox, *these essays tell the interested and avid adult*, who is not a specialist, just what is going on in the world of science. Simply and pleasantly written, covering a wide range of subjects from biography to Nazi "science," and showing an encyclopædic knowledge and a capacity to "put it across," they make a useful and entertaining book.

The National Health Service Act, 1946 (Eyre and Spottiswoode. *1947. Pp. 146. 9s. 6d.).—Between the* covers of this book has been bound a complete copy of the text of the National Health Service Act, 1946, together with an introductory explanation of the Act written by Dr. J. A. Scott and an index to the Act specially compiled by Mr. H. A. C. *Sturgess. It is thus a useful reference book for* all who will be affected by the Act in the months ahead. Dr. Scott, *having reviewed the developing background of* social progress beginning from the time of the Beveridge Committee, takes us through the Act section by section, and from his extensive knowledge of medical administration analyses the effects the Act will have on medical practice as we have known it. His explanations are lucid and comprehensive, and his footnotes make reference to the appropriate section of the Act easy and rewarding. This is particularly true of the sections which deal with services provided by local authorities. The index conveniently refers, not to the sections and subsections of the Act, but to the page numbers of the official copy.

THE LANCET

LONDON: SATURDAY, AUGUST 23, 1947

Management of Poliomyelitis

OST of us have poliomyelitis without knowing it ; is, we become immunised by being exposed to virus without developing any symptoms of the ase. A few have symptoms of a general infection ; fewer still suffer in addition from symptoms neningitis, but never develop paralysis ; fewest ll become paralysed. In an epidemic of poliolitis, therefore, it is necessary to look with ,icion on a child or young adult who for no overable reason has an acute febrile illness, aps with mild symptoms of upper respiratory rrh. Such patients should be isolated from chil- ı and treated expectantly, and the medical er of health should be consulted. They should be t under observation for a week after the temperature to normal, since in poliomyelitis it is common for temperature to fall to normal after 48 hours and ı to rise again with the onset of meningeal and-alytic symptoms two or three days later. They uld be examined daily for the symptoms described ow. If none beyond those of a general infection present it is impossible to prove that the illness been poliomyelitis, though it may have been, and it mpracticable to quarantine a patient for three ks on suspicion alone.

Next in severity come the "meningitic" cases. er two or three days of malaise and fever, sometes interrupted by a remission, the patient comins of pain in the back and headache. There is ally some cervical rigidity ; but more characteristic pinal rigidity which can be demonstrated in a child asking it to try and kiss its knee, which it will be ible to do owing to stiffness and pain in the back. ere will be no paralysis or change in the reflexes. mbar puncture should always be carried out when patient is seen at this stage, not only to confirm diagnosis but to distinguish poliomyelitis from ier forms of meningitis. In poliomyelitis there will a mixed pleocytosis of polymorphonuclear and nonuclear cells, usually between 50 and 150 per ım., a moderate rise in protein, and (in contrast to erculous meningitis) a normal chloride content—)-to 750 mg. per 100 ml. The diagnosis having en made, treatment is still mainly expectant. ough individuals hold different views, such as those t forward in our correspondence columns this week, is generally agreed that neither at this nor at any ier stage is chemotherapy—whether with sulphonides or penicillin—or serotherapy of any use. ialgesics will be needed, and a careful watch must kept for the onset of paralysis.

This may occur at any time between 12 and 72 urs after the onset of meningeal symptoms. Pain d tenderness in the limb muscles are as a rule the st sign that the disease is assuming the paralytic rm, and weakness gradually develops, usually nultaneously in several muscle groups, reaching its aximum in about 48 hours. The affected muscles become flaccid and their tendon reflexes disappear. In the average case the limbs and trunk are alone affected, and the respiratory muscles and bulbar muscles escape. Since the chief danger to life lies in respiratory paralysis, movements of the chest wall and diaphragm must be tested whenever the patient is examined, the latter by asking him to blow out his abdomen while taking a deep breath. Respiratory paralysis may develop in three ways : (1) at the same time as paralysis of the trunk and limbs, (2) as a sequel to an ascending paralysis creeping upwards from the lower limbs, or (3) as a symptom of the bulbar form of the disease. Respiratory paralysis will call for artificial respiration, and as soon as poliomyelitis is diagnosed the doctor should ask himself where the nearest respirator is in case it should be required. The location of these in London is known to the Emergency Bed Service (Tel.: Monarch 8515) and elsewhere to the local medical officer of health.

Though the paralysis usually reaches its maximum within 48 hours of its onset, it occasionally continues to extend. When the worst is known it can be confidently stated that much improvement will take place, but only time will show how much. The object of treatment at this stage is to prevent stretching of paralysed muscles and contractures in their antagonists, and to promote recovery of power. As long as pain persists in the muscles little can be done towards these ends beyond such simple measures as preventing foot-drop by means of a sandbag and taking the weight of the bedclothes with a cradle. As soon as pain is gone and the state of the muscles can be accurately assessed splints and plaster must be called in aid—under the guidance, if necessary, of the orthopædic surgeon—and the physiotherapy appropriate to the chronic stage commenced. Retention of urine may call for catheterisation for a day or two during the acute stage.

Poliomyelitis of the bulbar type may be mild or severe. Unilateral facial palsy or isolated palatal paralysis may be the only sign. On the other hand there may be widespread paralysis of the muscles of articulation and deglutition, with interference with the medullary cardiovascular and respiratory centres. Such patients tax the resources of doctor and nurse to the uttermost. They may need to be nursed in a respirator and fed by nasal tube. Suction may be called for to remove the secretions which otherwise tend to accumulate in the pharynx, and tracheotomy if the adductors of the vocal cords are paralysed. Despite every attention death may follow from medullary paralysis. In such cases artificial respiration may be of no avail, whereas when respiratory paralysis occurs at the level of the spinal cord it may be life-saving by tiding the patient over the crisis until some respiratory muscles begin to recover.

It seems probable that poliomyelitis is still spread mainly by droplet infection, but the virus is certainly present also in the stools and in sewage and may be carried by flies. Nursing, therefore, calls for "typhoid precautions." Nevertheless it is still true that case-to-case infection is rare. It is unusual for further cases to be seen in a household which already has one member affected, even when children have been exposed to the infection. Such contacts may, however, be carriers, and children should be isolated for three

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l. The clinical features of the cases admitted to lare's Hospital are summarised by DEENY and RIEN[2] *in tables which show that the disease* ars suddenly, often in underweight and anæmic lren; the stools are offensive, fluid, and usually green; the temperature is seldom raised except inally. In the newborn, vomiting as well as hœa may be observed. Generally speaking, the is more ill than the clinical findings might est. At post-mortem is found a petechial hæmor- ic condition of the gastric mucosa with minute s. Similar conditions prevail in the small bowel, icularly the ileum, while the presence of abnormal unts of mucus suggests a catarrhal state in the o-intestinal tract as a whole. Enteritis in lin, then, though it has its individual charac- tics, is essentially a particular form of what RGE NEWMAN described as "a general disease of ecific character within wide variations."

the classical epidemics of infantile diarrhœa er in the century the disease was particularly alent in the poor-class districts of the larger is, and the same feature appears in its epidemio- in Eire today. Dublin and the thirteen larger is, with a total population of 800,000, account nore than 60% of the cases, the other 40% arising ng the remaining *2,100,000* people in the country; in the large towns themselves the incidence is istently higher in certain dispensary districts. raised incidence seems to be related to over- ding but not to bad sanitation, and the seasonal t so evident in the classical epidemic is lacking. vever, a clear social gradient is seen in the con- ration of cases in the poorer sections of the munity, with relative immunity of the professional ses Another striking feature is the age-distri- on of cases during the epidemic phase: from a l of 13·0% in the endemic period, which ended in), the percentage of neonatal deaths among the l infant deaths from enteritis rose to 19·1 in the emic phase of the next five years. But the most ing fact of all is the observation that the disease almost limited to children who were artificially

omparing the Irish experience with that of other tries, we see that in Glasgow in 1944 there was arp epidemic of infantile enteritis among infants er a year old which was almost classical in its onal distribution and its prevalence among the nitary overcrowded houses of the poorer quarters he city. Of 522 cases, the child was breast-fed in 22 In Edinburgh in 1942, on the other hand, the t recent form of outbreak, attacking the newborn ifically in certain maternity hospitals, was erved In the United States in 1934 this form ame widespread in hospitals throughout the ntry. A pre-existing nursery infection such as ish or impetigo seemed to set the stage for an break of a fulminating type of intestinal intoxi- on which spread irregularly from cot to cot. parisons between breast-fed and artificially fed dren were invalidated by the universal practice of plementary feeding; but clinically and patho- cally the condition was similar to the type of ess seen in Dublin, and bacteriological investigation proved equally fruitless. The seasonal swing so characteristic of the former epidemics is absent, and *the disease tends to remain localised in specific* hospitals. Recent English experience of hospital outbreaks has followed this pattern fairly closely; though, in Greater London particularly, mortality is unduly heavy among infants over three months old[3]

While therefore more than one type of outbreak can be differentiated epidemiologically, the clinical and pathological findings differ only in degree, and the two main types of outbreak may be present together, as in Dublin, either in endemic or epidemic form. The general nature of the disease has changed somewhat in recent years; meteorological, seasonal, and sanitary factors seem to be rather less important, while convulsions are now seldom seen. Yet DEENY is convinced of the essential unity of the modern types with one another and with the classical epidemics of enteritis in the last century.

On the practical side he makes three main recommendations, concerning milk-supplies, epidemiological control, and isolation Efforts must be concentrated, he says, on the encouragement of breast-feeding among the poorer people in districts which his survey has shown to be specially prone to outbreaks of this very infectious disease An educational drive among parents and doctors is needed to ensure the prompt recognition and notification of enteritis, and measures for isolation—whether by architectural design of clinics and hospitals or by excellence of nursing technique—must be enforced. All this may possibly seem platitudinous; but the continued loss of 500 infant lives each year in Dublin illustrates how far practice falls short of precept. DEENY's preliminary study, though necessarily incomplete, demonstrates the importance of such epidemiological features as changing age-incidence, association with other diseases, time sequences of outbreaks, and the domestic circumstances which favour breast-feeding. If we on this side are to profit by Irish experience, bacteriological studies must be correlated with carefully controlled field surveys.

Swords into Ploughshares

OF late years science has been associated in the public mind with destruction; and the programme of the first full post-war meeting of the British Association, to be held at Dundee from Aug 27 to Sept. 3, has been designed to indicate how science may contribute to human progress. *No doubt* Sir HENRY DALE, F.R S, will point the contrast of these opposing purposes in his presidential address on Science in War and Peace. Subjects of general interest will be considered at the meeting; but there will also be some more specialised contributions In the section of physiology, for example, Prof. WINIFRED CULLIS will deliver her presidential address on Physiology and the Community; while other topics to be discussed range from antibiotics to aviation physiology, climate and health, tracer elements, and man and the machine. The section of psychology is to consider a number of topical questions, including selection for management, public-opinion surveys, and incentives in industry.

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[2] Deeny, J., O'Brien, D. P. *Ibid*, p. 178.

[3] *Proc. R. Soc. Med.* 1944, 37, 479.

weeks after their last association with the patient, who should himself be isolated for three weeks after the onset of his symptoms. Finally, poliomyelitis is a notifiable disease.

Agene and Canine Hysteria

ACCEPTABILITY of bread as an article of food is largely increased by the use of an "improver," a substance which enables the yeast added to the flour to exercise its full value. The one in most extensive use in this country, in America, and in Western Europe is nitrogen trichloride: known commercially as "agene," this has been by far the most popular improver during the past quarter of a century. In everyday milling technique a quantity of NCl_3, somewhere between 3 and 8 mg., is used in the treatment of a sack (280 lb.) of flour, the actual amount varying with the degree of extraction—the higher the percentage extraction the greater the amount of agene employed.

Sir EDWARD MELLANBY[1] has lately published the results of experiments which show that "canine hysteria" can be produced by feeding dogs on agenised flour, *using the amounts of agene which are current in milling practice.* In these feeding experiments the syndrome which goes by the name of canine hysteria appeared after 14–28 days. Dr. MORAN, working at the Cereals Research Station of the Milling Industry at St. Albans, has now taken research in this field a long step forward. In a paper which we publish this week he shows that the symptoms of canine hysteria can be produced in as short a time as 24 hours if the content of agene in the animal's food be greatly increased. An even more important addition to our knowledge is his discovery that it is in association with the protein fraction of flour that the toxic factor leading to the pathological nerve effects is produced. He was able to exonerate the carbohydrate and the fat from any such association, and he was also able to get the same effects by using the proteins of milk and of maize and even by using gelatin. The particular part of the protein structure immediately concerned is left in doubt. Clearly, the condition is not a "deficiency" disease.

No such symptoms, nor others like them, have, so far, been recorded as occurring in animals other than dogs, which thus appear to have a special susceptibility to agenised protein. Nevertheless, it is pertinent to ask what steps, if any, should be taken, whether at the level of technology or of administration, as the result of these investigations of MELLANBY and of MORAN. At first blush it might be suggested that the use of agene as an improver in milling technique should be stopped, and it is true that there are possible substitutes. But a fuller consideration tends to discount any precipitate action. As already stated, agene has been very extensively used for over twenty-five years in the preparation of flour for baking. No toxic symptoms in man, traceable to agenised bread, have ever been recognised, and the dog must be peculiarly susceptible to the particular toxic agent here concerned. Agene is an easily controllable improver and should not be lightly discarded; such discard would probably open the door to a number of alternatives which are by no means easily subjected to scrutiny and concerning which experience is largely l At the moment, while recognising these observat we do not think the position calls for action think rather that the whole subject should re in the field of investigation, with the double ap by medical research and by industry. Some may be created by irresponsible people in the p mind—a thing not easily avoided. But panic those who guide the policy of a great industry, still more among those who safeguard the co health, would be out of place and inexcusable.

Epidemiology of Infantile Enteritis

THE continuing downward trend of mo among infants and children in the last decade made for complacency about infantile en Latterly it has no longer been the serious mena child life that it was at the beginning of the ce Nevertheless various sharp outbreaks in mate hospitals have brought a reminder of the potentialities of this disease. Unfortunately, t bacteriological investigation of such outbreaks incriminated a long list of organisms and their t *their multiplicity implies failure to answer* ætiological problem; so there is something to said for returning to the classical type of inq in which practical indications, like those obtained SNOW on cholera, may be derived from considering disease in the mass. Such a study of the beha and conditions of spread of infantile enteritis reported by Dr. JAMES DEENY,[1] chief medical o of the Eire health ministry.

In Eire there has lately been an ominous rise mortality from this disease, which has been causing annual average of 500 deaths in Dublin alone. This is not part of a general deterioration; indeed the standards of public health in Eire have been refl in lowered death-rates from other causes: and seeking an explanation DEENY has made a serie comparisons of the epidemiological features of *disease both in Eire and in other countries.* show that in the latter part of the last century and the beginning of this, the infantile death-rate enteritis was roughly four times as high in Englan and Wales as in Ireland; but the curves describ the epidemic waves in both countries were ve similar, both in their broad trends over seve decades and in their biennial fluctuations. The 1924 the two death-rate curves crossed and dive *sharply: in Eire the enteritis mortality* has be rising steadily, whereas in England and Wales, un 1939, the trend was just as steadily downwards. the period 1935–41, when the disease was "endemic in Eire, 500–600 deaths occurred each year, but 1941 the present epidemic period began with a dea roll of 805, rising to a peak of 1176 deaths in 19 and causing more than 1000 deaths in every sub quent year. In 1943 the minister of local governme and public health set up a committee of investigatio infantile diarrhœa and enteritis was made a notifiab disease, and research-workers were appointed t examine its bacteriological, clinical, and medic social aspects. The bacteriological studies sho that there was no common agent; indeed in 40–5 of the cases no pathogenic organisms were discove ty or more new types imported with American d egg. Some American authorities are inclined to ot the potential danger from dried egg, and there is scepticism in this country about these "new-led" salmonellas. In America outbreaks of sal-ella food-poisoning are not caused by dried egg, h few people eat; but it is obvious that their raw s eggs, like our duck eggs, are often infected. A recent ical Research Council report[5] should convince those doubt the potential danger from dried egg. breaks of infection caused by *S. oranienburg*, *ontevideo*, *S. tennessee*, and *S. sundsvall* are described, there have been many cases caused by other types he newer salmonellas. Clinically the disease caused hese alien salmonellas generally lasts from 2–3 days, sometimes it lasts 2–3 weeks with symptoms not ke typhoid fever. It has been stated that human iers of salmonella organisms are comparatively rare, one should remember that the patient can, and lly does, infect others during his illness and for ral weeks after apparent recovery.

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[1] Mellanby, E. *Brit. med. J.* 1946, ii, 885.

[1] *J. med. Ass. Eire,* 1946, 19, 146.

hile human infection from dried egg can readily revented by following the Ministry of Food-recipes, important to know whether the new salmonella s have found any other animal home in this country. M.R.C. report tells what has happened to British . Mesenteric lymph-nodes from over 5000 pigs were mined and 2·5% were found to be infected. There e 17 different species of salmonella and of these 12 not been found in a similar investigation carried out re the war. As all but 3 of the 12 new types were recovered from dried egg, and as it was customary to discarded dried egg to pigs, there can be little doubt he source of infection. It will be of interest to find out ther the new salmonella are merely squatters among pigs or whether they have set up permanent residence. er domestic animals may also have been invaded but re is no information on this point. In America nestic hens and turkeys suffer severe attacks of nonella infection, and it is possible that our own s may have acquired some of these new infections. th the British poultry-farmer, who already knows the ravages caused by *S. thompson*, and the doctor agree that the native salmonellas need no nforcements.

THE CASE OF MR. BOWMAN

ROM statements appearing in the lay press it seems t Mr. D. W. Evans, coroner at Newport, Monmouth-re, when holding an inquest last month on Mr. J. M. wman, criticised the treatment he received from the st Middlesex County Hospital. The Middlesex County ncil, who had no opportunity of being represented the inquest, have sent us an account of the facts m their records.

Ir. Bowman, who was about 74 years of age, fell and ke his wrist on July 8. He was taken to King Edward's spital, Ealing (which does not come under the Middlesex nty Council), where his fracture was reduced and put up plaster. He was then discharged for outpatient treatment, is customary with cases of fractured wrist. On attending t day as an outpatient he appeared somewhat sleepy d had some bladder trouble. King Edward's Hospital d no vacant bed, but arrangements were made by telephone him to be admitted to the West Middlesex, where the ualty officer found him a bed in the acute surgical ward hout delay. He was taken there at once by ambulance.

The Middlesex County Council state that he was mitted to their hospital for the treatment of his dder trouble. While he was there a slightly peculiar ntal condition was noticed, which gave the impression senile decay but might have been attributable to the adder trouble. The latter quickly responded to treat-ent and on July 13 he was considered fit for discharge. He was advised when he left the West Middlesex to resume attendance at King Edward's Hospital for further treatment of his fractured wrist. His relatives, however, wished to take him back to Monmouthshire, and since in the opinion of the medical staff he was fit for this journey he was accordingly discharged. He needed help in dressing because he was an old man with his arm in plaster; but he was able to walk to the door of the ward, whence he was taken by wheel-chair to the lift, and then to a waiting car.

The subsequent history of the patient has been published; he died in hospital, a few days after his return to Newport, from the effects of a fractured skull.

The Middlesex County Council wish it to be clearly understood that any assertion that young patients are admitted more readily than old ones cannot refer to the West Middlesex or any other hospitals under the control of the council. As soon as the casualty officer had been satisfied that this was a proper case for inpatient treatment, he arranged for Mr. Bowman to be admitted. Such inquiry is necessary because of the great shortage of hospital beds. The help given by the staff in getting Mr. Bowman up was only required because he needed dressing. Any suggestion that he was unnecessarily discharged, or compelled to leave the hospital, the council affirm, is entirely unfounded.

THE PARENT AND THE DEAF CHILD

WHEN a child is discovered to be deaf parents are likely, at first, to be despondent, and very soon to fall into the habit of guiding the child by gestures. Mr. A. W. G. Ewing, PH.D., and Mrs. Irene R. Ewing point out, in a new pamphlet[1] addressed to parents, that few things could be worse for the child. The first task of the parents, they say, is to look at the child hopefully and assess his abilities: if his physical attributes are otherwise good and his intelligence normal, no matter how deaf he is he can learn to understand speech and to talk. A hearing child normally learns his first word or two because those words have caught his interest and he has associated them with meaning—he learns most readily what he hears most often. In the case of the deaf child the parents must take "every possible natural opportunity of putting words into his eyes instead of his ears."

Whatever the child's age when the deafness is discovered, the parents should begin to speak to him in the same way and in the same words as they would use if he could hear; but they must make sure that the child is looking at them when they speak. Like the hearing child, he will first understand meaning mainly from the mother's expression, but, unlike him, cannot get a further clue from her tone. The words used must be spoken plainly but not mouthed, and the child must get hundreds of opportunities of seeing words spoken, just as the hearing child gets hundreds of chances of listening to them. Because words cannot be seen as plainly as they can be heard, and because the deaf child only learns while he is looking at the speaker, progress in lip-reading is much slower than progress in the understanding of speech by the hearing child. Parents are advised to place the child with his back to the light, so that light falls on the faces of those speaking to him. "Baby" talk should be used no longer than it is with an ordinary child, but simple words should be preferred at first, and the expression on the face of the speaker should help to make the meaning clear. Once the child has begun to watch and lip-read, the length of the words does not matter: the Ewings have known a child of two lip-read "blackboard" and "motor-car." Given plenty of chances

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[5] *Spec. Rep. Ser. med. Res. Coun., Lond.* no. 260, 1947.

[1] If Your Child is Deaf. Published by the Deaf Children's Society, 105, Gower Street, London, W.C.1. Pp. 15. Obtainable on payment of postage.

Annotations

OPPORTUNITY IN INDIA

LAST week 163 years of British rule in India came to an end with the formation of Pakistan and India as self-governing Dominions. On Aug. 14 some of the medical aspects of this change were discussed at a gathering in London called by Lord Moran, P.R.C.P., to hear Dr. R. G. Cochrane, F.R.C.P., principal of the Mission Medical College at Vellore in the Madras Presidency.

When it was known that India was really to have independence, Dr. Cochrane said, the tension snapped and the attitude towards Britain changed overnight. But fewer and fewer British doctors will be going to India, and the governments are likely to want official services to be manned by Indians. In this situation scientific standards are threatened by the backward pull of Eastern medicine, while professional integrity must be weakened by any weakening of the Christian ethic. If the mission hospitals disappear the Christian ethic will disappear too, and if that happens Western medicine will inevitably go into eclipse. It is essential, moreover, for India to have independent voluntary hospitals able to set a standard for the government institutions. In Madras a health minister whose wife was an Ayurvedic practitioner recently tried to establish five colleges of Ayurvedic medicine and induce the University of Madras to recognise this subject; and though the proposal was defeated it could be revived by a turn of the political wheel. It was felt that the only way to counter such retrograde influences was to create a medical college with an international reputation and train men and women who would follow its standards. To meet the challenge Vellore was converted from a lower-grade school, preparing students for the L.M.S. diploma, into a university college providing the educational background for positions of responsibility. The difficulties of finding a good enough staff are being overcome, and if money is forthcoming for the next few critical years Vellore may be able to do more to influence research and education than any other institution in the East. Though he himself is especially interested in leprosy, Dr. Cochrane felt that nowhere is this lead needed more than in psychiatry, where India is at the stage of England 200 years ago. Today there is a great opportunity, and Vellore College, a joint effort of the Churches of half a dozen countries, could do much to cement the friendly relationship with Indians which we all so much desire.

In response to questions Dr. Cochrane said that a proportion of Indians have an undoubted aptitude for scientific work, but in the official institutions research is apt to be crippled by lack of staff and consequent lack of time. Moreover many Indians are strangely attracted to Ayurvedic medicine, just as laymen in England are attracted to bone-setters. Dr. Cochrane agreed with Mr. Ian Orr and Sir Philip Manson-Bahr that the study of Ayurvedic remedies should go on, but he described Ayurvedic medicine in general as that of the Middle Ages and worse. Sir Francis Fraser spoke of the training of future Indian teachers in Britain, where a first batch of 50 have already been placed, and pleaded for continuation of efficient selection of these students at the Indian end. Sir Weldon Dalrymple-Champneys echoed Dr. Cochrane's regret that the Bhore Committee's recommendations are likely to fall into the background. The Christian ethic, he said, is the only moral backing for medical practice in India, which without it must revert to the past. It is something not imposed on Indians against their will, but a source of strength and inspiration on which many Indians depend in their struggle against political and other forces opposed to science.

As Lord Mountbatten said to the departing last Sunday, British rule in India has ended b place is being taken by something far more valu friendship between the British and Indians. To friendship, which is needed on both sides, m could contribute much.

MORPHINE SUBSTITUTES

FEW doctors would care to be deprived of a therap tool of the power of morphine; indeed it is hard imagine what medical practice would be like without All the more pity, therefore, that this drug so captures those it relieves, in the trap of addiction. latest League of Nations bulletin[1] on the treatment drug addicts is well worth reading. Here is told the story of how one method after another has been adv as a certain cure, only for patient to relapse and d to recant. Mention is made, too, of oddities such the birth of morphine-addicted babies from mo addicted mothers.

Against this somewhat macabre background the search continues for a substance which will have al pain-relieving and sedative powers of morphine but of its danger of addiction, and recent months produced several papers describing new synthetic gesics thought to have these properties, 'Miadone', 'Amidone'), one of the latest of such substances said to be a promising morphine substitute. Thorp[2] studied its analgesic properties by electric pain-thresh determination in rats, while in this issue we publish preliminary report by Dr. Hewer and Dr. Keele on effects in man. Miadone in their opinion has a pot equivalent to morphine without some of the undes side-effects of the latter; but they by no means exc the possibility of addiction. A similar compound AM is reported on by Gentling and Lundy[3] who saw no of addiction in patients who had taken the drug weeks.

In studying what is written about synthetic substitu for morphine, one is struck by the attention paid to constipating effect, which most workers seek to elimina No doubt they are right so far as the majority of pati are concerned; but it should not be forgotten that is a body of people with afflictions of the colon w would be delighted were they given a harmless dr which would reduce the liquidity of their stools. If the search for a morphine substitute a substance found which is a good "constipator" but a poor an gesic, it should not be immediately discarded; a tho should be given to those with colitis or a colost who might have a use for it. At the moment, cod is in high regard for this purpose, but more than patient has found that the dose of codeine that h sufficiently will also diminish his interest in life. Wh more, the drug is scarce, and very expensive.

SALMONELLA IN THE BACK-YARD

PLUM-SICKNESS is a countryman's description of Sonne dysentery; but this year dysentery bacilli a having a poor time. Instead, organisms of the salmonel group and particularly *S. typhi-murium* are ca much of the prevalent diarrhœa and sickness. Inad quately cooked duck egg continues to cause ma sporadic cases, and the public still does not realise th duck eggs should be boiled for at least eight minut A large outbreak in Essex[4] was lately traced to a d slaughter-house where the meat ration was contamin from an infected pig, but few recent outbreaks h been traced to rodents. It is the European type salmonella which are causing most of the serious ca though one might have expected trouble from some of t

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[1] *Bull. Hlth Org. L.o.N.* 1945, 12.

[2] Thorp, R. H. *Brit. J. Pharmacol.* 1946, 1, 113.

[3] Gentling, A. A., Lundy, J. S. *Proc. Mayo Clin.* 1947, 22, 21

[4] Camps, F. E. *Month. Bull. Min. Hlth*, May, 1947, p. 89.

Special Articles

NITROGEN TRICHLORIDE AND CANINE HYSTERIA

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ITROGEN trichloride (NCl_3) is used in many countries ughout the world, including Britain and the U.S.A., n improving agent for flour; commercially it is vn as "agene." For white flour of 70% extraction verage treatment is 3 g. per sack of 280 lb. of flour mg./100 g.), and for 85% extraction flour about 8 g. sack (6·4 mg./100 g.).

ellanby (1946) has shown that, with flour of 80–90% action, nitrogen trichloride in the amounts normally produces changes in flour which can give rise to eria in dogs. His paper was a preliminary report calls for much further work, including the answers ve questions:—

) Is the hysterical condition due to the absence of a itional factor (destroyed by NCl_3)?

) If it is not a nutritional deficiency, what is the identity e toxic agent or agents?

) Is wheaten flour essential in the diet—i.e., does NCl_3 with a constituent peculiar to wheaten flour?

) Has the toxic agent any effect on other animals, ding man?

) How far is the toxic agent influenced by the general osition of the diet?

he present paper describes the results of experiments gned to give information, particularly on the first e questions. In these experiments 85% extraction r was used throughout.

BORATORY PREPARATION OF NITROGEN TRICHLORIDE

 the laboratory a convenient method of preparing is to aerate an aqueous solution of chlorine in nonium-chloride or ammonium-sulphate solution. chlorine is added as freshly made chlorine water he solution of the ammonium salt, and the mixture llowed to stand in the dark for about 30 min. The tion is said to proceed according to the following ations:

$$Cl_2 + H_2O \rightleftarrows HOCl + HCl \quad \ldots \quad (1)$$

$$NH_4Cl + 3HOCl \rightleftarrows HCl + NCl_3 + 3H_2O \quad \ldots \quad (2)$$

h solutions of pH 4·4 or less, the ammonium derivative lmost entirely nitrogen trichloride with very little o- or di-chloramine. In our experiments we have ed the appropriate amount of chlorine water (0·1–N) to excess of a solution of 2% ammonium-chloride about 10°C in an amber bottle Under these itions the so-called nitrogen trichloride released the solution contains about 20% of free chlorine.

NGES IN FLOUR PRODUCED BY NITROGEN TRICHLORIDE

itrogen trichloride can act as an oxidiser—e g.:

$$NCl_3 + 3H_2O \rightarrow NH_3 + 3HOCl \quad \ldots \quad (3)$$

$$\rightarrow NH_4Cl + 2HCl + 3O \quad \ldots \quad (4)$$

$$\text{or } 2NCl_3 \rightarrow N_2 + 6Cl \quad \ldots \quad (5)$$

ould also form additive compounds at double hands g:

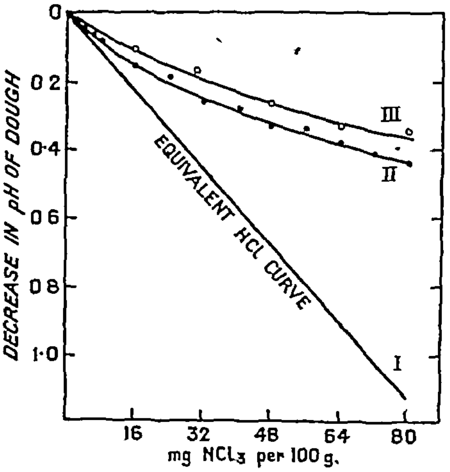
$$>C=C< + NCl_3 \rightarrow >C(NCl_2)-C(Cl)< \quad \ldots \quad (6)$$

$$\xrightarrow{H_2O} >C(NO)-C(Cl)< \quad \ldots \quad (7)$$

$$\text{or } \xrightarrow{H_2O} >C(NO)-C(OH)< \quad \ldots \quad (8)$$

t is also possible that NCl_3 might act as a chlorinating nt as in chlorine substitution reactions. The oxidation effect is obvious when flour is heavily treated, because it acquires a typical linseed-oil odour due to the oxidation of its fat. There is some evidence, however, that addition or substitution takes place as well as oxidation. Thus, if hydrochloric acid is added to flour, the curve relating the fall in pH to the amount of acid added is practically linear. This does not apply to nitrogen trichloride, even though from equations (4) or (5) the amount of acid formed is a fixed proportion of the amount of trichloride added. This is shown in curves I and II of the accompanying chart. In constructing these curves allowance was made for the fact that the nitrogen trichloride as prepared contains 20% of chlorine, which would, however, have no significant effect on the form of the pH curve. A departure from the curve obtained by the addition of HCl alone is also observed if the flour is defatted (by extraction with petrol ether) before it is treated with NCl_3, suggesting that addition or substitution compounds are also formed in the non-fat portion of the flour.

In the report of the Departmental Committee on the Treatment of Flour with Chemical Substances (Ministry of Health 1927) the suggestion is made that, in the treatment of flour with NCl_3, chlorine enters into parts of the protein molecule, particularly in the tyrosine and tryptophane groupings. In an attempt to check this we have carried out an extensive series of estimations of many of the individual amino-acids in flour (including tryptophane but not tyrosine) before and after treatment with NCl_3. In no case was any change observed in the apparent content of any of the amino-acids. The microbiological technique was used, and as this requires a preliminary hydrolysis for six hours with 2 5 *N* HCl (or, in the case of tryptophane, 0·4% baryta) it is obviously not too satisfactory, since unstable substances would be destroyed. It is therefore of some interest that a water extract of flour which contains tryptophane available to *L. arabinosus* without preliminary hydrolysis showed a progressive reduction in tryptophane content with increasing treatment with NCl_3; in the case of a flour given NCl_3 at the rate of 80 mg. per 100 g. (100 g. per sack) the reduction was 25%.



Curve I. Addition of HCl to flour.
,, II. Flour treated with NCl_3.
,, III. Defatted flour treated with NCl_3.

Mellanby in his experiments showed that the production of canine hysteria was not due to a deficiency of vitamin A. Vitamin E is said to be partially destroyed by NCl_3 (Engel 1942), but the addition of peanut oil was probably more than adequate to compensate for this. We have also found that even heavy treatment with NCl_3 has no effect on the B_1, riboflavine, and nicotinic-acid contents of flour. Measurements have also been made of the total pyridoxine-hydrochloride content of flour before and after treatment. This appeared to be of immediate interest in view of the finding by Chick et al. (1940) that epileptiform fits in rats fed for long periods on a purified synthetic diet could be prevented by the addition of pure vitamin B_6. The microbiological some children have started lip-reading at the age of a year and eight months. In children not recognised as deaf until they are two or three years old, lip-reading may begin within a month of the start of training. Gestures should be avoided at all costs: "every time one is employed instead of a word, an opportunity of helping the child to achieve lip-reading has been lost for ever." Indeed, the Ewings hold that where gestures are used instead of words they encourage dumbness. The child whose deafness has escaped diagnosis for as long as four years has become interested in doing things, and feels he has no time to spare for watching faces. He should be helped by the use of phrases dealing with action: "throw the ball," "wheel the cart," "eat your chocolate." His glance must be caught as often as possible and he must be talked to about things he is doing or wants to do.

Children who go deaf after learning to talk must be encouraged to keep up their speech, as well as to lip-read. Those who are born deaf babble like other babies. The parents must respond to this use of the voice, and later, when the child tries to use the words he has learned to lip-read, he must *always be encouraged and* praised for any kind of attempt. No attempt should be made, however, to teach him to say words, or to say them better: these are tasks for the trained and experienced deaf teacher.

DISTRIBUTION OF DOCTORS IN WAR-TIME

We in Britain have had our questionaries, but never on the scale of those addressed to some 50,000 American doctors by the Committee on National Emergency Medical Service, now analysed by Dickinson,[1] director of the Bureau of Medical Economic Research. The purpose was to find out what the American doctor thinks of medical organisation during the late war, and what improvements he would suggest. Replies were received from 2322 members of the profession who remained in civilian practice, and from 25,728 who served in the Forces.

During the war about 40% of practising doctors were taken into the Services, leaving the other 60% to look after 91% of the U.S. population. On the average the work which the civilian practitioner undertook was about 75% more in 1944 than in 1941—an increase of load which few other groups in the community had to bear. The health of the people improved during the war years; but in view of the difficulties under which the profession laboured it is not surprising that the question "could more doctors have been released for the Forces without endangering the welfare of the civilian population?" drew nearly three times as many answers No as Yes. In the Services, on the other hand, a very different problem arose—that of waste—and Dickinson thinks that the views of the ex-Service doctors merit serious attention, even though they did not see the situation from a high level. The majority recorded that (by civilian standards) too much time was given them to carry out their job; they estimated that only 72% of doctors employed were actually needed, and they held that too much time was spent in non-medical duties, such as administration and food inspection, which could have been carried out by laymen. Civilian hospitals, it was felt, were unnecessarily depleted of staff; yet there were idle beds in military hospitals which might have been used to relieve the pressure on them. It was admitted that military exigencies might well have increased the needs of the Services; but in the same way a serious epidemic might have increased the needs of the civilian population.

The civilians were asked, in four questions, to say what they thought should be done in the event of another war. The highest votes cast were in favour of the formation of mobile civilian medical teams to help areas strick by epidemics or by the newest forms of warfare. those answering thought they should take their t on Service boards (despite the administrative difficul so as to share out the burden among practition and three-quarters favoured establishment of a med board to decide on policy.

THE POLIOMYELITIS FILM

Mention of action proposed by a Ministry, particul where this involves Treasury authority, brings to a picture of long delays, punctuated by interdepartm memoranda. The Ministry of Health is to be con lated on having abjured such routine in making its for doctors on poliomyelitis. This film was con only on the 6th of this month; the idea was o to the Ministry on the 7th; and on the 11th the Tre agreed to meet its cost. The Ministry of Health rel to the Central Office of Information, which handles making for Government departments, and a unit commissioned to undertake the work. On the 1 final conference was held at the Ministry and the *ing script was decided; and that* same day started. Three days later this was completed; from the end of the month the film will be obt in all parts of the country, with projector and pro jectionist, from the regional offices of the Central O of Information, for showing to medical audiences.

The film, entitled *Early Diagnosis of Acute An Poliomyelitis*, was made with the help of Dr. W. Kelleher, invoked as a consultant by the Ministry, of Dr. R. C. Mac Keith, who acted as adviser to the which is directed by Dr. Brian Stanford. With a runn time of about 15 minutes, it describes the age-distribut of the disease in the present epidemic, and the ge symptoms; it gives an account of the signs that be elicited on examination of the central nervous sys and of some clinical techniques; and finally it refers simple measures for the prevention of spread.

THE TWO INTERNATIONAL CONGRESSES

The International Conference of Physicia convened by the Royal College of Physicians of Lond will meet on Monday, Sept. 8, under the presidency Lord Moran. After the opening session, to be held at college, it will divide into eight sections whose presid are: cardiology, Sir Maurice Cassidy; disorders of t chest, Sir Robert Young; dermatology, Sir Archib Gray; neurology, Dr. Gordon Holmes, F.R.S.; pædiatr Sir Leonard Parsons; psychiatry, Dr. Bernard Har social medicine, Sir Wilson Jameson; and gen medicine, Lord Moran. Daily until Friday, the sectio will meet at various halls and medical institut Social events will include a Government luncheon Monday, a reception at the college on Tuesday, and a banquet at Guildhall on Wednesday. Dr. G. B Mitchell-Heggs is acting as organising secretary.

The International Society of Surgery will ho its 12th congress in London from Sept. 14 to 21, follow by a visit of 100 members to Edinburgh from Sept. to 27. Dr. Leopold Mayer (Brussels) will preside; Pr G. Grey Turner is chairman of the British executiv committee, Sir Alfred Webb-Johnson, P.R.C.S., chairm of the consultative committee, and Mr. H. W. S. Wri hon. secretary of the congress. Some of the scientif sessions will be held in the great hall of B.M.A. Hou and others at University College; the inaugural ceremo will be at Lincoln's Inn; and the functions will incl the president's reception at the Savoy Hotel, a Gover ment reception at Lancaster House, and other gatheri at the Royal College of Surgeons, the Apothecari Hall, the Royal Society of Medicine, and the Brit Medical Association. The official dinner will be h at the Dorchester Hotel on Sept. 20.

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[1] Dickinson, F. G. *J. Amer. med. Ass.* May 24, p. 360.

;e experiments show :

'hat the toxic factor is not associated with the starch ı of flour.

t is not associated with the fat; otherwise it would racted with petrol ether, absolute alcohol, acetone, loroform.

t is not a sterol; otherwise it would be soluble in orm and acetone.

conclusion therefore is that it is associated with the ı.* The fact that the 70% alcohol extract also ns the toxic factor supports this conclusion, since gliadin is soluble in this solvent. Owing to the ;al difficulties of evaporating large quantities of in the laboratory, no experiments have yet been l out with water or dilute salt extracts, though since two solutions contain protein they would also be ;ed to contain some of the toxic factor.

proteins of wheat are not well defined. Accordingly decided to carry out experiments on other proteins whether, when treated with NCl_3 and fed to dogs, would produce hysteria. Three proteins were ned—casein, zein, and gelatin. The last two were with the appropriate quantity of maize starch e a flour containing 12% of protein conditioned to 15% moisture content, and the mixture was then :d at the rate of 80 mg./100 g. The casein was :d alone at the rate of 136 mg./100 g. and then l with untreated potato starch equivalent to an ll treatment of the casein-starch mixture of ;./100 g.

Series IV

o.	*Protein-starch mixture*	*Symptoms*
10	Casein (Glaxo Light-White)	Running and convulsive fits in 24 hours
14	Zein (Glaxo pure)	Running and convulsive fits in 24 and 48 hours
d 15	Gelatin (Spa Brand)	Very slight running fits with both dogs after 10 days. Experiments then discontinued

)gs 8, 10, and 14 died, but dog 1 continued for some on the same diet but containing untreated zein; quickly recovered.

nally, as a further justification for identifying the ts of low and high levels of NCl_3 treatment, two were fed with five times the normal amount of ıed-out gluten from flour treated at the normal mercial rate of 8 mg./100 g.

Series V

Dog. no.	*Symptoms*
7	Convulsive fits after 3 days
11	Convulsive fits after 4 days

parate experiments showed that the high level of ein did not in itself produce hysteria or any other ırmal symptoms in dogs fed at the same level of en from untreated flour for 21 days.

DISCUSSION

ellanby (1946) has reviewed the more important ature on the subject.

he experiments here described show that the canine :eria produced by a diet containing flour treated with ogen trichloride is caused by a toxic agent and not a deficiency in the diet. Further, this toxic factor is ciated almost entirely with the protein fraction is relatively insoluble in the normal organic 'ents—absolute alcohol, chloroform, acetone, and rol ether.

Another important point is that the condition can be just as readily produced by the products of the interaction of casein and zein with nitrogen trichloride. Gelatin can also produce the toxic factor though apparently in much smaller amounts; this may, however, be connected with the more horny nature even of powdered gelatin compared with casein and zein.

In looking for this toxic factor, which may be present in exceedingly small amounts, we must not overlook the fact that inevitably these three proteins contain traces of impurities which may possibly react with the nitrogen trichloride. Even so, the fact that zein produces the toxin suggests that glycine, tryptophane, and lysine are not involved, since they are said not to be present in this protein in significant amounts.

It is tempting to carry this analysis further by comparing the amino-acid composition of the three proteins; but more experimental work is required before one is justified in giving better definition to the toxic substance. At the moment it looks as if it is of the nature of a protein poison or proteose mentioned by Clark (1940), the nitrogen trichloride reacting with a particular unit in the protein molecule.

The Ministry of Health report (1927) named tryptophane and tyrosine as the amino-acids likely to be involved, but the results with zein seem to rule out tryptophane.

Just recently attention has been drawn to experiments in America on the beneficial effects of feeding glutamic acid to epileptic children, and the fact that it is the only amino-acid known to be metabolised by the brain (*British Medical Journal* 1947, *Lancet* 1947). This acid predominates in cereal proteins and in casein, while it is present only in small amounts in gelatin. In following up this possibility we have so far been unable to produce hysteria by feeding casein hydrolysate which had been treated heavily with nitrogen trichloride.

No response has so far been obtained from the guinea-pig, the only other animal tried, when fed on flour treated with NCl_3. The flour beetle (*Tribolium confusum*) gives a response in that its life-cycle is retarded, but closer examination indicates that the mechanism is probably different from that involved in canine hysteria; this work will shortly be published. Work on the general problem is being continued.

CONCLUSIONS

(1) Canine hysteria has been produced within 24 hours by the use of NCl_3 in amounts which are, however, considerably in excess of those used in milling practice.

(2) Nitrogen trichloride reacts with wheat protein, casein, zein, and gelatin, producing substances which give rise to canine hysteria. The symptoms rapidly disappear when the dogs are given the same diet which has not been treated with NCl_3.

(3) The production of these substances appears to involve a particular structure in the protein molecule which does *not* include lysine, tryptophane, or glycine.

Several of my colleagues, including E. N. Greer, J. B. Hutchinson, J. G. Heathcote, R. G. Booth, and G. G. Grindley, have contributed to the work described in this paper. I have also had the benefit of discussions on the problem with Lord Horder, Sir Edward Mellanby, Prof. E. C. Dodds, and Sir Robert Robinson.

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* is not generally realised that gluten simply washed out from a dough of flour and water contains 70% of the original fat in the flour. This simple method of approach cannot, therefore, be used to decide whether the toxic factor is associated with the protein in the flour.

method was used (Barton-Wright 1945), and the following results were obtained on an 85% extraction flour:

	Pyridoxine-hydrochloride content
Control flour	4·9 µg./g.
Flour treated with 9 6 mg. of NCl_3/100 g. ..	4·9 „
„ „ „ 80 „ „ „ ..	4·8 „

On the whole, therefore, there is no evidence that a *vitamin deficiency is the causal factor in canine hysteria.* Experiments on dogs support this view.

EXPERIMENTS ON DOGS

Mellanby has described in detail the symptoms of canine hysteria, and our experience is in accord with his observations. There are in general four stages:

(1) The dog is obviously off colour, takes little interest in his surroundings, and walks slowly, but in general coils himself up as if to sleep.

(2) There is much weakness in the hind legs, and he may lift his forelegs high when walking. He will often "hide" his head low down in a corner of the cage.

(3) Running fits; the dog, apparently apprehensive, will, after some preliminary haphazard quick movements, run round and round the cage, sometimes running into the walls, upsetting its water and food, and obviously in a state resembling panic. It may howl and bark.

(4) Epileptiform or convulsive fits usually but not always follow running fits. The animal lies on its side, its jaws champing, foaming at the mouth, and legs beating the air. If these fits are severe and many, the dog will die.

In all our experiments we have followed the diet used by Mellanby—i.e., skim-milk powder 20 g.; lean meat 15 g.; peanut oil 10 ml.; bakers' yeast 5% of the cereal; flour 100–300 g. The flour was first made into a cream with water and then cooked in a steamer for 90 min. at 1/2 lb. pressure.

In the first experiment three dogs (nos. 1, 6, and 9) were given this diet, the flour having been treated with NCl_3 *at the rate of 80 mg. per 100 g. (100 g./sack).* Within 24 hours all three dogs had shown the symptoms already described, including running and convulsive fits. After this one meal they were put on the same diet but containing untreated flour, and they all recovered within a few days and thereafter behaved as apparently normal healthy dogs.

The fact that the symptoms were precisely those described by Mellanby is reasonable evidence that the same mechanism was at work, but that the much higher dose of NCl_3 was sufficient to produce the disease rapidly compared with the 2–4 weeks found by Mellanby for the ordinary commercial treatment of some 6·4 mg./100 g. Further, Sir Edward Mellanby informed me that he had not produced the disease with flour treated only with chlorine. This was confirmed by us later in this work, because a diet containing flour treated with chlorine, at the rate of 112 mg. per 100 g., had no effect on dogs 9 and 13, even after 21 days. Since the heaviest treatment of NCl_3 used in this investigation contained only 16 mg. of free chlorine per 100 g. of flour, the chlorine per se can be ruled out as the cause of the hysteria.

In a further experiment two groups, each of two dogs, were given diets containing flour treated at 20 and 40 mg NCl_3/100 g. Two similar groups were given flour treated at 80 mg./100 g. but diluted with untreated flour to give an average overall treatment of 20 and 40 mg./100 g.

This series of experiments (II) was instructive since it showed that there is no additional toxic factor produced at the high level of NCl_3 treatment compared with the lower level of 20 mg./100 g. The fact that, at the low level of 20 mg./100 g., precisely the same symptoms were produced as with the heavily treated flour diluted to this low level is further evidence that canine hysteria is not caused by a deficiency in the diet. Perhaps even more convincing is the fact that the disease can be after one meal.

Series II

Dog no.	*Flour*	*Symptoms*
2	Treated 40 mg./100 g...	Running fits .. ..
3	Diluted to 40 mg./100 g.	Running and convulsive fits .. ..
16	Diluted to 40 mg./100 g.	Unwell but no fits .. *
17	Treated 40 mg./100 g...	Unwell but no fits .. *
7	Diluted to 20 mg./100 g.	Running and convulsive fits .. ..
14	Diluted to 20 mg./100 g.	Running fits .. ..
9	Treated 20 mg./100 g...	Running and convulsive fits .. ..
15	Treated 20 mg./100 g...	Running and convulsive fits .. ..

* Experiment discontinued after 7 days.

Dogs 16 and 17 were anomalous, but they than three months old, and later work co older dogs, 4–6 months old, were much more Mellanby observed the same point. We have as factual evidence that breed plays an important part

Since in this work we were concerned primarily origin and identification of any toxic factor and with the physiological aspects of canine hysteria, it reasonable to continue using flour treated with at the high level of 80 mg./100 g. Further, there be no objection to using the same dogs once they been given a period to recover from an attack; as it was clearly an advantage to use a dog which known to be sensitive to the toxic factor.

The next series of experiments was planned to whether the *toxic factor is associated* with the carbohydrate, or the protein, of flour. The foll table gives the broad results:

Series III

Dog no.	*Fraction of flour under test*	*Symptoms*
4, 7, and 11	Residue after removal of water-solubles	Running and fits in 23–72
2 and 5 ..	Residue after treatment with petrol ether	Running and fits in 18 and
13 ..	Evaporated petrol-ether extract	None
6, 7, and 11	Residue after treatment with absolute alcohol	Convulsive fits hours
2 ..	Evaporated absolute-alcohol extract	None
3 and 12..	Residue after treatment with 70% alcohol	Running fits in 96 hours
4 and 11..	Evaporated 70% alcohol extract	Running and fits in 24 and
1 and 13..	Residue after treatment with chloroform	Running and fits in 23 and
12 ..	Evaporated chloroform extract	None
1 ..	Evaporated acetone extract of flour	None
13 ..	Wheat starch treated at 80 mg./100 g.	None after 6 days
12 ..	Maize starch treated at 80 mg./100 g.	None after 6 days

In the experiments with the extracts of petrol absolute alcohol, chloroform, and acetone, each of dogs was given for several days the equivalent of quantities of flour—e.g., in the case of absolute al the dog was given each day for three days the extracted from 1600 g. of flour. It is therefore safe to that the toxic factor is relatively, if not compl insoluble in these four solvents. The residues on other hand still retained it.

In England Now

Running Commentary by Peripatetic Correspondents

HIS year we decided to have the first good holiday e we were married, so I considerably more than ned" my war gratuity and we went to Switzerland. ıpared to the people of this prosperous nation, the lish are exhibiting many of the signs of a mild-ety neurosis, of a type which can best be summed ıs "fussy fatigue." This was brought home to us ı a jolt by the waitress of the very "second class nary" hotel at which we spent the night in London our way back; when we had finished our plate of idge, she remarked, with categorical abruptness, ıere is nothing to follow." This kind of thing soon ıght us to our senses after the plenteous courtesy of preceding weeks.

art of the treatment for this national neurosis should ly be to lay off diffusely applied propaganda which es on" at the workpeople, and to concentrate licity upon explaining in words of two syllables t the present crisis is about and what steps the ernment is taking to overcome it and why. Explana- is the key to coöperation in the treatment of national f individual maladies, and high-level planning should imed at making available the basic materials without h any work, even by slackers, is impossible.

*

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itish medicine appears highly socialised compared Swiss counterpart, and it was with interest that med that the patients in the hospital were divided three classes, the first, in private single rooms, ibuting 20 francs a day, but the third in small wards , contributing about 4 francs a day; and I heard rather a shock that, although the clinic chief visits first-class patient daily, he only sees the third-class nts once a week.

e medical records in this hospital are typed, many em by one of the assistants of the chef-de-clinique ıse of the inability of the typist to deal accurately the nomenclature. I decided to try this on when in my own department, but second thoughts sted that I wouldn't have much luck. Democracy ts cost. The internal arrangement of the notes was orderly; but on the other hand they are still d within easy reach of the patients, and eventually in unwieldy great tomes.

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*

ıd now down with a bump to an earth of coalmining shipbuilding. It often seems to me that one of the s to tackle the environmental problems of the pit ld be to develop a system of personnel medical officers ogous to that used so successfully by the R.A.F. ng the war, where doctors of wing-commander ority studied working conditions at first hand and made immediate appropriate suggestions or took problem along to a team of research-workers. Lighting e subject I should start with, as we know quite enough ıt its rôle in the ætiology of accidents and nystagmus: is it that below ground the legal upper limit is some rable decimal of a foot-candle, when in a factory above ground it is nearly 10? Most of these problems are to be solved by applied engineering of one sort and another, and one's feeling is that a combined team with its members of equal rank, irrespective of profession, is the way to set about it. As for shipbuilding—but here an almost complete absence of basic data makes the situation, if anything, a stage more primitive than that found in mining.

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Your young peripatetic colleague's experiments in temporary immobilisation of poultry by a chalk line interested me because I remember my father showing me much the same thing some 35 years ago. His technique of calcilinear fowl-hypnosis was however somewhat different: instead of leading the reluctant hen to the chalk line he led the chalk line away from the already stationary hen. He first held the hen's head to the ground with one hand, and with the other he then drew a quite short chalk line away from the point of the beak so that the distal end disappeared behind a nearby brick or stone. Then he let go, not always gently. The hen would stand stupidly and unblinkingly immobile —perhaps squinting a little; I don't remember—for what seemed several minutes, after which she would slowly and dazedly lift her head, shake it sorrowfully, then apparently awaken to a sudden realisation of the enormity of her folly, and scurry away, protesting volubly at her public degradation. If she was forcibly removed before her natural time, her beak would cling to the ground and you could almost fancy a faint "twang" or "ping" as the psychological tether snapped.

Obviously a worthy subject for further research. Has anyone tried two hens side by side? or at opposite ends of a line?

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Early in October, 1945, a Naval force from H.M.S. *Anson* landed at Hong-Kong and began the difficult task of rebuilding His Majesty's law and order upon the ruins left by the little yellow men. From then until May 1 of last year this rehabilitation was left to the Armed Forces, and a good job they made of it. It has never been easy to impose Occidental morality and social machinery upon the Oriental, but they did it. The colony was policed, fed, cleaned, guarded, and doctored. When the Civil Administration returned to office, the Military handed over a going concern.

This morning I entered my clinic (two rooms in an old government building) to find a smartly dressed and obviously consequential young Englishman busily taking measurements of the walls and the floors, whilst a clerk recorded the findings in a fat exercise-book.

"What," I said, "are you up to now? Are you from the P.W.D.?" (For one wild moment I had the foolish idea that my six-month-old request for a little whitewash on the blotched and peeling walls had met with action. Silly of me.)

"No," said the young man. "I'm the Assessor."

"And what," I asked, "do you hope to assess here?"

"We're measuring up all the space used by the Service departments during the Military Administration. They're going to be charged rent. So much a foot."

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* * *

Anxious patient to neurologist: "Are you—forgive me if I'm being rude—a psychiatrist?"

WORKING CONDITIONS IN IRON FOUNDRIES

ADVISORY COMMITTEE'S REPORT

IRON founding is one of the oldest trades, and the work is intrinsically heavy, hot, and dusty. In Great Britain there are about two thousand iron foundries which differ greatly in size and methods of production; and the castings made in them vary in weight from an ounce to 150 tons. In some, especially the modern mechanised ones, the conditions are good, but in others, such as small jobbing foundries, the buildings, production methods, and working environment have not changed materially during the last fifty years; and it is becoming increasingly difficult to get people to work in what are regarded as unpleasant trades.

In 1945 Sir Wilfred Garrett, chief inspector of factories, set up a joint advisory committee,[1] composed of representatives of the industry, trades unions, and the Factory Department, to advise him:

> "on the most effective methods of implementing certain requirements of the Factories Act, 1937, and on other cognate problems in ironfoundries, particularly those relating to cleanliness, lighting, ventilation, and maintenance of satisfactory atmospheric conditions, provision of washing facilities and accommodation for workers' clothing and other welfare and health services and amenities."

The committee's report,[2] which has now been published, contains a series of recommendations which, if adopted, should go far towards making iron founding a more attractive trade, and to furthering the efforts which have already been made in some iron foundries to improve conditions. Throughout its deliberations the committee kept three main objectives in mind: (i) the provision of better amenities and more comfortable and healthy working conditions; (ii) the improvement of the appearance of iron foundries through better cleanliness and orderliness and more light and colour; and (iii) improvement of the atmospheric conditions by prevention or removal of dust, smoke, and fumes.

Detailed recommendations are made to secure cleanliness, and one of these says that all floors should be maintained firm and level and should be constructed of concrete, brick, or other suitable materials unless it can be shown to be necessary to have a sand floor at any part of a foundry. The firm floor is easier to keep clean, though it may be broken up when heavy castings are dumped on it. The use of vacuum methods for removing dust and dirt is strongly recommended. Under the heading of "good housekeeping" suggestions are made for keeping the foundry tidy—a factor which not only improves its appearance but contributes to safe working, better morale, and production efficiency.

As regards temperature, it might be thought that the main problem is to keep a foundry cool; but this is only so in parts around the furnaces and metal-pouring operations. In other parts it can become very cold, and it is not uncommon for work to be delayed because the sand has frozen overnight. It is recommended that the temperature in a foundry should not be less than 50°F one hour after work has begun. If the outside temperature is under 30°F it is regarded as reasonable that the inside temperature should not be less than 20°F higher. Methods for heating the workrooms should not include open coal or coke fires or mould driers. An "open fire" is defined as one not provided with a flue to take the products of combustion to the outside air.

The lighting in foundries should comply with the standards laid down by a code of regulations made in 1941, and additional lighting should be provided where the nature of the work demands it. For instance, 20 foot-candles should illuminate the work of fine core making and moulding. The lighting will be improved if the walls, ceilings, and machinery are painted with light colours, and the industry is urged t away from its customary drab colour-schemes or l schemes.

The provision of washing facilities and accommoda clothing is now compulsory under the Factories Act, 1 but so far standards have not been laid down. B especially of the needle or shower type, are recommende those persons engaged on hot, dirty, and arduous jobs. W basins, one for every 10 persons employed, should be ins hot water should be laid on, and clean towels, soap, and brushes should be available. Changing-rooms and l for clothing should also be provided, and all these am should be under the care of a responsible person. Ca or mess rooms should be provided, and the taking of in work-rooms should be prohibited.

It is customary to use open fires in foundries for a numbe purposes, such as warming the work-rooms, drying ladle moulds, and in a process called "burning," a technical which is not explained in the text.[3] The committee is of the opinion that the use of such fires should be a and that the industry should try other methods. It is mended that a ladle-drying station should be arranged i new foundries and, wherever practicable, in existing Moulds should be dried in stoves, or where this is not p by mould driers, which are portable devices consisting coke fire blown upon by a fan or by compressed air; would be little risk of injurious or offensive fumes or being evolved from them. Cores, which consist of sand binding materials such as dextrin and linseed oil which heating give off irritating fumes, should be dried in prope ventilated stoves. When those cores are being broke after the metal is cast, any fume given off should be qu removed from the work-rooms.

One of the dustiest of foundry jobs is the "knock-out a term used to describe the various ways of removing cast from the sand moulds. A series of recommendations is for controlling the dust during the knock-out in types of foundries, such as mechanised, heavy and job and light and green sand foundries. The methods su include the application of exhaust ventilation and sep of the process from other foundry jobs. Another job is the "dressing" of castings, which is done in ways by wire brushes, hand hammers, rumbling barrels, gr ing wheels, or blasting apparatus. It is recommended the operation should be concentrated in an area of foundry set apart for the purpose, or in a separate r and that it should be done under exhaust ventilat a high standard of general ventilation should als maintained.

In the section on health reference is made to incidence in iron foundries of silicosis and pneumoconi dermatitis, rheumatism, and "dead hand" in work using pneumatic tools. The committee's terms reference did not include the assessment of h risks, but it was inevitable that in the considerat of amenities such matters should be discussed. committee is of the opinion that the iron-fo industry, in common with other industries, would b greatly by the provision of medical and nursing s to help in maintaining the health and reducing occupational risks of workers. It also recognises desirability of appropriate periodical examinations workers, and it recommends that medical and n services should be provided as soon as possible. question of noise in factories is mentioned, and foundries the committee thinks this merits fu investigation. Finally, a section is devoted to practical and technical matters which the comm thinks should receive attention from those who inten build new foundries.

The committee adds two comments: first, in comp with other old industries, many iron foundries s from being housed in poor premises built in days too little attention was given to working conditions, this will remain a fundamental defect until rebuil can be undertaken; and secondly, the committee w welcome an increased use of mechanical aids and labour-saving devices.

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[1] The members were: H. E. Chasteney (chairman), J. N. Deas, C. Gresty, W. A. Morton, A. E. Pearce, B. L. Broadbent, P. Leonard Gould, E. C. Happold, A. Bennett, J. Gardner, A. G. Logan, W. Wallace, H. N. Harrison, Gavin Martin, J. H. Wigglesworth, J. W. Gardom, Dr. A. I. G. McLaughlin, T. W. McCullough, H. Woods (secretary), and W. B. Lawrie (assistant secretary).

[2] Report of the Joint Advisory Committee on Conditions in Ironfoundries. H.M. Stationery Office. 1947. Pp. 34. 6*d*.

[3] Chambers's Technical Dictionary defines "burning-on" a process of adding a piece to an existing casting, by a mould round the point of juncture and pouring into it.

In England Now

Running Commentary by Peripatetic Correspondents

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* * *

Anxious patient to neurologist: "Are you—forgive me if I'm being rude—a psychiatrist?"

Letters to the Editor

FOOD

SIR,—Your leading article of Aug. 9 raises several important issues. You urge the Ministry of Food to publish the results of its surveys and researches into past and present eating habits in this country. If this was done there is no doubt that most of us would be astonished at the wealth of data actually known about recent and present food problems. This information is probably of a high order of accuracy owing to the considerable resources and the highly trained staff at the disposal of the Ministry for this work.

As you pertinently point out, the Ministry should enlist the support of doctors in explaining present-day feeding difficulties to the public. Patients often make derogatory (and, I think, mostly inaccurate) statements about the rations, and many professional colleagues do the same. Ignorance of data on the subject makes it difficult to combat the "prejudice and personal impressions" you speak of.

So much for the immediate issue. There is another aspect to this problem which seems to be extremely important. The growth of Government-financed research, medical and otherwise, proceeds apace. Where this is under the ægis of the Medical Research Council the results are published, but where it is carried out by Civil Service departments publication is not assured. Some of the facts may eventually see the light of day as political literature, which, rightly or wrongly, is often regarded as biased. This is a serious state of affairs when it is realised that increasingly large numbers of high-grade scientific workers are being employed in the Civil Service, which has financial resources and an organisation transcending in size those of other research-workers or groups of workers. This being so, data of considerable scientific importance—to do for example with the nutrition of this country—ought not to remain locked away in the files of a Government department, but should be published. Further they should not be published as official "hand-outs," nor necessarily as special publications, but in the medical journals. If anonymity was required only the office of the authors need be stated.

It is realised, of course, that this problem is far from simple, and that it raises the whole question of the necessity of secrecy in work done for the Government. However, facts about the nation's nutrition cannot be placed in the same class as those relating, for example, to atomic energy; and it is time the medical profession pressed for the most extensive publication of scientific information by the Ministry of Food.

West Middlesex County Hospital,
Isleworth.
N. F. COGHILL.

SIR,—It is indeed essential for the Ministry of Food to publish the results of surveys of the diets actually eaten by the different categories of the population. It is even more important to know, as you suggest, Sir, the exact figures of the amount of food moving into consumption, and the proportion allocated to various sections of consumers.

I may, however, perhaps comment on your statement that in this country "the level of food consumption is at least sufficient to prevent deficiency symptoms." I cannot agree with this, for two main reasons: (1) because we are not in possession of reliable statistics and results of surveys, and (2) because the incidence of minor or latent deficiency states has noticeably increased during the last year or two. Furthermore, I should like to point out that deficiency states are not caused only by inadequate dietary intake; in the clinical assessment of nutritional states conditioning factors—e.g., interference with ingestion, absorption and utilisation; increased requirements; and increased destruction and excretion—are also relevant. I feel that these factors are even more important now, since the present narrow margin which food-rationing allows us makes it very difficult, if not impossible, to counteract the factors by an increased or more balanced food intake. After seven years of rationing it may not be enough to consider the nation's nutritional state merely from the poi view of adequate intake.

London, W.1.
Z. A. LEI

SIR,—You might, I think, have gone furthe believe that the general failure of the Ministry of F to consult the medical profession may well extend to a failure to consult the Ministry of Health.
M.O.

ELECTRONARCOSIS

SIR,—Dr. Paterson and Dr. Milligan's article (Au raises again the question of the risks of electrical con therapy and its recent modification. L. C. Cook,[1] like authors, stresses the importance of a thorough m examination "with special reference to the circ and respiratory systems"; but apart from a note previous convulsive disorder they do not urge importance of eliminating diseases of the nervous s

Since 1942 I have personally known of three whose deaths were hastened by E.C.T. and which not reported in the literature.

1. A British soldier who presented mixed psychotic with no demonstrable organic basis was started on E.C He immediately developed meningitic symptoms and Post mortem a temporal-lobe abscess was found.

2. A West African soldier appeared to be a classical of endogenous depression with ideas of unworthiness guilt. While this form of mental illness was rare in West Africans, admitted to the base psychiatric unit condition looked typical and he was started on E.C The next day his temperature rose and he showed sig cerebral irritation. Lumbar puncture was done and t somes were found. He was given specific treatment but 24 hours later.

3. A female patient, aged 54, who was diagnosed as genous depression and who previously had had a cours E.C.T. with benefit, was given a second one. She devel incontinence of urine, ankle-clonus, and bilateral ext plantar responses. There was ataxia of all limbs and abdominal reflexes were absent. These gradually impro but several weeks later she was still slightly ataxic spastic. She left hospital and a couple of weeks later following a stroke.

There were two cases of G.P.I., one of whom nearly d following E.C.T. He was a soldier, aged 31, who was diagno as hysteria. It was later thought that there was sc phrenic deterioration and he was started on E.C.T. He not recover consciousness for two days, and after th flaccidity became spastic with grasp reflexes, &c. Lu puncture was diagnostic of G.P.I. The other case did react so grossly, but the condition was "unmasked" by E.C.T.

All these cases had been given careful ph examinations by independent physicians and one been examined by a neurologist. It seems that o disease of the nervous system also merits special refe prior to giving E.C.T. or electronarcosis. I think unlikely that these 5 cases are exceptional, and I a tempted to think that there may be others which ha not yet been reported.

Walsall.
M. St

DENTAL CARIES

SIR,—In reply to Dr. MacGregor's interesting comm of Aug. 2 I wish to make the following points:

1. Disuse atrophy in bones and muscles is obv and undisputed. Yet the how and why is l problematic and hypothetical. For the same r an attempt at an explanation of the physiol process in disuse odontoporosis would be prematur

2. The statement in my letter that changes in t due to disuse cannot readily be demonstrated by e radiographic or chemical analysis needs clarific The effects of disuse on the bones has been given c attention in radiological studies. In disuse atroph the bone, the changes appear early on röntgenol examination. They are readily detectable only in spongy trabecular structure, while demonstration in cortex is difficult or impossible until at an adva stage real narrowing of the cortex takes place. 0

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[1] Recent Progress in Psychiatry, London, 1944, p. 44

he dense non-trabecular structure of the teeth, the
ographic method is of little use in attempting to
ct a reduction in density, as too many variable
ors enter in trying to estimate the density of a more
ss uniform shadow.

Examination by chemical analysis was considered
tisfactory as it has been demonstrated in disuse
phy of the bone that the chemical composition
ergoes no detectable qualitative alteration. The
iges represent merely a quantitative variation
ting the density of the tissue.

A comparison of the physical density of an
rently sound tooth of a western European and of a
itive native not affected by caries has not been
e to my knowledge. I observed that if Europeans
poor teeth start to chew sugar-cane, it is not a
occurrence that also apparently sound teeth break,
t I never saw or heard of in non-assimilated natives.
observation impresses me as an indication that
teeth in civilised man are structurally different
not merely superficially more exposed to the ravaging
ts of chemical agents in their diet. This structural
rence is not congenital as a few years of civilised
are sufficient to impair the condition of the teeth
ny native.

The assumption that enamel is a "lifeless" struc-
is not definitely established. Sognnaes was able
tect radioactive phosphorus, administered systemi-
, in the fully formed enamel of cats and dogs.

The fluorine content of drinking-water does not
a satisfactory clue to the varying incidence of
al caries. There are too many places with a very
fluorine content in the water and simultaneously
w caries incidence, and vice versa. The fluorine
ent of the drinking-water of Wellington, N.Z., and
es, Italy, is approximately the same. Yet caries
rs at a proportion of ten to one in Wellington.
iote a study made among the Indians in Mexico
Anderson et al. which concluded as follows: "the
rvation that nearly fifty per cent. of adult males
perfect teeth seems remarkable. . . . Chemical
nination of the water from several of the wells
rs 0·2 to 0·3 p.p.m. of fluorine. This is far below
ptimum usually stated to be desirable for preventing
s."

ere is no doubt that experiments will have to
fy some of the problematic points and to verify
lusions based on empirical knowledge.

Albans, N.Y. H. H. NEUMANN.

CRAMP AND SALT BALANCE

R,—In his article of Aug. 16 Sir Arthur Hall raises a
tion which has interested me for some years. I
e that salt depletion is a very rare cause of cramp,
ys excepting miner's cramp of which I have no
rience, and cholera, of which I have a little.

1940 I was consulted by an elderly civilian chaplain
ig the hot weather in Northern India. He had, of course,
sweating freely for several weeks, and complained of
iso cramps in the legs. I advised a teaspoonful of common
three times a day and the addition of as much salt as
ible to the ordinary meals. Next day the cramps went
did not come back that summer.

have never repeated this success: I have been
ulted many times in this country by elderly men
nocturnal cramp, but not one has improved with
um chloride. In fact, I cannot say that any treatment
been much good. It is hard to say what other factors
e much effect; long-standing ischæmia does not seem
ortant, for extreme cases of intermittent claudication
a poor reactive-hyperæmia test do not seem specially
uffer nocturnal pain. Incidentally, the pain produced
oing this test varies enormously.

nlike Sir Arthur, I saw no evidence of increase in
eptibility to cramp in those with disturbed salt
nce. Careful observation of large numbers of people
ng hot seasons did not bring to light complaints of
np, even where routine urine-testing showed gross
ciency in chloride excretion.

o while, once in a way, one may pick a winner in
ting cramp with salt, the odds are very long. Nor is relationship with poor blood-supply clear. It will be interesting to hear other opinions on this resistant and obscure symptom, both as to pathogenesis and treatment. For myself, I shall continue to try salt in cramp; it may relieve somebody again some day.

Hutton Mount, Essex. GAVIN THURSTON.

DISTRIBUTION OF STREPTOMYCIN

SIR,—In your issue of Aug. 16 a writer accuses you of complacency as regards the supply of streptomycin. You scarcely rebut the charge, and in attempting to do so you speak of "hesitation about diverting any large proportion of our limited resources." This lays you open to the charge from another angle.

Those who feel keenly about the ravages of tuberculosis and know that the fight depends fundamentally on money should never rest content with the attitude that the fight should be financed out of current revenues or contingent charity. Of course our money standards have recently been upset in several senses, but we suffer too because enlightened and sensitive people do not put the perspective with regard to our fight against preventable diseases in a true light. For example, with regard to cancer, the benefit of research will accrue mainly to future generations and they should be made to bear the burden of loans from which this research is financed. As to tuberculosis it should be a commonplace that what we need is education, appropriate legislation, workers adequately remunerated, and buildings which would be required for only a term of years that could be estimated; then the white disease could be made as rare as rabies for generations that would gladly pay for such freedom.

London, W.2. JOHN MACLEAN.

ACUTE POLIOMYELITIS

SIR,—The following two cases of acute anterior poliomyelitis illustrate some important diagnostic points.

CASE 1.—A boy, aged 6, was admitted with a history of vomiting three days earlier from which he had recovered and returned to school two days earlier, the vomiting recommencing the day before he was seen. On examination he was very confused, with slight neck rigidity and brisk reflexes; the bladder was distended half-way to the umbilicus. A provisional diagnosis of poliomyelitis was made, and was confirmed the next day by the appearance of unilateral facial weakness of nuclear origin, and by the disappearance of all other symptoms. The cerebrospinal fluid (C.S.F.) contained 10 red blood-cells and 55 white cells (40 lymphocytes, 15 polymorphs) per c.mm.; there was 85 mg. protein per c.cm.

CASE 2.—A boy, aged 3, developed listlessness, which continued for three days. After being apparently recovered for two days he developed vomiting, pains in the legs, and drowsiness. On examination six days after the initial symptoms, his general condition was satisfactory. He had a bladder distended to the level of the umbilicus. The next day facial palsy of lower motor-neurone type appeared. The C.S.F., obtained with some difficulty, contained 400 red blood-cells and 10 lymphocytes per c.mm., and 45 mg. protein per c.cm.

From discussion with other doctors it appears that vomiting is common as a symptom of the initial illness, sometimes clearing up temporarily. In both these children the distension of the bladder had been missed, presumably because the child's crying made the abdomen less easy to palpate. American authorities find that bladder involvement occurs in 40% of cases of poliomyelitis. In fact during this epidemic retention of urine (sometimes combined with an up-going plantar response) is highly suggestive of acute anterior poliomyelitis. This does not appear to be widely appreciated, and as it may be a very useful early diagnostic sign it seems worth while to draw attention to it.

Children's Department, Central
Middlesex County Hospital,
London. RONALD C. MAC KEITH.

SIR,—In view of the steadily increasing incidence of poliomyelitis and the lack of any specific treatment in the acute phase of the disease, I should like again to emphasise the apparent value of intensive sulphonamide therapy when applied early in the illness.

The following case was lately seen by me in consultation.

An R.A.F. groundsman, aged 19, was at work up to 5 P.M. on Saturday though he had had severe headache with considerable malaise since midday. He went to bed when relieved of duty, but had a restless night, with severe pains in the neck, back, and limbs. He reported sick with severe headache the next morning, when his temperature was 102°F. He was admitted to a fever hospital on Sunday evening. His temperature was then 102·4°F; he had headache, and pains in the back and limbs; neck rigidity was present. Lumbar puncture showed the cerebrospinal fluid to be at 200 mm. pressure; protein and globulin were increased, and the cells numbered 84 per c.mm. (polymorphs 40%, lymphocytes 60%). When seen by me on Monday morning his temperature was still 102°F; neck rigidity was pronounced, with pain and tenderness in the muscles of neck and back; tendon reflexes in the upper limbs were absent; the abdominal reflexes were absent on the left side and greatly reduced on the right side; there was slight weakness of the left lower limb and the left knee-jerk was absent. There was also considerable paresis of the muscles of the back, the patient being hardly able to raise himself to the sitting position; this had developed in the previous twelve hours.

On admission to hospital the patient had been given sulphamerazine 2 g. by mouth, followed by 1 g. four-hourly. He was now given soluble sulphathiazole 4 g. intravenously, followed at twelve-hourly intervals by 3 g. intravenously; the sulphamerazine by mouth was continued. Seventy-two hours later the fever had completely subsided and there was no further increase in the paresis; the intravenous sulphonamide was now stopped. Ten days after the onset of the illness the patient had recovered almost completely.

As Dr. S. Wray and I[1] have already pointed out, intensive intravenous therapy assures a high concentration of sulphonamide in the blood, whence, it is suggested, it diffuses in effective quantities to the anterior-horn cells and cuts short the infection. The response in this case is similar to those in the previous series and well warrants a further trial of the method. There is no need to stress the necessity of giving fluids and alkalis freely, and of a careful watch on the cytology of the blood and frequent examination of the urine.

Duchy House Clinic, Harrogate. SINCLAIR MILLER.

EMOTIONAL ASPECTS OF SKIN DISEASE

SIR,—Dr. Gladstone Robertson's article (July 26) must call to mind the experiences of many of us in the Services. The skin, among other organs, suffered frequently from the infidelity of the wife of the Serviceman abroad, whose anger and fear could not be expressed naturally because of the difficulty of traversing the distance between himself and his wife.

Urticarias and eczemas were frequent; but the most curious of the emotional skin reactions was impetigo of the back of the neck. I saw four cases, the victims, though not necessarily blameless ones, of an unfaithful wife. All harboured an intense sense of grievance against the circumstances that had allowed this to happen and resented their powerlessness to do anything about, it.

Queen Elizabeth Hospital, Birmingham. JOHN HAMBLING.

SIR,—Dr. Gladstone Robertson is to be congratulated on his successful application of psychotherapeutic methods to the treatment of skin conditions. Although details of the personalities discussed are not given, they appear to approximate, broadly speaking, to the typical personalities of seborrhœic-dermatitis patients—viz., the socially inadequate obsessionals. Such patients have always had difficulties in their social relationships, owing to their being reserved and retiring, with deep-seated feelings of inferiority and inadequacy. They are unaggressive, and at the same time compulsively overconscientious perfectionists, with intense guilt feelings which cause them to fear punishment and insecurity.

Dr. Robertson has rightly described the precipitating factors, which are associated with self-esteem and social status; the skin condition being a protest against the treatment meted out to him by his fellows, a self-imposed punishment, or the evasion of a situation intolerable to him.

The direct attack on the psychological aspect of illness on a purely intellectual level will, of cou create havoc in such poorly integrated personali Hence the flare-up of the condition and the retreat of the patient to his own defences. Only by gaining a g positive transference can his anxieties and aggressi be "piecemeal" abreacted, and so experienced on emotional level. This in many cases leads to a disapp ance of the skin condition, but in order to prevent re he must readjust his emotional life in relation to social milieu. This requires, of course, more prol treatment.

Netherne Hospital, Coulsdon, Surrey. J. SLORACH

INJECTABLE CRYSTALLINE HORMONES

SIR,—There are several drawbacks to the s cutaneous implantation of pellets of crystalline horm It involves a surgical operation, which, however cannot be repeated frequently and therefore necess the use of large pellets which will sometimes con hundreds of milligrammes of the hormone; the is not constant, as the rate of absorption depends on surface area, size, shape, and degree of compressio the pellet; the amount absorbed decreases in the c of time with diminution in size and alteration in shap the pellet; sterilisation by heat destroys the compo and local infection sometimes follows implantation.

These difficulties have stimulated the search for suitable methods. Freed and Greenhill[1] found that suspensions of crystalline œstrone in aqueous m are more effective therapeutically than oily solut of the hormone. Miescher et al.[2] demonstrated feasibility of injecting a crystalline suspension of hormones. Méier et al.[3] found that the injection of large single dose of an oily solution of desoxycort *into an adrenalectomised dog* did not give a prop tionately longer period of action than the injectio smaller doses. Thus an adrenalectomised dog weig 10 kg. can be maintained in a state of health with single daily injection of 1 mg. of the hormone, whereas single injection of 100 mg. is effective for only nine da On the other hand, a large single dose of cryst. desoxycortone administered in aqueous suspension d act for a considerably longer period. Up to a certa limit the daily maintenance dose of this suspens increases in proportion to the size of the dose injected.

Meier et al. also showed that the action can be pr longed by increasing the size of the suspended crys *A wide-bore needle is necessary for the injection* of su suspensions: in fact, we had difficulty in filling th syringe and injecting the suspension even throug wide-bore needle. To overcome this difficulty, suggest the use of an *absolute* solution of crystal hormones to form a subcutaneous depot of crystals the site of injection. We adopted the method devel by Rappaport[4] for prolonging the action of injectio 'Anæsthesin.' The organic solvent used is a 5 solution of urethane in water to which 10–20% of m acetamide has been added. The crystalline horm dissolve in the organic solvent, preferably under g heating, but remain in unstable equilibrium, so th addition of a small amount of water causes precipit of the crystalline hormones. When the horm dissolved in urethane come in contact with the s cutaneous fluids (an aqueous solution) at the site of inj *tion they are immediately precipitated.* The solut rapidly absorbed, while the insoluble hormone crys remain at the site of injection. We have used th method for injecting desoxycortone, testosterone, p gesterone, and œstrone. The solution can be inject with a no. 20 needle.

Through the courtesy of Dr. S. Btesh, chief of t *medical* service, *Government Hospital*, Tel-Avi were able to test the efficacy of 30 mg. of desoxycort dissolved in urethane and methyl acetamide injec subcutaneously in a case of Addison's disease. T site of injection was first infiltrated with 2–3 c.cm. of 1% procaine, and 3 min. later the hormone solution ed at the same place, thus avoiding the temporary pain and producing an additional depot of water ie precipitation of the hormone crystals. (More ly we have mixed procaine with the hormone on in the ampoule.) The maintenance dose of this it, during the year before he came under our vation, had been 5 mg. of an oily solution of ycortone every 4 or 5 days. After the administra- of 30 mg. of desoxycortone in urethane, the treat- could be stopped for five weeks, during which time atient felt perfectly well.

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[1] *Lancet*, 1941, i, 753.

1. Freed, S. C., Greenhill, J. P. *J. clin. Endocrinol.* 1941, 1,
2. Miescher, K., Gasche, P., Frey, H. *Helv. physiol. Acta*, 1 2, 515.
3. Meier, R., Gasche, P., Frey, H. *Schweiz. med. Wschr.* 1 6, 107.
4. Rappaport, F. *Acta med. orient.* 1946, 5, 115.

assah Municipal Hospital, Tel-Aviv.

F. RAPPAPORT
N. LASS.

RAVENOUS INFUSIONS AND MASTOIDITIS

,—A good deal has been heard recently about the dence of gastro-enteritis and mastoiditis in infants, he coexistence of these diseases has been established arge number of cases, posing very difficult problems gnosis and treatment.

iave been pathologist to a children's hospital of , 100 beds for the last eighteen years, and during time I have seen numerous cases of gastro-enteritis iave performed post-mortem examinations on many em. In the early years nursing management was ss efficient than it now is; yet except at times of mic, we had no such terrifying succession of deaths s now become almost a commonplace.

is true that in the post-mortem examinations of days we did not look for mastoid disease in the ice of external signs; but in the vast majority of cases gastro-enteritis alone was the cause of death espiratory infection was only occasionally present. exact opposite is now the case; and my personal is that the mastoiditis is an indirect result of nt-day treatment, the villain of the piece being the venous saline drip fixed up by enthusiastic house- and necessitating the exposure and handling of the it. The result is either a directly occurring broncho- monia, or the indirect sequence of embarrassed lation leading to respiratory embarrassment and tion, with consequent mastoiditis in either case.

believe that the old subcutaneous saline was much harmful, and I think the intravenous drip should ised, if at all, far more conservatively and with itely more skill and judgment.

MARY LESLIE-SMITH
Pathologist to the New Sussex Hospital for
Women and to the Queen Alexandra
Hospital for Children.
ghton.

A HYGIENIC FORK

R,—The table-fork of today is the outcome of much rience and experiment, and the number of its prongs ld not be lightly altered. As an indication of the culties surrounding this problem, we may recall Miss Matty's *Cranford* friend, unexpectedly faced old-fashioned two-pronged forks, felt compelled ave her delicate young peas untasted on the side of plate.

shey Heath, Herts. F. CAMPBELL ROSE.

BDOMINAL TUBERCULOSIS TREATED WITH CALCIFEROL

R,—In connexion with recent reports of the success- use of calciferol in some forms of tuberculosis, the wing case appears to be worth recording.

n unmarried woman, aged 23, began to have recurrent cks of abdominal pain and vomiting in April, 1946. September she was seen at the South London Hospital sent to the Schiff Home, Cobham; she was noted to have grade pyrexia and an ill-defined abdominal mass.

iss C. M. Stacey performed a laparotomy on Oct. 2. peritoneum was studded with tubercles, and the viscera so matted together that it was impossible to explore pelvis or abdomen; biopsy of one of the lesions showed appearances of tuberculosis.

n Oct. 5 she was put on calciferol 50,000 units thrice y. Her general condition soon began to improve, but Nov. 21 the drug was temporarily discontinued as the m calcium had risen to 13·2 mg. per 100 ml.; her abdomen become much softer, and she had no symptoms of calciferol overdosage. Treatment was resumed on Dec. 10 with a dosage of 50,000 units once a day; this was continued until May, 1947.

Apart from a brief attack of abdominal pain and vomiting at the beginning of December, she made steady progress; by the end of February she was up and about all day, afebrile and symptom-free. Nothing abnormal could be felt in the abdomen, and she was discharged apparently well at the end of March. Early in June she was still very well, and free from abdominal signs.

A rapid recovery was not expected in this case of plastic tuberculous peritonitis; and calciferol may well have exerted a favourable influence.

I wish to thank Miss Stacey and Dr. G. S. Yeoh for permission to publish this report.

St. Thomas's Hospital, London, S.E.1. ROBERT BOWERS.

EX-BORSTAL MEN IN THE FORCES

SIR,—The last paragraph of your account (Aug. 9) of the Prison Commissioners' report caught my eye. I have not yet read the report itself, but a question sprang to my mind.

Has any satisfactory follow-up been made on these thousands of young men who, discharged from Borstal, have gone into the Services? It is entirely as it should be that they can rehabilitate themselves without any stigma from their past mistakes. It seems to be a vital matter that we should know how many do and how many do not succeed in becoming adjusted soldiers and citizens. Further, we need to know why any failures occur.

The careful methods of selection and sorting for review of sentences of deserters in B.A.O.R. showed much promise, and we should be able along such lines to understand more of the personal and social factors involved in the prognosis of delinquency.

It is not merely a concern for the morale of the Forces in peace-time, nor for a check on Borstal results and prognoses which prompts this question. We have surely to our hand a unique opportunity of testing our understanding and techniques in dealing with adolescent delinquency. The provision of suitable investigators by the commissioners and the Home Office should pay a handsome dividend.

London, W.1. J. R. REES.

PLASTER TECHNIQUE IN INTRAVENOUS INFUSION

SIR,—Valuable time is often lost in blood-transfusions or saline infusions by interruption of the intravenous flow. Occasionally this is caused by venous thrombosis, but more often it is due to sudden interference with the position of the intravenous cannula or tubing during some form of nursing procedure. Such interruptions can be reduced by substituting for the usual back splint and crêpe bandage a light plaster, as follows:

The vein is exposed in the usual way near the medial malleolus, and the infusion is started.

The rubber tubing is fastened to the dorsum of the foot with adhesive plaster so that it passes between the great and second toes.

A gauze dressing is then applied to the site of incision, and the ankle is placed in the neutral position.

A 6 in. plaster bandage is next so applied as to form a light unprotected plaster boot. In most cases one bandage is sufficient. If more bandages are necessary, care should be taken to avoid making the plaster too heavy. Within twenty minutes the plaster is sufficiently set to permit unrestricted movement, and the leg can now be replaced under the bed-clothes.

This technique was first used on patients with much restlessness following operation for intracranial complications of mastoiditis, but the method proved so successful that it was extended to all patients requiring intravenous infusion. The advantages of this technique are as follows: (1) the lesser restriction of the patient's movements spares him the discomfort of keeping the limb in a fixed position; (2) it facilitates nursing; and (3) it reduces the incidence of pressure points on the back and ankles.

There is as yet no statistical evidence that this technique reduces the incidence of embolism or hypostatic pneumonia. It seems reasonable, however, to assume on basic surgical principles that the increased facility for movement on the part of the patient will reduce the chances of thrombosis and chest complications as compared with patients immobilised with a back splint.

London, N.W.10. **DENYS E. HOWELLS.**

Dr. P. J. SMITH, who appealed in our columns last May for textbooks for medical "displaced persons," writes: "I wish to thank each of my colleagues who so kindly sent medical literature for the use of D.P. doctors. Should anyone not have received a personal acknowledgment I should be glad to hear from him." Dr. Smith's address is now Drimoleague, co. Cork.

Public Health

ADMINISTRATIVE MEASURES AGAINST POLIOMYELITIS

CONFERENCE IN LONDON

A SPECIAL meeting of some eighty medical officers of health from the home counties, or their representatives, was held at the Central Public Health Laboratory, Colindale, on Aug. 8, to discuss administrative measures during the present epidemic of poliomyelitis. Medical officers of the Ministry of Health attended.

It was stated that at the present rate of notification some 5000 notified cases might be expected before the end of the year; this was far in excess of the incidence in any previous year since the disease became notifiable in 1912 (following, as was pointed out, a high incidence in 1911, which was also a year with a hot dry summer). About a third of the notified cases admitted to hospital this year were not confirmed as poliomyelitis; and although the proportion of patients with cranial-nerve involvement was probably higher than usual, severely ill cases were not very numerous. The highest incidence was in those aged between 8 and 16 years, with about equal numbers in children below this age and in young adults.

PRECAUTIONARY STEPS

The following measures were generally considered acceptable:

Swimming-baths and paddling-pools.—Swimming-baths should not be closed unless there is some definite indication that cases have been or may be infected there. The number of children admitted on any day should be restricted, and the children should be advised to stay for only a short period in the baths. Overcrowding is probably a more important factor than infection of the water in swimming-baths.

It has been found that the poliomyelitis virus is destroyed by exposure to 0·2 parts of free chlorine per million for ten minutes.

Hired bathing-suits and towels should be washed and laundered between use, and the floors of changing-huts should be washed out and mopped with a disinfectant solution.

Fresh-water paddling-pools in areas where cases have occurred should be drained so as to discourage the congregation of young children; and a bacteriological check might be kept on natural bathing-pools to see that they do not become heavily contaminated. There is no risk from river bathing unless sewage effluent is entering the river nearby.

Schools and nurseries.—Schools should reopen on the normal dates unless there are special reasons to the contrary. Some attempt might be made to restrict attendance of intimate contacts of cases for three weeks after the onset of illness.

In regard to nursery schools and day-nurseries, on the occurrence of the first case all parents should be informed, and if there is a second case the nursery should be closed. The chances of spread of the virus are likely to be greater among young children playing in close contact in nurseries than the ordinary schools.

Cinemas.—Closure of Saturday-morning cinema shows for children is not recommended: they should not be closed it is certain that the children will not go to a neighbouring cinema and so cause the overcrowding which it is desired to avoid.

Household contacts.—The parents of children and adolescents who have been in contact with a case should be warned to keep them as far as possible from other children and young people.

Generally speaking, no action should be taken to [illegible] adult contacts, but those who are food-handlers should be warned to be particularly careful of personal hygiene. If a contact food-handler becomes ill an attempt should be made to persuade him and his employer to arrange that he does not handle food for at least a fortnight.

Flies.—Although there is no evidence that the fly is playing a part in the spread of infection in the present outbreak, efforts should be made to minimise the fly nuisance as a general public-health measure. Salvage food-bins should have tight-fitting lids and should be emptied frequently.

Fruit, milk, and other foods.—Fresh fruit and milk have been suspected in the past as possible vehicles for the spread of poliomyelitis, and suitable precautions may be taken—e.g., by washing fruit and peeling the skins before eating, and by pasteurising or boiling raw milk.

Tonsillectomies, extraction of teeth, and E.N.T. operations should be avoided in areas where cases are occurring.

MODE OF SPREAD

Dr. ROBERT CRUICKSHANK, director of the Central Public Health Laboratory, mentioned that the virus was demonstrable in the oropharynx of 30–50% of cases for some days before and after onset of typical symptoms; and it persisted in the stools of half the cases for 3–4 weeks after onset. Although the present tendency in America, as represented by Sabin[1] was to stress the intestinal mode of spread, epidemiological evidence suggested that the respiratory route was perhaps more common and that patients may be most infectious in the prodromal stage. He asked clinical colleagues to record particularly any history of nasopharyngitis at this early stage.

The great rarity of infection among those nursing paralytic poliomyelitis, despite the presence of virus in patients' fæces, was in contrast to the findings in typhoid and dysentery. Respiratory infections might spread in high summer, as witness the present prevalence of measles. Infected dust might be a factor, although outbreaks in the U.S.A. had occurred in wet as well as dry seasons. Another epidemiological feature of poliomyelitis was that outbreaks did not recur in the same area in consecutive years, which suggested a widespread latent immunisation with the virus.

CLINICAL FEATURES

Dr. W. H. KELLEHER described some of the clinical features of the cases admitted to the Western Hospital, L.C.C. Only a quarter of the cases were under 5 years of age, the remainder being in patients of up to 32 years. As an example of the protean nature of the disease, of three adolescent girls admitted from the same institution, one had no paralytic symptoms but showed evidence of meningeal irritation and changes in the cerebrospinal fluid; the second had polioencephalitis with [illegible] peripheral paralysis; while in the third only one group of muscles was affected. Lumbar puncture might be a useful diagnostic aid in doubtful or abortive cases. It was suggested that cases of poliomyelitis should be brought together under expert nursing and medical care; in particular the handling of bulbar cases calls for experienced staff. Attention was drawn to the possible occurrence of anoxæmia from bulbar paralysis simula

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1. Sabin, A. B. *J. Amer. med. Ass.* 1947, 134, 749; see *Lancet*, Aug. 9, p. 214.

phalitis.[2] There was no shortage of iron lungs; any cal officer requiring one in a hurry should get in h with the London Emergency Bed Service (Tel.: arch 8515). Respirators not in use should be over- ed and made serviceable. There should be close on between physician and orthopædic surgeon so paralysed patients can have remedial treatment as as possible. The supplies division of the Ministry Iealth had been asked to make available through regional organisation a supply of bed-cradles, ibly to be lent out for use by patients in their own es.

PATHOLOGICAL MATERIAL

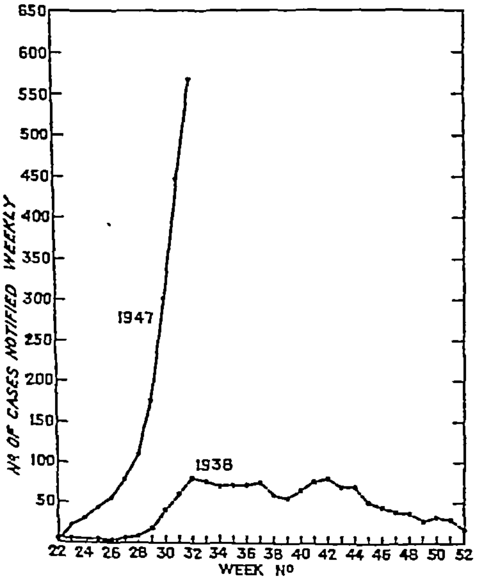
r. F. O. MacCallum, of the Virus Reference Labora- , Colindale, had been receiving brain and cord tissue)% glycerol saline from different parts of the country. was also collecting samples of serum from acute and valescent cases for assay of neutralising antibody nst the Lansing strain which had been adapted to ents. He wished to discourage clinical colleagues from ling further specimens of cerebrospinal fluid, fæces, rine, except by special arrangement.

PRESS PUBLICITY

was suggested that medical officers of health should personally with the local press, supplying them with factual information as was available. The Ministry Health has tried to guide the national press, parti- rly in the avoidance of alarming or sensational ements.

Poliomyelitis and Polioencephalitis

he number of cases of poliomyelitis notified in gland and Wales during the week ended Aug. 9 s 568. This is an increase of about 27% on the figure the previous week (448); and it is a considerably maller proportional increase than the 50% recorded for ar successive weeks before that. Increases in noti- ations were recorded in the following county areas gures for the previous week are shown in parentheses): ncs 71 (36); London 84 (53); Middlesex 35 (20); arwick 23 (13); and Kent 21 (13). Decreases were corded in Yorks, West Riding. 57 (70); Yorks, East lding, 5 (16); Durham 36 (45); and Surrey 24 (32).



Notifications of polioencephalitis were 56, compared ith 39 the previous week. For the four weeks ended July 5, 12, 19, and 26 notifications numbered 9, 16, 16, and 34 respectively.

Infectious Disease in England and Wales

WEEK ENDED AUG. 9

Notifications.—Smallpox, 0; scarlet fever, 680; whooping-cough, 1508; diphtheria, 138; paratyphoid, 7; typhoid, 9; measles (excluding rubella), 5488; pneumonia (primary or influenzal), 225; cerebrospinal fever, 66; poliomyelitis, 568; polioencephalitis, 56; encephalitis lethargica, 1; dysentery, 78; puerperal pyrexia, 103; ophthalmia neonatorum, 66; relapsing fever, 1. No case of cholera, plague, or typhus was notified during the week.

Deaths.—In 126 great towns there were no deaths from enteric fever or scarlet fever, 1 (0) from diphtheria, 4 (0) from measles, 7 (0) from whooping-cough, 61 (5) from diarrhœa and enteritis under two years, and 3 (0) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 215 (corresponding to a rate of 25 per thousand total births), including 25 in London.

Parliament

ON THE FLOOR OF THE HOUSE

The House has adjourned until Oct. 20 and M.P.'s and Ministers, Government and Opposition, go back to their homes. Their morale will improve after a few weeks, for the strain all have been through has had its effects.

At the last sittings of Parliament, when extension of powers under the Supplies and Services Act was considered, the Commons took the debate feverishly because it is the chamber in which political differences and controversies are most acute. The House of Lords, where the Opposition is in overwhelming strength, dealt with the matter more calmly but indicated their view of the national situation by deciding to adjourn only until Sept. 9, when they will consider whether any urgent matters have arisen which require their attention. The difference is merely one of attitude; for it is competent for the Speaker to call the House of Commons together at any time should the Government think it necessary.

During the week the House had the opportunity of seeing an unusual power of the Commons being exercised. The Lord President of the Council and Leader of the House moved, and the House agreed, that two witnesses who had refused to answer questions put to them by the Select Committee of Privileges should be summoned to the Bar of the House "forthwith." The ritual was impressive. The Sergeant-at-Arms, on command of the Speaker, rose from his place, marched to the table before the Speaker's chair and shouldered the Mace. Then turning he returned to the Bar of the House, which is a mark on the floor of the chamber farthest from the Speaker's chair, and went outside to where the witnesses were waiting. These two gentlemen then marched in, followed by the Mace-bearer, and bowing three times to the Speaker, stood at the Bar to answer the Speaker's questions. Having apologised for their previous refusal they then gave their answers to the House as a whole and retired. The House decided, as soon as they had withdrawn, that no further action was necessary. What could have been done is a matter of speculation. But the House of Commons can decree its own penalties and could enforce severe punishment including imprisonment did it think fit.

The last day was nominally devoted to the motion for the adjournment, though the arguments put forward were more appropriate to the State of the Nation discussions than to those of dates and times. But at 2.15 this, too, came to an end, the Opposition not resisting the closure, and the final formalities were completed with a tail of adjournment debates on a variety of topics on which members would have shown more enthusiasm if they had been less fatigued.

During these last days some interesting facts about the Armed Services emerged. There are in these

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[2] J. Amer. med. Ass. 1947, 134, 757.

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London, N.W.10. DENYS E. HOWELLS.

Dr. P. J. SMITH, who appealed in our columns last May for textbooks for medical "displaced persons," writes: "I wish to thank each of my colleagues who so kindly sent medical literature for the use of D.P. doctors. Should anyone not have received a personal acknowledgment I should be glad to hear from him." Dr. Smith's address is now Drimoleague, co. Cork.

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ADMINISTRATIVE MEASURES AGAINST POLIOMYELITIS

CONFERENCE IN LONDON

A SPECIAL meeting of some eighty medical officers of health from the home counties, or their representatives, was held at the Central Public Health Laboratory, Colindale, on Aug. 8, to discuss administrative measures during the present epidemic of poliomyelitis. Medical officers of the Ministry of Health attended.

It was stated that at the present rate of notification, some 5000 notified cases might be expected before the end of the year; this was far in excess of the incidence in any previous year since the disease became notifiable in 1912 (following, as was pointed out, a high incidence in 1911, which was also a year with a hot dry summer). About a third of the notified cases admitted to hospital this year were not confirmed as poliomyelitis; and although the proportion of patients with cranial-nerve involvement was probably higher than usual, severely ill cases were not very numerous. The highest incidence was in those aged between 8 and 16 years, with about equal numbers in children below this age and in young adults.

PRECAUTIONARY STEPS

The following measures were generally considered acceptable:

Swimming-baths and paddling-pools.—Swimming-baths should not be closed unless there is some definite indication that cases have been or may be infected there. The number of children admitted on any day should be restricted, and the children should be advised to stay for only a short period in the baths. Overcrowding is probably a more important factor than infection of the water in swimming-baths.

It has been found that the poliomyelitis virus is destroyed by exposure to 0·2 parts of free chlorine per million for ten minutes.

Hired bathing-suits and towels should be washed and laundered between use, and the floors of changing-huts should be washed out and mopped with a disinfectant solution.

Fresh-water paddling-pools in areas where cases have occurred should be drained so as to discourage the congregation of young children; and a bacteriological check might be kept on natural bathing-pools to see that they do not become heavily contaminated. There is no risk from river bathing unless sewage effluent is entering the river nearby.

Schools and nurseries.—Schools should reopen on the normal dates unless there are special reasons to the contrary. Some attempt might be made to restrict attendance of intimate contacts of cases for three weeks after the onset of illness.

In regard to nursery schools and day-nurseries, on the occurrence of the first case all parents should be informed, and if there is a second case the nursery should be closed. The chances of spread of the virus are likely to be greater among young children playing in close contact in nurseries than the ordinary schools.

Cinemas.—Closure of Saturday-morning cinema shows children is not recommended: they should not be closed it is certain that the children will not go to a neigh. cinema and so cause the overcrowding which it is desired avoid.

Household contacts.—The parents of children and adults who have been in contact with a case should be warned keep them as far as possible from other children and y people.

Generally speaking, no action should be taken to adult contacts, but those who are food-handlers should warned to be particularly careful of personal hygiene. If a contact food-handler becomes ill an attempt should be to persuade him and his employer to arrange that he should not handle food for at least a fortnight.

Flies.—Although there is no evidence that the fly is pl a part in the spread of infection in the present outb efforts should be made to minimise the fly nuisance as general public-health measure. Salvage food-bins have tight-fitting lids and should be emptied frequently.

Fruit, milk, and other foods.—Fresh fruit and milk been suspected in the past as possible vehicles for the of poliomyelitis, and suitable precautions may be ta e.g., by washing fruit and peeling the skins before ser and by pasteurising or boiling raw milk.

Tonsillectomies, extraction of teeth, and E.N.T. *op* should be avoided in areas where cases are occurring

MODE OF SPREAD

Dr. ROBERT CRUICKSHANK, director of the Cen Public Health Laboratory, mentioned that the was demonstrable in the oropharynx of 30-50% cases for some days before and after onset of typ symptoms; and it persisted in the stools of half the cases for 3–4 weeks after onset. Although the pres tendency in America, as represented by Sabin[1] was stress the intestinal mode of spread, epidemiological evidence suggested that the respiratory route was perhaps more common and that patients may be inf tious in the prodromal stage. He asked clinical colleagues to record particularly any history of nasopharyng at this early stage.

The great rarity of infection among those nurs paralytic poliomyelitis, despite the presence of virus patients' fæces, was in contrast to the findings in typh and dysentery. Respiratory infections might spread high summer, as witness the present prevalence measles. Infected dust might be a factor, altho outbreaks in the U.S.A. had occurred in wet as well dry seasons. Another epidemiological feature of po myelitis was that outbreaks did not recur in the sa area in consecutive years, which suggested a widespread latent immunisation with the virus.

CLINICAL FEATURES

Dr. W. H. KELLEHER described some of the clin features of the cases admitted to the Western Hosp L.C.C. Only a quarter of the cases were under 5 years of age, the remainder being in patients of up to 32 yea As an example of the protean nature of the disease, three adolescent girls admitted from the same institution one had no paralytic symptoms but showed meningeal irritation and changes in the cerebrosp fluid; the second had polioencephalitis with peripheral paralysis; while in the third only one gro of muscles was affected. Lumbar puncture might useful diagnostic aid in doubtful or abortive cases was suggested that cases of poliomyelitis should brought together under expert nursing and medic care; in particular the handling of bulbar cases c for experienced staff. Attention was drawn to the pos occurrence of anoxæmia from bulbar paralysis simul

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1. Sabin, A. B. *J. Amer. med. Ass.* 1947, 134, 749; see La Aug. 9, p. 214.

THE DOCTOR'S MISSION*

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once you must abandon any idea that you are to ne your work to medical practice. My educationist , A. N. Whitehead, has laid it down that, " the life Ian is founded on technology, science, art, and ion. All four are interconnected and issue from his mentality." It is with the life of Man that your will lie. In the community of your choice you will oncerned with the care of the sick, and with the ention of illness, both physical and mental: but lieve that your experience in the university has l you to help to promote that part of the total life Ian which is founded on science, and it is my con-ion that your work should include an attempt to aint the members of your community with the der aspects and broader values of scientific work, so to secure for science a place in the foundations uman activity and of human conduct. I say *a* place sedly, because it would be wrong, and misleading, xhort you to claim for science a disproportionate e in the pattern of life ; so incomplete is our present vledge of human relationships that he would be a man who essayed to define the relative importance cience, or of technology, or of art, or of religion. h is to be sought in all four.

predict that you can be only partly successful in r attempts, because success cannot be achieved until system of education in schools and in universities ures that every citizen shall have some knowledge the sciences, and particularly of biology. This ientation in education will take at least one genera- and probably longer before it is completed. Until ı, the importance of scientific subjects which a scientious and intelligent student may need several rs to grasp cannot be explained to an individual over nner-table, or to a community at an evening meeting. il then, often you must be expositors, although the rable rôle for a medical man is that of commentator. il then, any health service cannot be completely essful, because it will be operating in a community which the citizens lack the fundamental knowledge nake full use of it.

APPROACH TO THE OBJECTIVE

Inlike certain other branches of science, fortunately licine, from which you will draw most of your strations, is not at intervals faced with the moral blem of assessing the proportions of good and bad ch may accrue out of knowledge gained under ormal conditions such as those of war. In medicine, added knowledge is ultimately of direct benefit to nkind. Yet it would be unfortunate if this yard-k of " direct benefit " were to be the only one applied the public to assessing work in science, the more so ause for some time to come the laity will remain ditioned to regard scientific achievements more otionally than dispassionately. Our professional aims doctors may make you more agreeable pleaders: this should not deter you from the strategic educa-nal objective, that—if its best minds are to be given scope—a nation cannot and must not attempt to ne any " end " to the work of its scientists. Happily, conclusion of the war freed science from the rigid essity of confining itself to the exploration of problems immediate military applicability, and restored its e function of adding to the body of knowledge. The plication to surgery of what should be the ideal yardstick was aptly crystallised by the late Dr. Harvey Cushing, himself one of the most expert surgical craftsmen of all time, in the remark that he looked forward to a day when some university would be farseeing enough to appoint a professor of surgery who had been born without hands.

How is this strategic objective to be approached during your professional lives? You must first realise that during *your* lifetime those to be educated will include the adult members of the population, and that you cannot be their teachers until you have lived for a while in the outside world, and paid heed to what goes on around you ; not until then can you hope to be acceptable to your fellow citizens as interpreters of scientific matters. And you must keep abreast of all that may modify your apostolic mission—new ideas, new armamentarium, new methods, approaching these with open minds and with critical interest. Some of the universities are well on the way to providing you with opportunities for so doing ; you can never consider your own education to be complete ; although graduates you must remain students.

How are you to begin this educational work? One way of beginning—and to my mind a most attractive way—is to present science, including medical science, as a branch of learning which offers to those who follow it exciting opportunities for doing things which have never been done before ; opportunities which are not affected by belief in this creed or that ; opportunities which have the advantage—so desirable in our disturbed world—of not being limited by any geographical boundary ; opportunities which can be restricted to the narrowest of objectives or on occasion expanded to the broadest ; opportunities in which the method is primary, the objective secondary.

ATTITUDE OF THE PUBLIC

You will have difficulties in such educational work: and these will be both general and particular. I may remind you of the difficulty of explaining to the laity that progress in science, and particularly in medical science, is both continuous and episodic, episodic progress depending on the genius of men and of women and on the possibilities of putting promising therapeutic agents to properly controlled clinical trial. On the other hand, one of the aspects of scientific work which bewilders unscientific people is the speed at which progress is occasionally made. You must expound advances against the background of the age in which they occur : in its time the invention of the wheel was more revolutionary than was the more recent invention of television. At first progress could be summed up every century or so ; then every decade ; but nowadays it may be every year, or even every month. Compare the medical progress made in the last century with that made in the preceding nineteen centuries, and with the speed at which men's minds have been attuned to accept that progress ; in this year of the centenary of the discovery of the anæsthetic property of chloroform in our own university, it is still disconcerting to recall how slow was its acceptance. Moreover some advances have an emotional appeal, which is more attractive to human nature, and therefore a more tempting educational starting-point than others less spectacular but more fundamental. For a thousand citizens who understand that penicillin saves many lives in each year, you would have difficulty in finding one who realises that the addition of chlorine to drinking-water makes it, every day, safe for millions : yet it is of supreme importance that your public grasp this to them difficult perspective. These are some of the perplexities which are common to all members of the public, whatever their income, whatever their previous non-scientific education.

As to particular difficulties, the experience of an older man may perhaps help you to overcome them, not by

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* romotor's address to new medical graduates of the University of Edinburgh on July 16.

Notes and News

REPLACING THE RETROVERTED UTERUS

At a meeting of the North of England Obstetrical and Gynæcological Society in Liverpool on July 4, Prof. T. N. A. Jeffcoate described a simple method of replacing the retroverted uterus by manipulation with a Hodge pessary; the method does not call for the usual bimanual replacement before insertion of the pessary. With the patient in the left lateral position the Hodge pessary is inserted and allowed to take up its own position; the upper rim comes to lie in the anterior fornix and the lower bar projects beyond the introitus. One finger is then inserted behind the lower bar, through the pessary and in front of the upper rim, which is pushed against the anterior aspect of the cervix. The cervix is thus deflected backwards and the body begins to rotate forwards. Ultimately the upper rim slips past the cervix into the posterior fornix. By this time the retroversion is nearly always corrected, but sometimes not completely, the uterus lying with its axis vertical. In such cases the upper end of the pessary is pushed firmly against the posterior vaginal wall and the posterior fornix repeatedly "stroked" backwards and slightly downwards with the pessary. At the same time the lower end of the pessary comes to lie at a higher level. Thus the cervix is levered backwards and the fundus comes forwards; and the pessary is automatically left in its correct position.

STAFF FOR CARE OF THE OLD

In the West Middlesex Hospital, care of old people has reached a very high level (see *Lancet*, 1947, i, 760). The geriatric wards, under Dr. Marjory Warren, take 180 patients all of whom are actively treated and reabled, as far as possible, many of them being discharged on recovery or improvement. The Middlesex County Council are anxious to encourage this work, and are therefore appointing a senior and a junior resident house officer to work with Dr. Warren. The example of the West Middlesex deserves study by all authorities and doctors responsible for the care of the old in hospitals and institutions.

FOR PSYCHIATRIC SOCIAL WORKERS

Three pamphlets—on war-damaged children, foster-home placement for difficult children, and interviews with parents in a child-guidance clinic [1]—have just been published by the Association of Psychiatric Social Workers. These nicely produced and informative little volumes are the outriders of a series on various aspects of psychiatric social work. Written in a straightforward pleasant style, they set out material which may well be as useful to the family doctor as to the social worker.

University of Birmingham

The title of reader in the university has been conferred on Dr. W. Trevor Cooke, first assistant in the department of medicine.

University of Sheffield

The offices of the dean of the faculty of medicine are now at 358, Mushroom Lane, Sheffield, 10.

University of Durham

On Thursday, Sept. 25, at 5 P.M., at the Royal Victoria Infirmary, Newcastle-on-Tyne, Dr. Frank H. Lahey, of Boston, Mass., will deliver the second Rutherford Morison lecture. He will speak on Thyrotoxicosis, Thyroidectomy, Thiouracil.

University of St. Andrews

Dr. G. H. Bell, lecturer in physiology in the University of Glasgow, has been appointed to the chair of physiology in the university.

Dr. Bell graduated B.SC. in the university of Glasgow in 1929 and M.B. with honours the following year. After holding a house-appointment at the Royal Hospital for Sick Children in Glasgow, he became assistant in the department of physiology in the university. A period as lecturer in physiology in the University of Bristol followed, till he returned to Glasgow to take up the same position there. In 1943 he was awarded the gold medal for his M.D. thesis, and in the same year he published the 3rd edition of his *Experimental Physiology*. Dr. Bell has also written on capillary fragility and hæmoglobinometry, and he has devised (with E. Guthmann) a simple photoelectric absorptiometer.

Royal College of Surgeons of England

The following were successful in the recent pass fellowship examination:

N. H. Antia, D. Banerjee, D. Bartlett, P. H. Beales, J. D. E. Bolt, J. F. Bolton Carter, T. Burke, T. G. Cameron, T. Candler, H. Chaudhuri, C. D. Clark, R. I. Cohen, P. W. R. P. Crick, P. I. Cromack, P. J. Daniato, O. Daniel, T. C. Davies, B. H. Egerton, T. Fenwick, V. S. Van V. Fernand Fisher, D. W. Fleming, N. A. Fowler, E. K. Gardner, E. M. Horshman, A. C. Hicks, N. S. Hooton, E. W. P. H. Jayes, D. H. Jenkins, E. Jones, K. V. J. Kearney, Khan, J. M. Large, G. H. Levien, J. S. A. Linton, W. G. A. B. Mackenzie, R. A. Megally, J. W. Montgomery, T. P. A. O. A. Ohannessian, B. M. Omar, E. N. Owen, E. H. V. T. Pearse, M. F. Pilcher, D. W. Purser, M. A. Radwan, Rains, D. G. Reinold, J. P. I. Rose, D. T. Rowlands, E. P. N. J. Shah, I. M. Shulman, J. H. Smart, H. G. Stack, D. H. T C. L. Tucker, A. R. Wakefield, B. W. Wells, H. G. W A. M. E. A. Zikry.

Ministry of Health

Mr. J. E. Pater has been appointed an under-secretary the Ministry.

Mr. Harold Davis, PH.D., F.R.I.C., who has been pharmacist at University College Hospital since 19 been appointed as chief pharmacist to the Ministry.

Poliomyelitis in the United States

The U.S. Public Health Service in Washington is by B.U.P. as reporting that the danger of a polio epidemic is diminishing; cases reported in a typical in July were only half the five-year average, and the number of cases reported so far this year is only 1675, co with the five-year average of 2048 and last year's 3256.

N.A.P.T. Scholarships

The National Association for the Prevention of Tuber is to offer six scholarships this year: two (value £1 to registered doctors in the Colonial Medical Service; (value £100 each) to medical graduates of native schools the British Colonies; and two (value £80 each) to male nurses, health visitors, or other members of colonial departments. Applications should be submitted through Colonial medical departments to reach the Colonial not later than Aug. 31.

A refresher course in pathology and bacteriology will held in Oxford between Sept. 23 and 26.

Training in Child Care

The Home Office has appointed a Central Training Co in Child Care to organise courses and select candidates work among children who have been deprived of a home life. The medical members of the new council Dr. C. Fraser Brockington and Prof. Alan Moncrieff.

University courses, the first to begin this year, are to held for boarding-out-officers who will supervise chil placed in foster homes. For these applications are in from women between 21 and 40 with a university degree a social-science diploma. There are also to be courses house mothers, and for these applications are invited women aged 18 to 35 with a good general education and "deep interest in providing a home background for children Grants will be available towards fees and maintenance

Regional Boards' Appointments

The following appointments have been made by the *Regional Hospital Board:* senior administrative officer, Dr. G. C. Williams (M.O.H., Oxford city); secretary Mr. George Watts, F.H.A. (secretary, Berks, Bucks Oxon Regional Hospitals Council of the Nuffield Prov Hospitals Trust).

The *Welsh Regional Hospitals Board* is reported by *Manchester Guardian* (Aug. 13) as having received 51 appli tions for the post of senior administrative medical those short-listed are Dr. A. T. Jones (medical officer Welsh Board of Health, Cardiff), Dr. T. L. Hughes Middlesbrough), Dr. G. Rocyn Jones (M.O.H., Monmouth and Dr. J. Greenwood Wilson (M.O.H., Cardiff). Of 17 applied for the post of secretary, 4 have been short-listed The appointments will be made on Sept. 9.

The King of Norway has conferred the decoration knight 1st class of the Royal Norwegian order of St. O on Mr. C. Bowdler-Henry "in recognition of services ren during the war." In 1942 Mr. Bowdler-Henry was appo honorary consulting oral surgeon to the Royal Norw Forces in the United Kingdom and to the Norwegian Mi of Social Welfare.

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[1] Obtainable from the Association, 4, The Drive, Acton, London, W.3. 1*s*. 6*d*., 6*d*., and 1*s*. respectively.

TWO ESSAYS ON
THE PRACTICE OF MEDICINE

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has seemed to me for a long time that good doctors from bad ones in two major respects. The time they e to history-taking and their ability to interpret ory correctly is the first. The second is their ability mulate a plan of treatment. I have written down houghts on these two subjects in the form of two essays.

On History-taking

now that I am not alone in thinking that history-g is the greatest art in medicine. Generations of al teachers have acknowledged its importance and tried to pass on the art to their pupils. Yet there are ers, doctors, and students who still fail to appreciate ajor place in diagnosis.

ny physicians select for their ward teaching cases good physical signs and reject or pass over the with a good history and no signs at all. In the atient department they allot cases to their clinical s so that in effect the clerks are doing the same in department as they do in the wards. In this way it ssible for a medical student to go through his whole e without ever hearing a patient interrogated itio by an expert clinician.

students have to understand that they come to outpatient department to learn the art of consulta- and above all to hear me taking case-histories. the history has been taken, we discuss the provi- l or possible diagnosis *before* examining the patient. ere are some who may regard this procedure with ishment if not with horror, but it is really only llustration of the process whereby all good doctors e at a diagnosis. It is quite impossible for an ligent physician to take a history without diagnostic ibilities being presented to his mind. Far more akes are made by putting too much significance upon tful physical signs and neglecting the clear indica- s of the history than by the opposite process. After examination we reconsider the diagnosis in the light ur further findings.

ere is a special reason why the value of history g needs to be emphasised today. We are embarking a National Health Service in which laboratory ities will be freely available for the first time to nary patients in general practice. The practitioner ometimes under the illusion that the consultant's k is relatively easy—he has the resources of the ratory and the X-ray department at his disposal and only to set the machine in operation for the correct nosis to be produced for him. The consultant of erience knows full well that it is not so. He knows wasteful and misleading the ancillary services may e if due care has not been given to the initial exami- on of the patient and above all to the history. If ratory and X-ray services are to be intelligently l, history-taking must become more, not less, ortant and it is a task which in difficult cases can er be delegated.

AN INQUIRY

In order to emphasise the importance of history- ting, I have recently in my outpatient department ted the provisional diagnosis after taking the history; e diagnosis after examination; and the final diagnosis er all investigations were carried out, the patient ing admitted to hospital if necessary. These diagnoses have recorded in 100 consecutive cases, but I have of urse only used cases presenting a diagnostic problem. Cases sent solely for treatment, where a full diagnosis had already been made, were not included, neither were those in which the doctor's letter supplied foreknowledge of a physical sign of major importance, such as significant hypertension.

Most doctors send patients to the outpatient department with only a brief outline of the main complaint, and all such cases were suitable for the inquiry. The results are as follows:

The diagnosis reached after history-taking alone was unchanged by examination or investigation in 68 cases out of 100. For example:

Diagnosis after history: bronchiectasis.
Examination: basal râles.
X ray (bronchogram): bronchiectasis.

In addition to these 68 cases, the diagnosis after history-taking was *substantially* correct in another 6. For example:

Provisional diagnosis: rheumatic heart disease with early failure.
After examination: mitral stenosis with early failure.

In a further 8 cases, the provisional diagnosis was correct, but examination and investigation contributed important findings to the final diagnosis, unsuspected during the history-taking. For example:

Provisional diagnosis: osteo-arthritis of spine.
After examination: the same plus glycosuria.
After investigation: osteo-arthritis of the spine plus diabetes.

In 1 case the provisional diagnosis was correct, but examination was misleading, and a change of diagnosis was made which turned out to be wrong, the sequence being duodenal ulcer; gallstones; and (after two X rays) duodenal ulcer.

In 12 cases no provisional diagnosis could be arrived at after taking the history—only a number of vague possibilities presented themselves. Examination provided the clue in 5, investigation in another 5, and the remaining 2 were still vague at the end of the diagnostic process.

In 5 the provisional diagnosis was frankly wrong and had to be amended—in 2 cases by the examination and in 3 after further investigation. For example:

Provisional diagnosis: cervical root pain.
After examination: the same.
After X ray: pulmonary tuberculosis. (Re-examination failed to show physical signs but the possibility should have been considered before it was revealed by X ray.)

COMMENT

Before attempting to assess the significance of these results, we must bear several things in mind.

The first is that history-taking comes first in the diagnostic sequence. There is no intention of belittling the importance of examination. If examination came *before* history-taking, the results might be equally striking, but no sane physician works in that order.

Secondly, what we call history-taking really takes into account much more than the statements of the patient. We do not take histories with our eyes shut. We know how old the patient is, how he walks into the room, whether he is pale or flushed, thin or fat, healthy looking or cachectic, and in some cases we may know a great deal more, that he has a facial paralysis for instance or a tremor of the hands. All this is observed before the provisional diagnosis is made.

Thirdly, it must be emphasised that the diagnosis made after history-taking is in any case only provisional, and requires confirmation before any competent physician would act upon it. One would not give insulin on a history of thirst and polyuria, nor liver extract upon breathlessness, pallor, and paræsthesia. Again let it be emphasised that no case is being made out for neglect of diagnostic care and precision. On the contrary, the claim is put forward that because history-taking will lead to the right diagnosis in so many cases, it is an art to be acquired, taught, and constantly exercised, and *my trying to explain how to do so, for that will vary for* each one of you, but by my pointing out their existence and their nature, so that you may deploy your own natural resources to the best possible advantage.

Some of them are peculiarly British. For example there is our disinclination to adopt any course of action from which either divergence or retreat is impossible; and when we do accept a course of action, we often seem to choose the hardest way of completing it, as if unnecessary labour were something to be sought. Linked with this is our inclination towards stability: sometimes for a dangerous let-be stability, and this inclination you must temper; sometimes for a stability which will provide a stepping-stone for the next forward social movement, and this you must cherish tenderly. The national answer to such dilemmas, and often a successful one it is, lies in compromise, acceptance of the best existing hypothesis or plan, preparedness to await a better; an answer which is the very basis of all communal life, whatever the size of the unit. Indeed the only circumstance in which your own attitudes must be utterly uncompromising is when you encounter bad faith.

We may note, also, and as an opposing trend, our insatiable desire for new knowledge; this you must adjust carefully and with understanding, for your patients may fail to discriminate between the good and the bad in the mixtures of science and pseudo-science which they may hear or read. Even when they make the correct choice, you may have to help to ensure that their characteristic impatience for action to be taken in the light of the new knowledge does not necessarily mean the hurried uncritical discarding of existing arrangements.

CULTS AND VALUES

Although you will have discovered for yourselves that all men are not cast in the same mould, and although you may have met here some individuals cast in curious moulds, when you go out into the world your experience of different types will be greatly increased, and you will encounter the tendency of types to congregate in groups, some of which may actively or passively obstruct your educational work. Some such cults may be stimulating, because they are providing an outlet for the attitude of mind of those who are unorthodox, but who do not wish to impose their views upon the majority; whereas the difficulties you may have with an obstructive group are determined by the belief of each adherent, however sincere it may be, that one view alone is permissible: a belief that will often be understandable to you as the only one possible for the persons who hold it, if you realise that it has been reached without the use of any cerebral process with which your physiological studies have made you acquainted. *Many of these* people see and hear by proxy—they depend for the information on which they base their views upon someone else, or upon someone who knows someone else; and the best piece of advice I can give you is that in your attempts to overcome their prejudices you should not begin by provoking uncompromising opposition. There is one cult on which you must make continuous, total and unmerciful war—the cult of the obsolete: it can do nothing but harm, and *its adherents must* be destroyed utterly; they are too apathetic and too ignorant to debate any proposal for change.

Then you must realise that you may share with the laity our queer national topsy-turvy notions of relative values: even in large issues, if a cause be a lost cause you may find your fellow-citizens cling desperately to it in spite of all your incontrovertible arguments.

You must remember, too, that public opinion does not necessarily reflect that of the most intelligent citizens, and still more that changes which you may desire in public opinion are not to be brought about by the influence of the relatively few of exceptional ability, *but usually by those* possessing powers of persua who may be less gifted. Excluding the demag the man of average intelligence has most influence o average man, and at him your educational camp should be directed; any effort which ignores this pri is sure to be only partly successful. And when d with the average man you must be on the watch assess what Nicolson writes of as the "immense p played in human affairs by such unavoidable and unrecognisable causes as lassitude, affability, pe affection or dislike, misunderstanding, deafness, inc plete command of a foreign language, vanity, engagements, interruptions, and momentary stat health." On such flimsies may hang the fate of causes, or even that of nations.

A UNIFYING PURPOSE

It is time to draw together such threads as I been able to provide for my argument. I hope you will have realised that I have proposed to y merge your professional problems with those of society in which you find yourself, and to inclu *your scientific mission* personal, social, and eco problems as well as vocational problems. To l yourselves to these last would be to fail to assume proper responsibilities in society. The ultimate pr was defined by William James as the search fo moral substitute for war—some unifying purpose, w would stimulate a spirit of altruism and self-s on a large scale, in the absence of human con I believe that you and the other young men and wo who are now entering our profession from th schools all over these islands, should grasp the op tunity of so sharing in the education of our that it will find this moral substitute for itself in *effort to secure the best possible* mental and phy health for our people. To that end, the qualities w you must cultivate are those set down by Francis Ba four hundred years ago:

> Desire to seek; patience to doubt; fondness to medi slowness to assert; readiness to reconsider; carefulnes dispose and set in order; neither affection for what is nor admiration for what is old; and hatred of every k of imposture.

What is to be your tactical objective? To edu society in the place of science, and in particular of med science, in its life, so as to secure conditions in whi can help to provide for the intellectual satisfaction and the spiritual and physical welfare of that society receding objective, for at any given time so knowledge is neither complete nor final, wherein li charm of its pursuit.

By planned campaign or by isolated—even brillia *skirmishes? Surely by planned campaign,* which be flexible enough to enable you to make use of opportunity of time or place.

By steady advance or by impulsive crusade? Su by steady advance: have we not just learned th individual, no community, no nation, can co to sustain a maximum effort? And a long be the campaign is bound to be.

How shall we, or our children, recognise any succ *A difficult matter, on which I cannot offer you* guid for the beginnings of success may be recognisable on retrospect.

Finally I crave your leave to revert, for the last ti to my habit of asking you to take away but one p from any address of mine. And so I shall end by sug ing to you that your life's work will be in M. L. Ja words to prove yourselves "worthy to share the com and labours of those whose business it is to seek truth and to make wise use of what they find, b seekers and happy finders." Towards the accomp ment of that end, the best of good fortune go t each one of you.

Symptomatic treatment.—In the absence of treat- which is known to modify the course of the disease, ile waiting for a diagnosis to be made or for cure to place, what can be done to relieve the symptoms? we have analgesics from aspirin to morphine, otics, aperients occasionally, a linctus or inhalation, nany simple nursing and dietary measures.

What psychological treatment is necessary?—This es both to organic and to psychogenic disease. It e divided into: (*a*) psychotherapy, which may be ing from simple explanation and reassurance to ment in a mental hospital, and (*b*) therapy by bos. The latter has to be distinguished from tomatic treatment.

e frequency with which placebos are used varies sely with the combined intelligence of the doctor is patient. The more intelligent the doctor, the more e make use of explanation, reassurance, and, when ssary, an honest statement as to why medicine will o good. The more intelligent the patient, the more he heed the doctor's statement and advice. In this exion, intelligence and social status do not always ogether. The point is that the prescription of a ebo should be a deliberate act and not a conditioned x, and it should be an invariable rule that it must mething which can *do no good*. The greatest obstacle he intelligent practice of medicine is the habit of g something which *might* do good. Then if the ent improves, the reason remains obscure (but see er 5 below).

must be clearly understood that a placebo is given he mental comfort of the patient, not of the doctor, that whereas it may occasionally be expedient to ive the patient it should never be done at the risk eceiving oneself. Placebos should therefore consist he simplest possible ingredients such as infusion of ian.

he above principles are primarily designed for the in which a diagnosis has been made. In other cases an of therapy is just as necessary. The first question n is: how can an accurate diagnosis be established? l the second: am I justified in withholding therapy il it has been made? The answer is often unequivocal. suspected pernicious anæmia or carcinoma of the nach, it is always mischievous, sometimes criminal, reat before investigating. In other cases the decision ot so easy, for instance in a case of high fever. Here decision will depend upon the degree of likelihood t the provisional diagnosis is correct, the availability liagnostic aids, the danger of non-intervention, and the ger of wrong-intervention. In a remote country rict or on active service, I would give sulphaguanidine an acute febrile diarrhœa. In an urban practice I ld at least send a stool for bacteriological examination ore doing so, even if, in a severe case, I decided to rt treatment while awaiting the result. Finally in h. cases treatment may often be designed to give gnostic information, which comes under the important ding of:

. *The therapeutic test.*—This is usually wrongly carried . The tendency is for therapeutic timidity to accomy diagnostic doubt—"I gave a small dose of sulpha-azole in case it turned out to be pneumonia" is ocious therapy.

he right approach to the therapeutic test is this: am not certain. Therefore I will give remedy X in *l doses* for *x* days" (the usual period in which a ponse is likely to occur). "If it is disease X, then he l respond and I will know the diagnosis and continue atment. If there is no response I will try remedy Y in same way—or I will make further investigations into cause."

I make no apology for this elementary explanation cause I know how rarely a therapeutic test is properly plied. The point is that, used intelligently, every atment becomes a therapeutic test, thus aiding stage stage in the diagnosis. For instance, it may be spected that a headache is psychogenic. If the placebo contains aspirin, no useful information is obtained; the diagnosis is merely obscured. If it is dispensed on correct placebo principles (paragraph 4(*b*)) and the headache is regularly relieved, the diagnosis of psychoneurosis can be made with some confidence.

Finally, there is:

6. *Experimental therapy designed for the purposes of research.*

It is beyond the scope of this essay, but if such trials were properly planned with the necessary controls an enormous amount of valuable information could come from careful experiments in general practice, particularly as to the value of many accepted or advertised remedies in minor ailments.

I can think of no disorder in general practice that cannot be dealt with according to the scheme which has been described. Set out at length, it may appear extravagant of time; but actually it is merely a mental habit once the principles are grasped, and it is quite unnecessary to *think* in terms of 1, 2, 3, and 4. Nevertheless, lack of time is usually made the excuse for bad work. It is quicker to prescribe a bottle of medicine than to examine the patient properly and explain the nature of the illness. This is equivalent to an admission of failure, and let it be noted that the patient for whom the bottle of medicine has been prescribed will probably return for another and another, and what is more serious, an anxiety state may be induced, whereas explanation and reassurance might have finished the treatment in one consultation, thus saving time in the long run. Perhaps we must admit that many of us still have one more category which is:

7. *Treatment hastily prescribed without regard to principle or consequence.*

None of us is perfect. Let us realise that no. 7 exists, but is something to be ashamed of. I suspect that in not a few practices it is the category which most nearly corresponds with normal therapeutic procedure.

No-one's considered opinions are entirely original; they evolve gradually and are much influenced by discussion. Prof. J. C. Spence first used the words "teaching the art of consultation" to me, though I have practised the method for years. Dr. G. W. Rippon, of Sheffield, himself a general practitioner, first gave me the phrase "therapy designed not to deceive oneself."

SOCIAL MEDICAL TEACHING

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From the University of Birmingham

Both the Goodenough Committee and the General Medical Council have emphasised that the scope and method of undergraduate teaching in social medicine "are matters in which there is much room for experiment." In addition to a fuller discussion of the preventive services, they anticipated that instruction should be extended to include the more ambitious aim of influencing the clinical teaching so that due emphasis is given to the relation of the social environment to individual cases. In our view this aim can be realised only if accepted as the responsibility of all clinical departments. We here describe briefly the experience of a first year of joint social and medical teaching in the departments of medicine, social medicine, and surgery at the University of Birmingham.

We state first on what grounds we value this teaching. Since it has been supported by considerations in which never on any account to be neglected whatever may be the facilities available for investigation.

Finally, let it be remembered that these cases were all diagnostic problems sent for solution, and seen by me for the first time, and that the histories were taken not in the leisured atmosphere of the consulting-room but in a busy outpatient department in the presence of numerous students. With some help in routine examinations (blood-pressures, reflexes, &c.) the average time spent on each patient is unfortunately less than twenty minutes and this includes teaching and the dictation of brief notes.

On Therapeutics

How many doctors today think that they have the modern outlook in therapeutics because they treat sore throats with penicillin lozenges and prescribe stilbœstrol for menopausal flushing? And how many show their complete misunderstanding of all that modern therapy implies by prescribing vitamin B$_1$ for sciatica, by giving digitalis in inadequate doses to the wrong patients, and by retaining a belief in expectorant mixtures, not pausing to consider whether their results are due to the treatment prescribed, to its psychological effect, or to spontaneous recovery?

The new therapy, instead of being hailed as a welcome revolution in medicine, has simply been looked upon as an addition to knowledge, in no way modifying the use of the older remedies. In this year of 1947, I read in the examination paper of a final-year student the words "diuretics such as pot. cit. or mersalyl," as if these were equivalent. It is like saying: "The journey can be made by stage-coach or by aeroplane." And from two current textbooks I cull the following information:

> (In angina pectoris) "the daily bath should be advised to keep the skin active" (no comment).
>
> (In acute nephritis) "diuretics should not be used *at least until diuresis is established*" (italics mine).

In other words, if you use a drug be sure to use it at such a time and in such a way that you will be quite ignorant of its value and almost certain to deceive yourself as to its efficacy. So long as that is the teaching in therapeutics from the writers of textbooks, we cannot expect rational therapy from the majority of the profession.

We, the teachers of medicine, are often criticised, and often deservedly, for not applying ourselves sufficiently to the problems which the student will later meet in general practice. It is a fact that some teachers are too prone to discuss Cushing's syndrome when they should be teaching the causes and treatment of headache, but if the critics infer that we ought to be teaching how to write a prescription for a diaphoretic in bad Latin, I for one refuse to waste my time on such anachronisms. Yet we cannot hope to get rid of the bottle-of-medicine tradition without facing the problem and giving the prospective practitioner something to put in its place. It is not sufficient for us to teach the use of parenteral penicillin and blood-transfusion, leaving the student quite ignorant of how we, his teachers and exemplars, would tackle the problem of treatment in general practice ourselves.

CHANGES IN OUTLOOK

The therapeutic revolution to which I have referred has necessitated certain fundamental changes in outlook.

Firstly, diagnosis is far more important nowadays than ever before. For instance, before penicillin, a missed diagnosis of bacterial endocarditis was unimportant; today it may amount to malpraxis. In the old days the immediate diagnosis of pneumonia or meningitis was not essential; today it may be life-saving. With more potent and specific remedies the need for accurate diagnosis and control should require no emphasis.

Secondly, these remedies must be properly used. With *mist. expect.* it matters little whether $^1/_2$ oz. or 1 oz. is given, and whether every four hours or three times a day. With sulphonamides, with insulin, with iron, digitalis, with thiouracil, the dosage, frequency, and of administration are all-important.

Thirdly, in the old days when we had no real remedy for anything, we had to treat everything. Today when we can efficiently treat so many illnesses we can usually afford to admit honestly when we are beaten. There is less excuse than ever for the diaphoretic mixture, febrifuge, and the aperient.

Fourthly, there is a healthy tendency nowadays to admit the importance of psychological factors in the of disease instead of ascribing the cure to something We should therefore try to realise when we are employing psychotherapy so that we may use it rationally.

We who have the privilege—the very great privil of working in a well-equipped hospital with e diagnostic and therapeutic aid, with a team of y men to help in treatment and investigation, and all with the advantage of being able to discuss our lems with junior and senior colleagues, have a to those who are in the more isolated practice of medicine to pass on to them if not our facilities, at least the of our thought, and to apply ourselves to their problems as well as our own, so as not to disapprove without least attempting to show the way.

POSSIBLE REFORMS

What reforms then might be made in the teaching and practice of therapeutics?

First, I would divide the pharmacology textbooks and the *British Pharmacopœia* into two parts: the first dealing with remedies in current use, the second with remedies which are no longer used in modern practice. In the second category, I would put drugs like strychnine, calomel, hexamine, and strophanthus whose action it may be as well that pharmacologists should not forget, though I would not have them teach it to medical students. This would give the necessary authority for the omission of obsolete information from the curriculum, thereby defeating even the retarding effects of external examiners.

Secondly, I would inculcate the principle that therapy should always be approached as a scientific experiment. Often enough the result of the experiment will be known in advance, but at least it should be planned so that the answer will be as clear as possible at the end. With this aim in view, it stands to reason that major remedies should ordinarily be given one at a time unless their various actions are clearly distinguishable. In planning a therapeutic experiment, the following considerations seem to me to be universally applicable:

1. (*a*) *Is there a specific remedy for this complaint?*—Under the heading of specific remedies would come hormone therapy in clearly defined syndromes (insulin in diabetes, thyroid in myxœdema); vitamins in deficiency states such as rickets, pellagra, scurvy; penicillin and sulphonamides in the appropriate infections; antisyphilitic treatment; quinine and mepacrine; iron and liver used specifically each for its corresponding anæmia. Some operations come into this group.

(*b*) *Is there a specific remedy known to do good in the majority of cases, though not necessarily curative?*—For instance, gold in rheumatoid arthritis, or barbiturates in epilepsy, &c.

2. (*a*) *Although there may not be a specific treatment, is there some major corrective to the disordered physiology of the disease?*—Here we have digitalis (properly used) in heart failure; mercurial diuretics in œdema; saline in dehydration; adrenaline in asthma; blood-transfusion in anæmia and hæmorrhage; plaster and physiotherapy in arthritis; and some minor or major operations.

(*b*) *In this connexion, is there a way of life which I should advise the patient to adopt or to avoid?*—For instance rest in bed, exercise, diet, weight reduction, change of environment, or occupation.

SATISFYING THE EXAMINER

To prevent waste of time and labour has again become a national duty. An obvious form of economy, which has parently escaped official attention, is to arrange for all candidates to pass their examinations at the first attempt. ding legislative action to this end we offer a short series of articles whose perusal should ensure success.

AS THE EXAMINER SEES IT

HE student facing his qualifying examination can dly feel with Robert Louis Stevenson that to travel efully is better than to arrive. Nevertheless it is true, Sir Walter Raleigh (the one-time professor of English rature at Oxford) was wont to remind his own students, t there are *two* crucial examinations—Final, and the eat Assize. Translated into advice suitable for the dical faculty, it means that the student should seek t to become a good doctor, and all things shall be ded unto him. He is more likely to get through Final e takes it in his stride rather than if he crams for it.

THE YEARS BETWEEN

The first thing, then, which the student has to learn that it is useless to leave reading for Final until the al year. Medicine, being a practical art (or, if you like, applied science), cannot be learned from books. The mer who does not spend his days in the fields or the ippons or the stackyard can never be a good farmer, r pass any searching test of good farming. The read-g of books may help him to interpret or to enlarge his perience, but without the daily routine of farm work will never know much about farming however many tions he may have gathered about it from reading oks.

So too in medicine—we learn primarily by doing. the doing of it, what we have experienced and what e have read become part of us, instead of something traneous which we so easily *mislay* when we most ed it. The Final hurdle is surmounted mainly because the training in the wards, outpatients, and clinic om, whereby the student exercises his intellectual uscles—especially in the days of his apprenticeship clerk or dresser. Unless he builds solidly there, the undations of anatomy, physiology, and pathology pporting each acquisition of experience in the wards, e will labour in vain. No-one else can do the building r him. It takes time to learn and to understand, id the clinical years are short enough even for the mple fundamentals which the sympathetic examiner ks of the Final candidate. All too often those years e largely wasted because the student relies primarily reading books or on listening passively to a popular acher, rather than on his own painful struggle to ad his way. The child who first tries to draw a house ill only be discouraged and bewildered by the perfect icture drawn for him by an architect; but let him have aper and pencil and *try for himself, and after* some weeks e will be drawing something with a roof and windows and door which, though crude and simplified, has a vitality it which could never be got by merely tracing some dult's drawing.

“And so what?” the examination victim may ask. et us look back to the first days of young Galen's clerk-ig, and to his first patient. He has probably forgotten y now, but it was a Mrs. Jones who had jaundice. ould he but remember all the beautifully concocted linical *aperçus* of the case which clinical tutor and hief poured into his receptive noddle, Final would ave no terrors. Alas! however, it leaked out of his nderstanding as through a sieve. *He did not know at* he time that it was far more profitable to listen to rs. Jones telling him about herself, than to the medical ator. He ought to have read about jaundice in his xtbook of medicine and worked out for himself what e was to look for when he examined Mrs. J. He ought o have looked again at the detailed anatomy of the bile and pancreatic ducts, and reminded himself of various points in the physiology of bile secretion, in particular the essential differences between obstructive and other types of jaundice. Fortified with this, he could have examined Mrs. J.'s stools and urine with intelligent anticipation; and after all this discipline he would have found that the Chief's bedside talk illuminated and drove home essential points which he had already discovered for himself. Moreover, if he had taken a sheet of paper, headed it with Mrs. Jones's name and the final diagnosis, and summarised the salient features of her case and his own discoveries, he could have filed it away for later reference, together with his notes on Mrs. Brown and her thyrotoxicosis, Mr. White and his disseminated sclerosis, and the rest. By the time he had finished his clerking and dressing, he would have had a collection of examples which would almost have made up an elementary textbook of medicine, written in terms of personal encounters and living experience. In his Final year, he could have revised large tracts of his subject from his own notebooks; jaundice, for example, would remind him of Mrs. Jones's impacted gall-stone, Mr. Black's carcinoma of the head of the pancreas, young Tom Noddy's acholuric jaundice, and so on.

The student, no doubt, feels that he has not the time for all this; the art of medicine is long and time is fleeting, and nowadays so many teachers claim his attention that he is left with no private leisure for thought or contemplation. Let him be confident, in any event, that the examiner will be as delighted to see evidence of clinical observation and *nous*, of time spent at the bedside and in the clinic room, as he will be unimpressed by a catalogue of facts which are repeated parrot-wise.

THE DAYS BEFORE

And so at last the student comes to Final—an examination which is a test not only of knowledge but also of physical stamina. It is silly to work up to the last moment, trying to stuff the brain with last-minute facts, battening down the hatches so that for a few days at least they will not escape. A stuffy brain is an unreliable tool with which to tackle Final. The student would do far better to spend the last week before the examination on the golf-course, or loafing on the top of a hill, gazing aimlessly at long views while he airs his red blood-corpuscles. This he can do without panic, the more good-humouredly he accepts the fact that even if he is inadequately prepared for the test, what he can cram in a week will make no difference. Let him go to bed early, and if (as is natural) he cannot ignore the shadow of coming events, let him nevertheless cultivate a protective fatalism. If he must read, there are always thrillers to occupy the time; if he must hover round the flame of medicine, Osler's *Aequanimitas* is as good a book as any to keep him out of mischief.

APPEASING THE EXAMINER

At last the day comes. He has sat “padded up” long enough, and now he must go out to bat, strung up with that curious feeling in the pit of the stomach—*but, if he has taken my advice*, with an untired eye which is likely to see the ball well from the start. There are the questions and he has three hours for them. *He must not allow himself to be hurried.* Twenty minutes or so looking at the questions, drafting out the main lines of his answers on scrap paper, will save time in the end. This leaves him with half an hour for the actual writing.

the sentiment has at times been more conspicuous than the sense, many clinicians no doubt still feel they have heard no convincing reasons why the attention of the student should be directed beyond diagnosis and treatment to the social environment. The arguments for this are none the less compelling, and deserve simple statement:

1. Economy of medical effort requires that nothing should be treated once that can be prevented, and nothing should be treated twice that can be cured. The student should learn that it is as wasteful to treat anæmia secondary to ignorance of diet without educating the patient as to treat anæmia secondary to organic disease without attending to its cause.

2. Examination of such indices of morbidity as are available shows that health has improved in the past largely because of changes in the social environment. Continued improvement can be anticipated from this quarter if social medical research can define more exactly the relation of specific environmental factors (as distinct from the complex of variables described loosely by such terms as "poverty") to health and disease. Efforts of sociologists, statisticians, and others cannot bring this research to fruition without coöperation of medically qualified workers whose training has made them alert to the significance of social variables.*

3. Recent *legislation* provides for vast changes in the organisation of medical and social services, and the success of such plans depends on both medical and lay officers. For example, the Government has provided for the employment of the handicapped worker in the Disabled Persons Act (1944). It is essential to the operation of this Act that the doctor should realise that his responsibility includes return to employment as well as treatment of the disabled patient.

4. Inevitably the doctor's work imposes other exacting social responsibilities. With his knowledge of prognosis he is often the only person who sees clearly at an early date the steps that can be taken to minimise the effect of illness on the life of a family. His attitude to such problems is partly determined by his training in the teaching hospital, where special care is needed to ensure that improvement in techniques of diagnosis and treatment is not bought at the price of an impersonal service.

METHOD OF TEACHING

If these reasons are acceptable, it is necessary to consider how such instruction may best be incorporated in clinical teaching. Formal lectures have limited value, for students acquire their clinical habits not from academic lectures but from the practice of the clinicians by whom they are trained. In our school we have therefore proceeded on the assumption that the integration of social with clinical teaching is essential. It was initiated in the introductory clinical course, of which five mornings were devoted to social medicine. On each morning students attended in groups of twelve at demonstrations, one of which, given jointly by the professors of medicine, social medicine, and surgery, was arranged as follows:

Selection of Cases.—Cases for demonstration were selected from the medical or surgical wards by the professor of medicine or the professor of surgery. Presentation and discussion of a case require roughly half an hour, and it was convenient to choose three for each morning, usually one surgical and two medical cases.

They were chosen to illustrate various social medical problems, care being taken to focus attention on common rather than unusual situations.

Preparation of Case-histories.—The case-history was prepared by the house-physician or the house-surgeon, assisted by the almoner. It consisted of a complete clinical history, and a social history specified under the headings of personal background, work, family, home, food, budget, summary and comments.

Presentation and Discussion.—Cases were presented by a member of the clinical staff, usually the professor of medicine or the professor of surgery. The phy features were reviewed in the presence of the pa the social features after he had withdrawn. Th interrupted by the withdrawal of the patient, in w presence discussion of social circumstances was avo the complete social and medical history was co by one person. The case was then discussed by professor of social medicine, who drew attentio the social medical problems which it illustrated. T almoner contributed to the discussion which followed.

The close integration of clinical and social factors illustrated in the following case.

A woman, aged 33, was admitted to hospital comp of weakness and dyspnœa. She was found to have a r count of 3,070,000 per c.mm. and a hæmoglobin of 6 100 c.cm. Conventional treatment with iron and a g diet restored her to normal, but an inquiry into the stances in which she became ill revealed these facts:

1. In addition to caring for a husband and two ch aged 7 and 3, she was employed in a factory packing c for 30 hours per week. This yielded her a weekly wag of which £1 was spent on the care of the younger child her absence at work.

2. Home relations were not harmonious, partly becau husband had recently returned after several years of and the patient's fatigue and malaise had resulted in temper and friction. She went out to work agains *husband's wishes, apparently for the* companionship of factory.

3. She had a very inadequate conception of food va and her administration of an adequate budget was p She herself had been taking roughly 1200 calories per d with insufficient iron and vitamin C.

Further treatment consisted of dietetic instruction, advice and explanation to the patient and her hus coupled with a recommendation to cease factory w A health visitor was commissioned to give assistance.

The success of these demonstrations encouraged to make them a permanent feature of *clinical* teach and they are now given once a week for students atta to the medical and surgical units. For the first weeks of the student's clerkship cases are prepa and demonstrated as described above. In later we students prepare and present their own cases.

Social, as well as clinical, aspects of the case-hi are prepared by medical staff or by students, and whole case is presented by one person. Social or clin problems may be unduly prominent but are not sepa and should be considered together.

Only those facts which appear to have a direct bea on a case are included in the social history. Len accounts of personal difficulties are avoided, and attent is focused sharply on matters arising from the 1–4 enumerated above.

Since demonstrations have limited value unless ported by ward teaching and practice, students asked to consider social circumstances in all cases they are relevant. The practice of confining inquiry to a few selected cases prepared in great d presents the subject as a specialty which merits occasional consideration.

Since we think it important that examinations reflect this teaching, the final medicine paper year at Birmingham included a question on the rel of the social environment to illness.

"... The first step would be to entrust the teaching of basic medical sciences to a personnel actively inte in the teaching of medicine. The second step would a reform in the curriculum. . . . Let the preclinical surrender some of their hard-won time to the clinic in first and second years. . . . Let the clinic surrender time in the latter years to the basic science faculties. . . . the inclination of the average student to treat with pa in his first years and to understand the underlying natu the disease process in latter years be thus gratified." Dr. DE WITT STETTEN, jun., in an address to the New Y Academy of Medicine.

IN THE EXAMINATION ROOM

hen confronted with the patient consider the clinical roach with regard to the time allotted. In general, her strictly limited or comparatively liberal, this is nefully wasted. Don't dwell unduly on the history. eat deal of experience is required to extract a useful nnesis, a fact of which every examiner is aware, and vance is made for difficulties in individual cases when deafness, stupidity, or reticence of the patient are embered. Above all, deal first with essentials. If omplaint is related to the legs let us say, inspect the first of all. More than once I have seen a candidate bsessed with the importance of a complete examina-, that he started at the crown of the head and failed each the lower extremities before his time was usted. Thoroughness is all right in principle, but automaticity lacks a sense of proportion and alienates pathy.

isten to directions and respond accordingly. You may sked for a diagnosis or alternatively for a report. In one case, a plain answer is required; in the other, iscursive conversation is permissible. Anomalous ures may inspire a hesitancy in conclusion, but many lidates forget that textbook descriptions are compo- of signs and symptoms, some of which are present ndividual instances but all of which will be found in e. Diagnosis is the balance of probabilities, and the miner is impressed by the method of approach at least uch as by skill in deduction.

ere is of course an irreducible minimum which cannot efined, since all examiners have their shibboleths, pet aversions, their prejudices. But as a rule there difficulty in recognising the occasions when swift nary judgment and sentence are legitimate. The emically brilliant young lady who, confronted with ge aortic aneurysm, recommended “ biopsy of the our ” is a case in point.

mplicity and fundamentals. In a pass examination expected that the candidate can recognise the first the second heart sounds, and his inability will not ondoned by his facile enumeration of the third, fourth, (for all I know) the fifth sound. And remember a clinical examination presumes clinical methods. shocking to meet the refusal to give an opinion upon stolic murmur before being provided with an X-ray ograph of the heart, an electrocardiogram, and an nation of the erythrocyte-sedimentation rate. Doubt- this attitude is the result of bad teaching—an appy result, for the sins of the father will certainly isited on the child. If directed to examine a certain when only a few minutes are allotted, get to work waste no time asking the patient questions. The miner is not entirely devoid of reasonableness, he planned his request with due regard to the circum- ces. And whatever he asks, take him literally. On asion he may seem mad, but there is always method is madness.

have been tempted to present for clinical examination umber of perfectly healthy subjects—a temptation which I have never yet succumbed, for such a test ld be almost unreasonably exacting. Keyed up to ectation, a candidate naturally looks for abnor- lities. A gaoler is prejudiced against a prisoner in the k; his presence there signifies that he must have done nething wrong. And the atmosphere of hospital and ical examination is conducive to the discovery of ease and abnormality. For this reason the adjective ight” is always in evidence. Be a man, avoid it. It is oor bluff, which gains nothing; whereas a courageous neanour of dogmatism in a positive discovery or of qualified assertion in the negative commends itself the examiner, who will conclude that the candidate s the right temperament and will make an efficient actitioner even if he still has much to learn.

DEMEANOUR UNDER FIRE

Perhaps it is asking too much to suggest that the viva-voce interview should be regarded with pleasure rather than as a dreaded ordeal. Yet it really is intended to operate entirely in the examinee's interests. A man whose factual knowledge has otherwise been thoroughly tested can hardly bring about his complete discomfiture by even the most devastating performance across the table. Alternatively, academic deficiencies if not too extreme can be compensated by a good impression when such qualities as common sense and general capacity are being assessed.

Unfortunately many men are at their worst on such occasions. I say advisedly men, for women are on the whole far less nervous under fire. It may be that their coolness and self-possession are founded on the ability to exploit their “ weakness ” in relying on the chivalry traditionally accorded to their sex, and more than chivalry when their charms so demand. But I think they have a special form of courage.

It might be argued that this test of character operates adversely, on the principle that failure to exhibit presence of mind when personal interests are paramount denotes the likelihood of a similar failure on all occasions of emergency. There is something to be said for this somewhat harsh judgment, but there is good contradictory argument.

It is, I know, rather silly to exhort anybody not to be nervous, especially as in extreme instances the condition may lead to complete mental paralysis or to a curious compulsion to say the wrong thing when the right is known, to be conscious of the perversion and yet be helpless. But for average cases it is perhaps not silly to advise on the James-Lange principle the adoption of a confident exterior—to square the shoulders, to sit up, and above all to speak up. The majority of examiners are senescent if not senile. Their olfactory sense may still be strongly developed, but their auditory sense is rarely unimpaired, and the strain of listening, perhaps for hours, to a halting whisper or mumble will create irritability in the most placid. A correct answer may suffer through inaudibility, while an incorrect one gains no dividend.

In your encounter, believe that excessive faith in kindliness is better than the least suspicion of treachery. Don't look for the hook sticking out through the bait. Take the absurdly simple question at its face value, it is intended to put you at your ease; and give a straight answer free from qualifying phrases which reduce its value without compensating advantages.

If the answer is unknown, say so at once and let the examiner pass on to something else. Nobody expects omniscience. If the question is obscure, don't hesitate to request its elucidation: you run the risk of offending an interlocutor who may consider his meaning too clear for any misunderstanding, but it is a very small risk.

Avoid slang and with this I include unnecessary abbreviations. Life may be short, but it is not so short that odd tenths of seconds must be parsimoniously conserved. I have the impression that apart from laziness, medical students believe that there is something smart and technically professional in preferring the horrid word “ bug ” to “ micro-organism,” for “ doing a P.R. ” instead of making a digital examination of the rectum, for describing the teeth as “ O.K.,” and so on and so on and so on. In all honesty I have on occasion been compelled to ask whether “ P.A.” meant paralysis agitans or pernicious anæmia.

Examinations, however planned, are open to criticism. No modification could make them completely satisfactory. But whatever their faults there is no substitute.

Looking back over a long experience I can recall many instances when the quality of mercy has been strained;

of each of five answers. Even when he starts writing in earnest, additional ideas on the answers still to come will well up into his consciousness, and he will jot them down in the appropriate place in his scrap notes.

In order to qualify, you have to "satisfy the examiner." An intelligent approach to a question will go far to make him like you. He dislikes lists which you have obviously learnt by heart, all the more so if, as often happens, you get them wrong and thus betray that you do not understand what you are talking about. It is always wise, both in learning medicine and in examinations, to try to correlate medicine, surgery, and the rest with anatomy, physiology, and pathology. For example, you might be able to number off a whole platoon of manifestations of coronary thrombosis—if only you could remember them all. It is far less trouble to visualise the infarct of, say, the left ventricle, which wrecks it as an efficient pump (low blood-pressure, oliguria), causes left ventricular failure with œdema of the lung and marked dyspnœa (and maybe congestive failure as well), determines an inflammatory reaction in and over the *necrotic area* (*pericarditis, leucocytosis, pyrexia*, a particular form of myocardial pain, an abnormal electrocardiogram)—and so on. In this way the answer to even a "factual" type of question can be made to reveal clinical intelligence. With the less obvious type of question—for example, "Discuss the significance of pallor"—remembered facts are liable to absent themselves at an examination, and the approach from first principles will save much heart-rending. Think, therefore, of the anatomy of the skin, and recall its blood-vessels with their nervous control, and the tissues that surround them. What physiological and pathological conditions, local or general, can so affect the blood-vessels that they are relatively empty of blood: what conditions inside or outside the blood-vessels can obliterate them or make it impossible to see the normal colour of the blood in them? Here again, the student must have pursued this discipline throughout his clinical studies; he cannot hope to adopt it suddenly for an examination, it must be an attitude of mind which has already become second nature to him.

Spare a kind thought for your examiner, and *write legibly*. He wants to let you through if he can conscientiously do so. He is a very human fellow, and if he has already read through sixty papers before he comes to yours, he will be jaded and bored, though he will sternly discipline himself not to let that matter. Nevertheless, if he has to spend all his energies in trying to decipher what you have scribbled, you are "asking for it." You exasperate him, and then he is apt to say to himself "I suppose that I must not fail this chap because I cannot read his handwriting, but I would very much like to." Remember that your examiner is a friend, though a reasonably exacting and just friend. You are a fool if you throw that friendliness away, such a fool that you do not deserve to be made a doctor until you have learned better. It is true that the examiner knows that in Final you are probably not quite *compos mentis*, and makes allowances accordingly; but though he is not likely to plough you because you have irritated him, he will certainly be disinclined to stretch a point actively in your favour.

Write legibly, therefore; and if you can write good, clear, readable English your examiner will be cheered to encounter at least one civilised student. You will bias him into thinking that here is evidence of worthiness of entry into a learned profession, for you will have afforded him refreshment in what is usually a parched and arid land. This is a further argument against the use of lists—they are so wearisome, so unutterably boring to read.

Abbreviations, too, are irritating. In an examination paper they look like the product of a raw and uncultured mind. Not only do they bias the examiner towards thinking that you are a sloppy fellow, but also they may be unfamiliar to him. He will not like you if he has to waste time trying to puzzle out what they mean. To be able to spell correctly in your own tongue is also an advantage. I do not suppose that any Final candidate was ever ploughed solely on the grounds of bad spelling, but the man who writes sifelus, tubuclosis, falacea obviously cannot read, and ought to be referred back to the kindergarten.

Finally, do not hedge—your examiner knows what you are doing, and thinks the less of you for it; and do not try to bluff him, for he has had infinitely more practice at low cunning than you have.

CLINICAL AND VIVA-VOCE

I DO not flatter myself that I shall be believed if I declare that the earnest desire of the majority of examiners is to pass and not to plough. The idea of a contest is deeply ingrained in the mind of the average candidate, who visualises his opponent as a sadist, an arch-tormentor, a dirty fighter who disregards the Queensberry rules.

It would perhaps be hypocritical to represent a typical member of my tribe as an incarnation of all the virtues, with *charity* and *philanthropy* in the van; but I would emphatically maintain that so far from being an *advocatus diaboli*, he is the prisoner's friend or at least *amicus curiæ*. Let, then the more confiding accept me in this rôle. Those still suspicious may read on the principle that *fas est ab hoste doceri*.

PREPARATIONS

Approach an examination with at least a superficial regard for its professional relationship. The frock-coat, at one time our orthodox invariable uniform, has long been obsolete, and modern dress combines the consequences of compulsory austerity and sartorial indifference. Yet the function of dress is by no means negligible. The ass in a lion's skin, if he feels like a lion, is for practical purposes a lion. To look the part is to feel the part. Well, if the potential medical practitioner feels the part in crumpled flannel trousers and a pullover which would have made Joseph's coat look like deep mourning, there is no more to be said.

In the clinical examination the candidate is brought into close contact with patient and examiner. Deeply nicotine-stained fingers are not a recommendation. There is apparently an examination-halitosis, presumably the result of nervousness, which has to be accepted with resignation if regret. But an aroma compounded of carious teeth, stale tobacco, beer, and onions or garlic may to a considerable extent be avoided. I do not suggest that prejudice is deliberately injected as a result of these unpleasant associations, but it is by no means improbable that subconsciously they are not without influence.

Apart from a stethoscope, there is no necessity for a candidate to encumber himself with the apparatus required for a clinical examination. Only too often a bagful of gadgets is distributed on the beds and in different parts of the room, so that nothing is available when required and nervousness is succeeded by panic. Perhaps one's own ophthalmoscope is an admitted exception, but everything else will be provided. Avoid complicated machinery. I was once driven to distraction through an elaborate stethoscope with special attachments for auscultating at the apex, and at the base of the heart, and for respiratory sounds. So much time was wasted in screwing and unscrewing the particular section that no examination was effected. Some ladies bring a number of small handbags—possibly cosmetics are part of their armament—which are dropped or mislaid with maddening frequency.

for clarity, to all but the most expert of writers. igorous style uses strong terse words and phrases, full of meaning; it avoids vague and empty essions; its constructions are straightforward, roundabout. So it carries conviction. For good ce on style read Fowler's *Dictionary of Modern lish Usage*; A. P. Herbert's many articles in *Punch*; is accessible, Howie's recent address to medical ents on medical journalism[2]; and Clifford Allbutt's *s on the Composition of Scientific Papers*.[3]

is the duty of medical men, as educated and ential members of the community, to learn to speak and write well.

THE MEMBERSHIP

ME thirty years ago when I took the membership nination we were seventeen candidates assembled library of the College answering the written papers o successive afternoons, and entertained to tea ete with cream buns and a napkin handed to candidate on a tray by a liveried butler. Today, six hundred candidates write the papers. The s for the increase in numbers are obvious to body.

the past, medical education and training have been ht to be a most liberal education; but unfortunately lism has reduced the intellectual level of medicine. College, by its cultural and academic activities, vours to keep up the standard of medicine, and, eserving the structure of the membership examinas a test of general medicine and general knowledge, ntinues to fight the battle against narrowness tlook and extreme professionalism. Clearly the of the M.R.C.P. diploma is to show that a man is enough to be a consultant in medicine.

BACKGROUND

one who has groomed a large number of candidates he examination I am convinced that a great many nt themselves before they are ready. They need more mature in experience. Formerly a man had done three years of house appointments before ent up for the examination. He is the ideal candi-. The practice of medicine cannot really be set in books, and all good examiners know that the questions are those which cannot be answered of the pages of books. There is the story, doubtless ue, of an Indian candidate who left in anger three tes after the written examination started. On vay out he pounded the question paper with his fist ront of the invigilating censor and exclaimed in r—"This is *not* in Tidy."

ead up-to-date reviews of medicine and allied subjects. the latest copies of *Physiological Reviews*, *Medicine* timore), the *Quarterly Journal of Medicine* and other rterly journals in special subjects. Read *Abstracts Vorld Medicine*, annotations in *The Lancet*, and the ures delivered at the College right up to the date of examination.

ANSWERING QUESTIONS

ince very often the candidate enters the examination n in an acute anxiety state, he should make certain he understands the question asked. In extreme s he may write for half an hour on osteitis deformans n the question concerns arthritis deformans, or he even write an essay on impetigo when vertigo was nded. An error which is almost universal among mination candidates is to put into the answer all sorts things that are not asked. A famous professor eatedly addressed his class on this subject: "When I ask you for the description of a lion's tail I do not wish to see a description of the lion himself." You should read the questions very carefully, make a plan for each answer, answer *only* what is asked, try to be precise and concise, and whenever possible weigh the evidence for and against a particular view.

Too often a candidate merely glances at the question, sees the name of a particular disease, and then covers innumerable pages with everything he knows about that disease. And even where he fails to make this error, he is unlikely to use whatever critical faculty he may possess in the discussion of the subject in hand. Indeed, concise statements made on good evidence are seen much too infrequently in examination scripts. Nearly always answers could be greatly improved if only the candidate would first get out a plan of what he intends to say, putting emphasis on what is really important.

The man who strives to fabricate complete lists of diseases including rarities seen once in a lifetime rarely wins affection: every examiner longs for a concise answer which clearly states the general principles involved and the evidence for and against. Too many scripts show evidence in the writer of what has been called intellectual constipation and verbal diarrhœa. Bad spelling is of course rife in all examinations. I suppose most examiners school themselves to ignore it, though it must always be difficult to avoid being prejudiced against a candidate who repeatedly mis-spells a word which is actually printed in the question paper. Candidates unable to spell correctly should be careful to omit from their answers all reference to famous men in medicine whose names have been given to diseases. But be sure to attempt one or both language questions. The marks gained for good translations may be enough to turn the scale in your favour.

In confidential moments the censors tell us that throughout the membership examination ignorance of chemistry is abysmal. Answers to questions on such subjects as tetany, alkalosis, or extrarenal uræmia are, they say, so pathetic as to suggest that the Chemical Society in 1947 must indeed be celebrating not its centenary but its foundation! One man is said to have alleged that children get lead colic from chewing lead pencils, and another believed that asbestos is a vegetable substance! Surely it is time that doctors realised we are passing through a chemical age.

CHOICE OF LANGUAGE

Americanisms inevitably creep into examination scripts—"the findings identicate those above," "you get a better effect if you pyramid the dose," "she was premedicated with iodine," "he studies the icterogenicity of batches of serum, or polyagglutinability of the red cells, or hyperrugosity of the gastric mucosa." Already an occasional candidate is liable to be "motivated by considerations of particle size," and another dabbles in the "quantitation of urobilinogen in the urine." I have heard someone speak of insolubleising a chemical substance.

Candidates should avoid vulgar expressions—"he has rotten teeth," "he behaved like a drunk," "this is due to œsophageal piles," "that is the meat of the history." References to the patient in the viva as a bloke or chap are almost as indelicate as to call the urinary tract "his waterworks." In addition to what is merely vulgar there is also slang—"she is a controlled fibrillator under digitalis," "he is a hypertensive heart," "I thought I tipped his spleen," "she has been bismuth mealed." (Though not all examiners are innocent of using slang themselves. Outside the College I have heard the questions "Would you quinidine her?"—"Can an aneurysm cough up blood?"—"Prescribe me an expectorating mixture.")

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odiac. Journal of the Aberdeen University Medical Society. First number. 1947.

ondon: Macmillan and Co. 1923.

I recall very few of possible injustice in this procedure to safeguard the public and at the same time oppose no unreasonable obstacle to prospective guardians of their safety.

AN M.D. THESIS

THE universities of Great Britain differ so widely in their requirements for the degree of doctor of medicine that in general the letters M.D. after a man's name have small and uncertain significance. In one case they may mean that a searching examination in medicine—written, clinical, and oral—has been passed at a high standard; in another that a modest thesis has been accepted and a gentle clinical examination has been negotiated; in yet another that the results of two or three years' able and intensive research in (say) pathology have been embodied in a thesis which has been accepted and awarded honours. Where theses are required, there is no doubt wide variation in the standard expected, and in some universities there are up to four categories in which, according to their quality, accepted theses are placed. It follows that any remarks here offered to intending writers of theses must be quite general.

THE SUBJECT

The first problem is the choice of subject. There is no harm in seeking advice about this, but to go to one's chief and say "What do you think I could write an M.D. thesis about?" shows a lack of enterprise that ought to disqualify at the outset. Rather put up a suggestion or two as a basis for discussion, and be ready with an outline of how a suggested subject might be tackled. A good adviser may approve, modify, or condemn; but the discussion ought to be stimulating. Many theses are written on clinical subjects. They usually record and discuss a series of cases of some disease or group of diseases, chosen for their rarity, or for their occurrence in special circumstances (as in one of the Services or some institution), or because they have been studied by special means (as by some new technique or in a clinic with a thorough follow-up). Most subjects of this kind are worth-while, provided the observation and record are skilled and thorough. The disease need not be rare. A comprehensive and detailed account of a few dozen cases of peptic ulcer, or of prostatic hypertrophy, or even of "bilious attacks," observed over a period of years by a general practitioner, would make a useful study. Writers who contemplate the clinical approach would do well to read Ryle's book, *The Natural History of Disease*.[1]

The therapeutic thesis, in these days of chemotherapeutic innovation, often describes the results of treating a series of cases with some new drug. If the choice of cases and of controls, the dosage, and the methods of assessing the results are well planned in advance, and if the writer makes his own observations, this is likely to yield useful if not startling information; but if the material consists of other people's routine notes of cases the writer has never seen, the result of its analysis, however skilfully statistical, is not likely to impress. An experimental subject will commonly be chosen by those working in laboratories, and by those who have the facilities for applying the experimental method to man; papers on such subjects fill the journals, and the good ones are good models. Other kinds of subjects, in plenty, are appropriate for M.D. theses; there are opportunities in most of the specialties, only purely surgical topics being excluded; medical history and medicine in literature should not be forgotten. The essential requirement is that the writer should observe and record something at first hand, and set his own little addition to knowledge in relation to what is already generally known. Only occasionally will a pure "review of the literature" of some subject make an acce thesis: it will have to be a very comprehensive and a highly critical one, not merely condensing writings of others into small space but assessing t value and building them into a coherent picture.

While the work is in progress the form of its ult presentation should gradually take shape in the wri mind. The sooner the better, lest he omit to observations that later prove necessary to complete evidence, or be tempted by short-sighted cu down too many bypaths leading away from his theme.

WRITING IT UP

When the work is complete it must be "written up" to some the most difficult part of the task. The u pattern of a thesis is Introduction; Statement of t and methods of observation; Results; Disc Summary; References; Appendices.

The *introduction* should be rather longer than of the conventional paper in a medical or s journal. The writer of such a paper assumes a reader a knowledge of the field in which he works refers him to a review, and therefore restricts his duction to what is immediately necessary to explain purpose of his investigation. The writer of a on the other hand is expected to show that he is f with important work already done on his subject, moreover, familiar with its original sources, not m with its dried extracts in the textbooks.

With or after the introduction there must be a *statement of what the author set out to do* and what methods he used in making his observations, what the value and limitations of those methods a Where methods have been devised or modified by author full description is called for; where acc methods are used accurate references to publ descriptions of them are usually enough.

There is no standard pattern for presentation *results*, but the writer should think carefully w method is most appropriate to his own observat Straightforward description and logical arrangement are essential. Tabulation is useful, so long as it is too complicated. Graphs or diagrams often co the information more clearly. The figures on wh these are based, the protocols of confirmatory e ments, and case-records (where these are not t substance of the work) can often be set out in appendix, leaving the main presentation more su and easy to follow.

The purpose of the *discussion* is twofold: to dr conclusions from the observations already set f and to show how these observations and conclus confirm, confute, or extend the observations and c clusions of others. Where the body of the work is l it may best be divided into chapters, each dealing w one aspect of the subject or one stage in the argu and each containing its own presentation of results a discussion.

At the end comes the *summary*, which should p the facts and the conclusions into a few short paragr emphasising what in the author's view are his c chief contributions. It need scarcely be added t the list of *references* should be accurate, should in only books or papers that the author himself has r and should be given in standard form with abbrevi according to the *World List of Scientific Peri* A long thesis is improved by a *table of contents* at t beginning.

No doubt all theses today are typewritten. M are bound. No-one quite knows whether the style finish of the binding should express the author's re for his university or his own estimate of the qu of his thesis; probably a modest binding is better.

Finally, an M.D. thesis should be written in En that is clear, smooth, simple, and vigorous. Cl goes without saying. Smoothness leads the wr thought into the reader's mind, because each sente is linked with its predecessor, and each has its own inte balance and appropriate emphasis. Simplicity is ea is the sort of thing which will happen to such a over his long case :

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[1] London: Oxford University Press. 1936.

" Then the main points you have found here are weakness d shortness of breath for three months, pallor, purpura, iversal enlargement of lymph-nodes, and the spleen larged to the level of the umbilicus."—" Yes."

" That is correct. Now please discuss the diagnosis."— It might be pernicious anæmia."

" Oh ! Does a patient with pernicious anæmia have a leen like this ? "—" No."

" Or enlargement of the lymph-nodes ? "—" No."

" Or purpura ? "—" No."

" Well then, suppose we think of something else."—" It ght be thrombocytopenic purpura."

" Oh ! Does such a patient have enlarged lymph-nodes ? " " No."

" Or a spleen like this ? "—" No."

" Well now, what else have you to suggest ? "—" It ght be acholuric jaundice."

" Oh ! Has this patient ever been jaundiced ? "— No."

" And in acholuric jaundice are the lymph-nodes nlarged ? "—" No."

" And does purpura usually occur ? "—" No."

nd so the bell rings and the candidate has never n mentioned leukæmia ! Here he is up for an honours mination, having had forty minutes to take the ory, elicit the signs, and think about the diagnosis. s he suppose that blood diseases will be sorted out him by technicians who do blood-counts ? Clinical dicine has not begun to dawn on such a man. How a censor possibly consider him fit to advise another tor who calls him in consultation over a case ? He ld make the problem all the more confused.

THE VIVA

f you survive until the first viva remember that cimens and photographs are used mainly as pegs n which to hang questions. Thus a photograph of patient with obvious acromegaly evokes questions gigantism, basophilism, chromophobe adenoma, and rasellar cyst. You must know the clinical features, thology, and treatment of all such syndromes. Equally must be prepared to interpret radiographs, electrordiograms, blood-counts, and other laboratory reports. When shown a museum specimen in the viva you uld identify the organ and follow this up with a scription of the size, shape, and colour of the pathoical lesion. The diagnosis should always come last ; erwise if you come to the wrong conclusion, you will vitably lose everything. When it comes to describing e colour of the normal organs of the body most men are gularly bad. It is scarcely possible to persuade a ndidate in a viva to say that the suprarenal cortex is lden-yellow, the medulla slaty-grey, and the normal yroid red-brown. But scattered through examination ipts one sees such confusing descriptions as " the lour of a daffodil, an iris, a rose, a marigold, or a plum."

FUN FOR THE CENSOR

Does a censor ever get any fun at all out of the examinan ? I like to think so. One candidate, I am told, rote : " examination of the fundus reveals papal dema," and another " it is said that the face of a cretin like that of a constipated owl, but perhaps this is slight exaggeration." An examiner is occasionally ivileged to give an extra mark to a candidate with ceptional powers of human understanding, such as the an who said of the treatment of insomnia—" an tractive and agreeable marriage partner is advocated many." At one time a question was asked on thrax, but it is not recorded whether an extra mark as given for the statement that " in the case of an outeak of anthrax the animal must be burned or buried ive and the woolsorter must be boiled." Neither do e know what marks were allotted to the man who rote " in scarlet fever the patient should be strictly isolated and should have connexion with no-one except the nurse."

Sometimes, I understand, a number of examination scripts contain a remarkable answer which can only have come from a whole class of men having misunderstood a lecturer. The famous example is that in answer to a question on the treatment of hæmatemesis, where countless candidates said the patient must be given oyster soup. This was traced to a lecturer lately imported from Glasgow who had told them to give the patient " ice to suck." One cannot dismiss this subject without quoting the statement of a very earnest candidate who obtained good marks throughout a whole exam.— " in hypoglycæmia it is possible by the judicious use of adrenaline to restore the patient sufficiently towards consciousness that he can swallow himself."

In the final viva be prepared for questions on the history and classical literature of medicine. On the whole the censor of today despairs of meeting a really erudite candidate. One hot summer, during the July examination, one of them kept asking who was the author of *An Essay on the Shaking Palsy*. No answer was forthcoming, and in the end the President is said to have remarked kindly that in this modern age one could not expect to meet a candidate who had read anything beyond a textbook. In the words of a past president, himself a master of erudition, " it is a bleak prospect."

Reviews of Books

Textbook of Obstetrics

GILBERT I. STRACHAN, M.D., F.R.C.P., F.R.C.S., F.R.C.O.G., professor of obstetrics and gynæcology, University of Wales, obstetrician and gynæcologist, Cardiff Royal Infirmary. London : H. K. Lewis. 1947. Pp. 732. 45s.

ALTHOUGH the British Isles are provided with a goodly number of textbooks of obstetrics, and thereby with a great diversity of opinions, it is some few years since a new author made his appearance. We will state forthwith that Professor Strachan's book is a good book—comfortably orthodox, pleasantly written with a scattering of superlatives to give emphasis in safe places, bountifully illustrated with over 300 illustrations and 3 colour plates, and really well produced with clear type and (for these days) surprisingly good paper. Throughout it shows his conviction of the evils of what he terms too early interference and of the urge to interfere with even the normal course of labour.

There are nine sections, each of which is much subdivided, and the subdivisions are not numbered. The arrangement is unusual and leads occasionally to odd sequences. Of much greater importance, however, is the fact that no less than 275 pages—over a third of the total—are given to description of the normal. This is a great accomplishment. Probably the first two sections are the best in the book. The student receives detailed instruction in the preparation of the patient for, and the conduct of, a normal labour, and there is an excellent description of the objects and application of postnatal care. The third section, of only 36 pages, is concerned with the newborn child and its ailments. Although written by the pædiatrician to the department, it cannot be said to be notably better than similar sections in other obstetric textbooks. Condensation to this extent is always difficult.

In the treatment of gonorrhœa in pregnancy, local treatment of the infected sites is advised, and in that of concealed accidental hæmorrhage the author gives the impression that he has just failed to be courageous enough to exclude cæsarean section. No fewer than six different methods of treatment are described for the management of placenta prævia, and some of these, surely, are now discredited.

The assessment of contracted pelvis is essentially sound, and Caldwell and Molloy's classification is criticised. The estimate of the value, and lack of value, of external pelvimetry is definite and fair, but Professor Strachan's views on the results of trial of labour are gloomy. The student receives excellent instruction on the management of the occipito-

LACK OF PRECISION

Slackness in the use of words is a besetting sin of the modern doctor. The examinee who uses his mother-tongue to convey a precise meaning is a joy to the examiner, and unfortunately that joy comes but rarely. Lack of precision by the bedside, like the failure to use controls where this is possible, brings medicine into disrepute. One knows of instances where chemists, mathematicians, engineers, and astrophysicists despise the work of practising doctors. Their accusation against us is that although we live in an age of precision-instruments we shrink from the use of precise methods and constantly fail to define our meaning. That this is true can be seen by taking up current medical journals, let alone examination answer scripts. It is therefore not surprising that the examination candidate of today cannot be persuaded to describe the size of lesions in inches or centimetres.

The story is well known of two dermatologists as far apart as Frankfurt and Baltimore who were annoyed with each other because the one described certain lesions as being the size of a dime and the other the size of a pfennig. How can doctors be cured of comparing lesions in size to coins, fruits, and nuts? One frequently meets expressions such as "the size of a halfpenny, a threepenny bit, a grapefruit, an orange, a tangerine, a tomato, a nut, a hazel nut, an almond, a walnut, a coconut, a pea, a bean, a grape, or an olive." One would think men would have the sense to see that in any case there are several varieties of olive, many different sizes of tomato and tangerine, and at least two varieties of threepenny bit! The candidate who excelled at this type of description was he who described a lesion as the size of a large pea or a small bean. An examiner once took to task a man who said a tumour in a patient's neck was the size of an egg. "Well, what sort of an egg?"—"A hard-boiled egg, sir."

The use of meaningless expressions is quite common—"obviously poorly," "below par," "relaxed throat," "eyestrain," "sallow," "pale-looking," "toxic-looking." Loose terminology is rife. Thus a man will say "the patient has no temperature" when he means no fever, "the temperature chart was swinging" (remittent fever), "the patient has frequency of micturition" (increased frequency of micturition), "the patient has tubercular peritonitis" (tuberculous peritonitis), "he was given morphia" (morphine). In a viva a candidate will sometimes go to great trouble to avoid using precise terms such as fibrous ankylosis of a joint, maculo-papular pink eruption on the skin, left homonymous hemianopia, partial aphasia, granulocytopenia, or zoster virus.

Nobody suggests that examiners take off marks for all these petty mistakes. Obviously they must ignore such errors, otherwise they would never get through the dreary business of marking the papers in time for the next stage of the examination. But all this slackness leads sooner or later to loose thinking and to fundamental errors of principle. Thus it is common in clinical examinations for a man to say that he heard bronchial breathing over a certain point on the chest wall. When questioned about this he will admit that he has found no restricted movement, diminished percussion note, or alteration of voice sounds. The examiner swiftly discovers that he is not familiar with the physical signs of consolidation of the lung and that he is completely confused as to the difference between harsh vesicular breath sounds and bronchial breath sounds, and cannot define either of these. In the membership examination such a man fails, and richly deserves to fail. After all the membership is equivalent to an honours examination, and a man who displays such ignorance deserves to fail even in a pass examination like the Conjoint.

THE CLINICAL EXAMINATION

It is imperative that you should get through the clinicals in order to survive to the next stage of the examination. You just cannot afford to get any of the physical signs wrong.

It often happens that candidates invent signs to satisfy an imaginary diagnosis. Worse than this, a man imagines that he hears an aortic diastolic murmur and is quite content to diagnose aortic incompetence although there is no evidence of enlargement of the heart, no collapsing pulse, and no low diastolic blood-pressure. Many candidates fail to realise that the apex-beat of the heart may be found anywhere between the posterior axillary line on the left side and the nipple line on the right side. Cases of adults with long-standing fibroid lung are often misinterpreted by men who [illegible] to feel far enough out to the left for the apex. Innumerable candidates use the expression "[illegible] apex-beat," which is absurd because the apex-beat is defined as a point and therefore cannot be diffuse. Nor has the expression "diffuse apical impulse" any meaning. Candidates who use this expression [illegible] to convey that the apical impulse is thrusting, heaving, or forcible, and should say so.

Nearly every examinee will misdiagnose a case of polycystic kidneys, and hosts of men cannot define the difference between an enlarged kidney and an enlarged spleen. The number of men who can demonstrate they know how to examine the hip-joint, or any joint for that matter, is far too small. There is an idea in the minds of many candidates that a patient with joint disease, bone disease, or deformities of the spine or limbs belongs to surgery and not to medicine!

In the clinicals a candidate should never hedge. "The patient has a tendency to a hæmorrhagic rash"—either he has a hæmorrhagic rash or he has not. "There is the very slightest element of an aortic leak"—either the aortic valve leaks or it does not. "There is a certain sleepiness about the eyelids"—either the patient has ptosis oculi or he has not. If a man cannot make up his mind about these things surely he is not ready to take the exam. There is the story of the examiner (not a censor of course) who was a bully. He became quite impatient with an Indian candidate and barked at him: "Answer me, yes or no. Has this patient got mitral stenosis?" The gentleman from the East walked up to him until he was quite close and gave the answer in a whisper—"Perhaps."

The examinee who cannot handle with confidence a simple neurological case is clearly not ready for the examination. Yet few men have been properly taught how to elicit the plantar response. The region of the elicitation of this reflex is the outer border of the sole of the foot and the stimulus should always be applied [illegible] An extensor response may sometimes be obtained from this region when the inner border of the sole yields a flexor response. Examiners get tired of putting a [illegible] pencil through the erroneous expressions—"extensor Babinski sign," "his Babinski's are flexor," "the Babinski is plantar." What Babinski described was the extensor plantar response. It is far better therefore to use the expression "extensor plantar response," or else to say "positive Babinski reflex" or "up-going toe."

Candidates should have sufficient imagination to diagnose classical syndromes and diseases from what they have read. Supposing you have never seen a case, say, of hæmochromatosis, then you must be sufficiently familiar with its symptoms and signs to be able to recognise it. You will get a poor mark if you say such a patient has diabetes, fibrosis of the liver, and pigmentary changes which are in no sense correlated.

If you are not yet mature in your knowledge of medicine, you will commit yourself out of your own mouth

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posterior position, and emphasis is rightly put on the time of interference. Whereas Kjelland's forceps do not get favourable mention, articles of such dubious value as the laminaria tent, the gum-elastic bougie, and the solid rubber bougie for use in the induction of abortion and labour are given a place.

The book concludes with a section on the casualties of childbirth, and a practical account, by Dr. Robert Drummond, of blood-transfusion.

The criticisms that can be offered are few and unimportant in relation to the vast bulk of the work, which received too little praise at the beginning of this review.

The Acute Infectious Fevers

ALEXANDER JOE, M.D., F.R.C.P.E., medical superintendent, City Hospital, Edinburgh. London: J. & A. Churchill. 1947. Pp. 276. 18*s*.

Dr. Joe's book, based on his experience as clinician and teacher in London and Edinburgh, is primarily intended to help the student and young doctor in solving the everyday problems posed by the common fevers. The author has succeeded in his aim: the clinical descriptions are clear, the discussions on diagnosis adequate, and the sections on prevention and treatment full. From the teaching aspect, the half-tone reproductions of photographs, as usual, are not uniformly successful: those portraying the pock diseases are very good, but those illustrating measles are but indifferent guides to the student. Dr. Joe is, throughout, conservative in his views and cautious in their expression: in scarlet fever most fever clinicians now deprecate the use of the douche-can for flushing the fauces, however gently, because of the danger of infecting the eustachian tube and thus the middle ear. While the reliability of the cough-plate in the diagnosis of pertussis is perhaps overestimated, the postnasal swab, of greater value in infants and young children who cannot coöperate, is not mentioned. But such are small points which do not detract from the merits of the book.

A Synopsis of Anæsthesia

J. ALFRED LEE, M.R.C.S., D.A., consultant anæsthetist, Southend General Hospital. Bristol: John Wright. 1947. Pp. 254. 12*s*. 6*d*.

A GREAT deal of work has gone into the preparation of this book; and although it is only of pocket size it contains a wider range of factual information than many textbooks of anæsthetics. Some statements will not be accepted everywhere. For instance, the maintenance of an adequate respiratory exchange with carbon dioxide and oxygen is given as the first treatment of "other convulsions"—the old term being retained in preference to the current one of convulsions during anæsthesia. A rise in blood-pressure and a heart-rate slowed to 50 is also regarded as a normal response to cyclopropane, while the use of such high concentrations as mentioned in connexion with cardiac arrhythmias has few advocates today. In the main, however, this book will be found to be a reliable source of reference and a quick means of revision.

A Textbook of Dietetics

(2nd ed.) L. S. P. DAVIDSON, M.D., F.R.C.P., professor of medicine, University of Edinburgh; I. A. ANDERSON, M.B., lecturer in clinical chemistry, University of Aberdeen. London: Hamish Hamilton Medical Books. 1947. Pp. 517. 21*s*.

THE first edition of this book in 1942 rapidly established it as one of the soundest and clearest treatises in this field. The second edition lives up to this reputation and the general practitioner and general physician will probably find it the most useful work on dietetics now in circulation. The fundamentals are treated with commendable clarity, and dietetic therapy with lusty common sense. Sections from the previous edition have been brought up to date and new sections have been added on parenteral therapy, the treatment of starvation, the use of folic acid, and food policy during the war. The authors pay an instructive tribute to the scientific guidance so largely responsible for the success of this policy. Professor Davidson might also have remarked that a wider appreciation of the teaching in this book would have saved the invalid rationing committee, of which he is a distinguished member, much unnecessary work, and also economised the time of our legislators.

The Child-bearing Years

C. SCOTT RUSSELL, M.A., F.R.C.S.E., M.R.C.O.G., assistant director, department of obstetrics and gynæcology, University of Manchester. Oxford: Blackwell. 1947. Pp. 88. 7*s*. 6*d*.

AMONG the educational books now available for the lay woman it is pleasant to find one of outstanding merit and suitability. Mr. Scott Russell offers the woman of average education a good survey of the physiology of childbearing, menstruation, and the menopause. Contained in these chapters is also a [illegible] description of relevant pathological conditions, and he must be congratulated on his skill in describing these without playing into the anxiety of his reader. [illegible] of the sections contain just the type of information women require, and this is given in a direct and way.

It is perhaps a pity that in the chapter on breast feeding the emotional advantages to mother and child receive no mention. For both mother and child breast-feeding is invaluable as a means of education in intimacy and loving. With natural easy mothers suckling is indulged in simply; but the neurotic woman may all too easily lose this natural way of breaking down the barriers if these facts are not pointed out to her.

An Introduction to Bacteriological Chemistry

(2nd ed.) C. G. ANDERSON, PH.D., DIP.BACT., formerly Lewis Cameron teaching fellow, University of Edinburgh. Edinburgh: E. & S. Livingstone. 1946. Pp. 500. [illegible]

ALL living cells have the same basal biochemistry, and for this reason bacteria can be used for the rapid and economical assay of a wide range of biologically important substances such as amino-acids and vitamins. Bacterial enzymes are capable of performing almost every possible biochemical reaction, and we now know that several bacterial toxins, such as the α-toxin of *Clostridium welchii*, are enzymes. These are among the many reasons why [illegible] students of bacteriology should know something of the chemistry of micro-organisms. The present edition of this excellent book contains a new chapter on the antibiotics and a fresh presentation of the facts about growth factors. General subjects such as enzymes and colloids and adsorption are followed by a much larger section on the metabolic habits of bacteria, and finally there is a clear explanation of modern views on immunochemistry. It should be said that only an elementary knowledge of organic chemistry is needed to find the way in this expanding field of study.

Human Embryology

BRADLEY M. PATTEN, professor of anatomy, University of Michigan. London: J. & A. Churchill. 1946. Pp. [illegible] 45*s*.

THIS is one of the best textbooks on human embryology produced in recent years. Original in style, arrangement and illustration, it is unusually attractive to read and entirely up to date. The illustrations are well produced and clarify those aspects of development which the student often finds most difficult. The sections dealing with the functional significance of developing structures are somewhat of an innovation, though perhaps unnecessarily detailed in the case of the central nervous system. The story of development is carried well into postnatal life, and developmental defects receive detailed treatment. It is pleasant to see the sections on development of general tissues, such as bone and muscle, placed early in the book, instead of being relegated to an odd chapter at the end as so commonly happens. A few points for criticism no doubt arise—e.g., no reference is made to osteoclasts in bone growth; the magnification of many of the photomicrographs and illustrations of reconstruction models is not stated; and there are a few loose phrases, such as the description of the ventral nucleus of the thalamus as "a conscious and relay centre." But these are small blemishes in a book of exceptional originality and accurate detail.

THE LANCET

NDON: SATURDAY, AUGUST 30, 1947

Sometime, Never?

those who returned from the first world war study of medicine, some did well, and a few ntly; but many found it hard to readapt elves to academic life, and either abandoned ine or qualified late. This time it is different: om the Forces have delighted their teachers with zeal and grasp of essentials; indeed some who previously the despair of their mentors have ently turned over a new leaf. No single reason ins the difference, but it may be largely due to circumstances—improved selection, the changed cter of Service life, and the grim times in which ve. Of recent years the medical schools have to recognise that students are best selected not y by examination but also by their background, nality, and interests; and this lesson has been ed effectively to the returning Serviceman. dly, the war of 1939–45 being largely mechanised, were continuously schooled in scientific or scientific subjects and never lost the knack of ing; and at the same time they were not subd to the unremitting and disturbing strain of h-warfare which their fathers suffered. Finally, er during nor after the late war was there any aganda along the lines of "a land fit for heroes"; in the Forces never lost sight of the fact that t they wanted they must work for; and if, on return, a reminder was needed they found it ur national poverty and the continued interonal uncertainty. When they began their studies ervice students often found that they had lost "blotting-paper" memory which is so well rded in examinations; but they have brought to r work maturity and judgment, and a determinato make the most of their opportunity. In some ols—partly because of their application and partly use many are married—they have not engaged h in outside interests; while in others their ence has shifted the centre of student social vities from athletics to more staid recreations such usic and drama. The younger student is gaining h from the older.

he inference for peace-time is not certain. Most lical educators favour a break between school and versity, which they say promotes the maturity ential if the student is to benefit fully from his sequent training. It may be reasoned, too, that interval provides a much-needed rest before rting on the last six years or so of an education t has already been proceeding for ten years or re. And again it may be argued that since the dical student and doctor meet people principally patients, candidates for medicine require an erval in which they can get to know healthy manity. These are all valid contentions, and ough such a break can be bought only at the price reducing the working life of each doctor [1] there will a case for insisting on it when the shortage becomes less acute. At present it is scarcely a matter of choice: during the next few years, the medical schools' preoccupation with ex-Service students will necessitate the deferment of many younger men, who will thus first enter the Forces. But it would be a mistake to feel confident that during their service these youngsters will develop the same sturdy qualities as did the war-time Serviceman. During the war our soldiers, sailors, and airmen were sustained and united by a clear purpose, for whose achievement they submitted to a discipline which was often largely self-imposed and which now rewards those who returned. But the incentive of victory has gone, and no other strong incentive has taken its place. Even among the men who had done the fighting, the end of the war brought schism and bewilderment in place of unity and determination. And if this happened among those who had shared a common experience and reached a common goal, it is still more apparent among the young men who, having had no hand in the war, are thrust direct into the demoralising environment that is the usual portion of any occupying force.

THE SCHOOLS' PART

Doubt about the future is apt to be a grave disability; and during their period of national service men with a planned career ahead of them may be expected to fare better than those with none. Here then we should welcome the enlightened practice of the Liverpool school in promising admission after deferment and national service to selected candidates, subject to satisfactory conduct.

In considering how best to help these young men, the schools might also overhaul their system of selection. At present they can accept only between a tenth and a quarter of all applicants; but many of these candidates, uncertain of acceptance at any, apply to several, and sometimes indeed to all, schools. For the schools this means that, after careful deliberation, a student is selected who may later announce that he has been offered a place elsewhere which he prefers. For the candidates these multiple applications involve loss of time and sometimes the strain of sitting examinations imposed by the individual schools. The Royal Free Hospital school of medicine has decided to abolish its entrance examination, and others may do the same; but those schools that value an entrance examination might, like the public schools, at least accept a common one. The confusion caused by multiple applications could be ended by having a central register, on which all intending medical students would enter their names. A year ago we suggested [2] that the control of this register should be in the hands of a standing committee of deans, representing every school of medicine; and we return to the proposal in the belief that such a committee could be useful in more ways than one.

Except for the management of the register, this body should, we suggest, be purely advisory and consultative. In the first place it could deal effectively with some of the problems confronting the individual schools. For example it is feared that the increase in Treasury contributions, through the University Grants Committee, may presage interference with the running of the schools; and the committee would be well placed to detect and ward off any attempts in this

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[1] *Lancet*, 1947, i, 375.

[2] *Ibid*, 1946, ii, 305.

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be the promotion and advancement of research cardiac rheumatism in childhood. Not far away, is Stoke Mandeville, with the Ministry of Pensions ital for paraplegics. Ashridge itself is no longer a ital, but it would be a convenient place for a ring of medical men or hospital people, such as a al board or newly constituted board of governors eaching hospital. Here they could get to know nother in pleasant *surroundings*.

A CAMP FOR CRIPPLED PEOPLE

PING for pleasure is usually regarded as a pursuit e active. At "Woodlarks," near Farnham, it has shown that even severely disabled people can the chief pleasures of camping—the open-air life, s, camp-fire parties, nights under canvas, and good e food. This camp is specially planned for them, ts success depends on the work of large numbers of g helpers. As the annual report notes: "If there oo few they become fully occupied with the chores he camp and have neither the time nor the ration to do all that might be done."

a camp held in August there were 25 crippled and women and 45 voluntary helpers, 22 of whom rangers in the Girl Guide movement. The cripples very severely handicapped, most of them chair unable to walk at all, and one at least in a spinal age. Many of them spend the rest of their year mes and institutions for helpless cripples, their lives wed to the tiny orbit of the ward's day, their minds verished by lack of any sort of stimulus. This has become for many of them the chief event of year, with an effect long outlasting the ten days lly spent at Woodlarks. Friendships are made here carried on by correspondence until they can be ved again, new interest in country things can be loped by reading during the winter, and, perhaps important of all, since they are encouraged to themselves, many cripples learn to increase their e of movement and physical power. Two, at least, had not walked before learned to stand and take their steps in the camp.

oodlarks was founded in 1930 by Lieut.-Colonel R. Strover and his wife, who with their children he moving spirits in running and maintaining the . The large site lies off a wooded ferny hillside g a fine stretch of country. Paths and roads, made ly by rover Scouts, wind through the woods and will y take wheel chairs (plenty are kept in stock) and l carriages. The crippled campers can thus be taken untry excursions and on expeditions to neighbouring ens, can go blackberrying, and can watch birds and als. A swimming-bath, made from discarded tic water" tanks, is in the process of construction. ds of Woodlarks go down to spend strenuous week- in welding and riveting, and the result promises to ery good. Many cripples are able to swim, and more joy bathing. In the evening campers join in songs, petitions, and games round the fire, or if the weather t hold parties indoors.

he buildings are simple, solidly built in brick with windows. A large dormitory, able to take 25 les who have not gained their doctors' permission eep in tents, has folding windows down the whole h of one side. This room and the dining-room have good hearths. The lavatory block is specially designed. In the water-closets pans of various and heights have been fitted, and each is flanked pair of wooden arms to help the user to rise from the Each water-closet has a wide door and is large gh to allow a wheel chair to be brought in and ed. Ample baths, wash-basins, and hot water are ided. The first aid room, with a bed for casualties or suspected cases of infectious disease, is put in charge of a nurse or doctor among the helpers.

The kitchen is outdoors with a pent-house over it to protect the fire from rain; for the cooking is done as it should be, over an open fire. This is built in a long narrow brick trough, across which iron rods are laid to support the cooking-pots.

Ten-day camps are run steadily from May to September, camps for boys alternating with camps for girls. The report emphasises that the camp is run for *severely* handicapped people, and a visit is enough to show that this is no polite boast. But strangely enough it is always easier to persuade badly crippled girls to come than badly crippled boys. Crippled boys have often become too dependent on their womenfolk, and fear to trust themselves to an all-male camp, though the helpers are able and practised: the girls, of course, can count on the care of women; but they seem in any case more enterprising. Family doctors, it is found, are often over-cautious about advising parents to send their crippled children. A doctor's letter saying "I don't think he is too severely disabled to come to camp" generally precedes the arrival of someone almost too lightly handicapped to be accepted. The best testimonial to the value of the camp comes from the cripples themselves, who, once they have visited it, return year after year.

Before the war Colonel and Mrs. Strover used to run toy-making classes at the camp once a week for neighbouring cripples; and the toys made were exceptional in design and workmanship. Now they hope to extend this plan by running a residential training course in toy-making. Two gardeners' cottages on the camp site have been bought to house the staff and those in training, and a large airy workshop is to be built; but funds are needed. Woodlarks is built on voluntary subscriptions and gets no grants at present: it is too small to qualify for some, and the training scheme, being still unproven, cannot as yet claim others. Nevertheless it is doing remarkable work, the value of which doctors in charge of institutions for the crippled can well appreciate. Those who wish to support it should write to the hon. treasurer, Woodlarks Camp Site Trust, Farnham, Surrey.

FAREWELL TO THE I.M.S.

THE Indian Medical Service was formally dissolved on Aug. 14, and in the letter of retrospect and farewell which he has sent to every officer Lieut.-General R. Hay, the director-general, summarises the history of the service since 1612 when John Woodall was appointed the first surgeon-general of the East India Company. "As I pen these words to you," he writes, "the service is being wound up and its members are dispersing. Some of us will find new careers in the service of the Crown, in the health services at home, and elsewhere in the British Commonwealth. We know that their service here has fitted them to contribute generously to their new tasks. Our Indian members will be completely absorbed, with some of their British colleagues, in the two new Dominions. To them in their new sphere and to those who will work with them, we hand on our torch."

Prof. E. C. DODDS, F.R.S., has been elected master of the Society of Apothecaries of London.

Prof. N. HAMILTON FAIRLEY, F.R.S., and Prof. J. H. GADDUM, F.R.S., have been appointed members of the Medical Research Council from Oct. 1.

Sir THOMAS CAREY EVANS, former medical superintendent of the Hammersmith Hospital, died on Aug. 25 at his home in Wales. We also regret to record the death on Aug. 16 of Dr. ELLIOTT C. CUTLER, professor of surgery at Harvard and a companion-in-arms of British surgeons during two wars.

direction. Then again the effort at some schools to increase the output of graduates in anticipation of increased demands under the National Health Service Act is frustrated by refusal of requests for beds and buildings; here, too, the case could be put with weight by the committee. But perhaps the most valuable of all its functions would be the pooling of experience in teaching. Medicine is compounded of many subjects, whose importance is assessed differently at each school. Nothing would more certainly damn medical education to a uniform low level than ironing out these differences by ukase: the schools must be free to organise their curricula according to local taste and talent, subject only to reasonable minimum standards. But the negative duties of the General Medical Council might well be balanced at the positive pole by a body which set itself to pick out what is best in each school and bring it to the attention of others. In the past year different schools have set up new departments in social medicine, industrial medicine, medical statistics, rheumatology, and other special subjects. As is shown in the article by Professor ARNOTT and his colleagues which appears on another page, at least one of these departments can stake a claim to a regular place in student training. Experience should be shared as it grows; and a council of deans, more comprehensive and with more official st than the committees and groups already in exist is the proper body for the exchange. It might that to place this burden on such a council is u sary, since each school must surely learn uno of its neighbours' progress. Unhappily this is n Though each school is eager to make the mo its own resources, few have had, or have taken, opportunity of measuring their achievement a others'. Deans are already overworked in ad tering their own schools and in fulfilling duties re to their chairs. This has been acknowledged in schools by the appointment of a full-time de administrative officer, or of a subdean, or by st rotas in which each professor bears the burd deanship in turn; and, if the proposed commi to be virile and active, deans everywhere must ha help of whole-time officers to relieve them of ro

The duties of the medical schools in t students are, broadly, to pick the right men women; *to train them as fully* as possible; and supply the country with suitable graduates in required numbers. In each of these function schools can help themselves and each other sending their representatives to meet round committee table.

STUDENT HEALTH

PILOT surveys of students at Oxford, Cambridge, Sheffield, and Bristol have revealed a disturbingly large number of minor and remediable disabilities and some serious illness among them. At a conference on student health in British universities and medical schools, arranged by the Nuffield Foundation and held at Oxford on July 8 and 9, students were reported to suffer mainly from minor defects of eyes and teeth, and mild skin disorders. Some needed advice on the management of cardiac, digestive, or orthopædic conditions; and 15–30% had minor anxieties most of which were relieved by explanation and reassurance. In the Oxford survey, 15% of all students were deemed to need treatment before the end of term, and another 40% needed treatment which could safely be postponed to the vacation. Routine X-ray examinations of the chest were made at the universities of Oxford, Cambridge, Bristol, Wales, and Belfast, and at University College, London, and some of the London medical schools. In every case examples of active tuberculosis and openly infectious pulmonary tuberculosis were found, usually at a stage early enough to give good prospects of recovery. It was noted at the conference that though isolation of infectious cases from a closed or partly closed community is an essential public-health measure, at present a medical officer of health may know of student cases without having permission to inform the college authorities.

Studies of social conditions affecting the health of students in Edinburgh, Leeds, and Liverpool brought complaints of the scarcity of accommodation and the poor quality of the midday meal. Prof. F. A. E. Crew, F.R.S., reported that, at Edinburgh, 35% of men and 42% of women students wore glasses. Four days' illness a year per student might be expected; and a quarter of the men and nearly a third of the women had an illness last year which caused them to go to a doctor; the average duration of these illnesses was 16 days. He found that 74% of medical students and 64% of all other students were in favour of compulsory medical examination after admission to the university. The principle of compulsory health examination is fully accepted in the United States, and routine examinations of this kind ensure that all discoverable handicaps can be treated, and that conditions like pulmonary tu losis which endanger both the patient and his comp do not go undetected. Information gained from compulsory examinations show health and se tendencies accurately, and make possible compa studies in different universities.

Several universities which already have st health services contributed their experience. It agreed that sick-bays in colleges and hostels, attended a whole-time or part-time nurse, are needed; and in or associated with a hospital, where cases can be investigated.

Various estimates, ranging from 450 to 1000, were of the number of students whom a single whole- physician can be expected to examine. He needs tarial help and X-ray facilities. From July, 194 cost of treatment will be covered under the Nat Health Service. The conference resolved that a student health service should be provided for all unive students, and that provisions for the care of sick stu should be improved. Every university, it was should appoint at least one whole-time physician, where necessary other whole-time or part-time d to help him. The physician should have adeq accommodation, equipment, and secretarial and nu help. A subcommittee is to consider a design for standard record card. A further conference is pla for 1949, and in the meantime an interim coördin committee has been appointed, the secretary b Dr. R. W. Parnell, of the Institute of Social Medic *10, Parks Road, Oxford.*

ASHRIDGE

A CORRESPONDENT draws attention to the amenit Ashridge Park and its advantages as a meeting No medical body, he says, has yet made use of it in same way as the Magistrates' Association or the Nati Council of Social Service. Yet the house is well ada for the purpose of conferences, and the grounds famous. Standing on the borders of Hertfordshire Bucks, Ashridge is now owned by the National Tr which is doing so much to preserve the beautie England. Near at hand is Cliveden, with the Cana Red Cross Memorial Hospital at Taplow, whose spe

:iven the research and the men to carry it out,
s no reason why the business of feeding populations
not ultimately become a rational science and a
:able branch of preventive medicine.

A. P. M.

THE ACADEMIC PATH

ING had good luck, good health, and good friends,
become (as I wished) a whole-time clinical professor.
e try to give some account of the path I travelled.
n the faculties of science and medicine of an
t and populous university, I secured the honours
s which convention requires in mentors. More
:ant, I gained the absorbing and sustained interest
converts apparent drudgery into a continual joy
leasure. Most medical men work long hours com-
with the generality of mankind, and this is certainly
f those who follow the academic pathway. (I have
) meet a senior medical teacher who does not
ally spend most of his working hours in professional
and who does not take home with him at night
t the weekends a formidable assignment of home-
) But much of the work is creative in the sense
t consists in the devising of a new administrative
aching scheme, the evaluation and analysis of
ch data, or the writing of a monograph or article.
vever, the secret of diligence is interest; if one really
s work, it ceases to be an effort and becomes relaxa-
Boredom is perhaps the most exhausting circum-
: in human affairs; indeed, a cynic once said that the
aim of life was to pass the time between birth and
. Viewed from this angle academic medicine is
t satisfying career in that it provides an infinitude
ties, problems, and opportunities—all interesting.
ps the most important function of university
tion is to teach what is *not known*—that is, to
:ate lively curiosity into the minds of its graduates,
in them not only to apply knowledge but to be ever
ful for new knowledge, and to be ready to discard
nend the old in the light of the new.

all-too-brief period in general practice, partly in a
erous rural area and partly in a mining area during
lepression, afforded some insight into the daily
ems of the general practitioner. There then followed
as house-surgeon and house-physician. The vital
was taken when I was appointed to a registrarship
teaching hospital. Nowadays many of these posts
ull-time and carry a bare subsistence stipend, but
at time they were purely honorary and a living was
in a variety of ways—partly by coaching, and
y by work in pathology with research scholarships.
latter activity constitutes a most essential part of
raining of the academic clinician. Several years of
time work in one of the basic sciences, such as
iology, biochemistry, or pathology, mould an attitude
ind and an approach to clinical problems without
h sound teaching is probably impossible. For me
work was partly routine but mostly research: in
l measure productive, in larger measure unproductive
nat no publications ensued; but all beneficent in
it taught techniques of observation and measuring,
practice in the statistical treatment of data and
ction therefrom, and, above all, inculcated the urge
find out." Coaching for 3rd M.B., for "Finals," and
lembership, both individually and in classes, provided
tice in the art of exposition and a working stock of
al data; while the much-needed cash-returns operated
sensitive index of one's market value as a teacher.

that time there were few whole-time clinical
intments, and further advancement lay along the
of election to the honorary staff of a teaching
ital and the development of consulting practice—a
pect satisfying enough but giving all-too-little time
:he more elaborate forms of research. Into all this
e war, altering completely, as it did for all of us, the
r of life. A prior undertaking relieved me of any
sions; immediate mobilisation with early posting
oreign service followed. In retrospect it is possible
ealise that war service had a certain educative value.
rought the opportunity to practise tropical medicine,
the necessity, in the absence of better qualified men,
lo one's best in infectious diseases, psychological
licine, dermatology, and, in times of battle, in
sthetics and even in surgery. Emotionally it certainly extended the range of experience; it brought the bitterness of long exile, the crises of acute physical fear, the communal joy of military success, and finally the harrowing sight of a proud enemy beaten to his knees, his cities reduced to rubble. Educationally war brought peculiar opportunities in that I shared extensively in the training of medical specialists, the basis of which was a 3–6 months' course of instruction in a military hospital.

After demobilisation I had a generous welcome on returning to my old school; and some months later I was elected to a whole-time chair, where my duties comprise (to paraphrase the articles of appointment) conduct and general arrangement of teaching in medicine; care of patients in the teaching hospital; and the stimulation, direction, and personal prosecution of research. These responsibilities have been greatly lightened by the friendly and sustained help of new colleagues.

Mine is a story devoid of the unusual or the glamorous but, of its kind, typical enough to illustrate one of the prospects in the wide ambit of medicine.

W. M. A.

IN A COUNTRY PRACTICE

TURNING over the pages of the illustrated weekly before putting it in the waiting-room, I found a reproduction of Sir Luke Fildes's *The Doctor*. The caption proclaimed that "this celebrated picture is being used by the United States authorities for a new issue of stamps"; so our American cousins must still have a warm heart for the general practitioner of fifty years ago. Today, especially in the urban areas, his work is weighted with monotony, but gone are the days when most of our profession are engaged in purely clinical work.

After ten years in a country-town practice I feel justified in replying to those who were fellow students and who had said I would be just a jack-of-all-trades. It was well worth while to do a string of house-appointments so as to be suitably prepared for the kaleidoscope of rural practice. There is still charm in the variety of the work, not only in its clinical aspect but also in the versatility needed in dealing with the domestic sphere—from the terse orders to the half-witted stonebreaker to the advice proffered to the elderly dowager; from the urgent emergency of the perforated enteric to the patient encouragement of the hemiplegic convalescent; from the recipe for beef-tea to the supervision of a penicillin infusion.

The major part of the work is plain general practice; the town is small, and two-thirds of the patients are beyond the outskirts. At hand we have a cottage-hospital where two of us perform such surgery as can be accomplished without a pathologist and radiologist in daily attendance. Our half-dozen colleagues are all members of the hospital staff and care for their own patients while warded. Thus we each attend our own more seriously ill patients unless they require special investigation at a larger hospital. The interest from this uninterrupted supervision is a great stimulus to keep up-to-date. This being a very rural area, most of the exanthemata are nursed at home; but the fever hospital is resorted to when home conditions are questionable.

There is a privately run maternity home in the town, where those who lack the necessary help at home can be confined. A personal bias to home nursing means that most cases are still attended in their own beds, with the conscientious help of the Queen's nurse, or perhaps of one from the "Co-op." The professional bond under such conditions is much firmer than where the child is manipulated in the antenatal and delivered in the maternity department and weighed in the infant-welfare clinic, before being passed on to the education authority for medical supervision. The town has all these services, but they are not largely used except of economic necessity.

Consultants' advice may be obtained through the local authority, or at the neighbouring general hospital, or at the patients' private whim. There has been no occasion when patients have not had the chance of the best advice locally or more distantly; if they had their doubts, they presumably changed their doctor. The difficulty of transporting urgent pathological specimens is now more easily solved; many times a full round has been interrupted by a thirty-mile journey with a culture incubating in a waistcoat pocket.

UP OTHER STREETS

Some start their medical training with a definite aim. These, who are not many, are mostly men and wome career is already decided—for example, the pure scientist who has found that his researches demand more than a acquaintanceship with medicine, and the barrister who seeks to specialise in medical cases at the bar. For qualification brings a bewildering choice of paths. Which to take? We print below articles by four contributors who answered the question to their own satisfaction, and so have at least warded off the boredom which one of them stig as "perhaps the most exhausting circumstance in human affairs."

PERIPATETIC NUTRITIONIST

A MEDICAL specialist in nutrition hates to be called a "nutritionist" in case he is mistaken for someone trying to sell vitamin capsules or breakfast cereals. He likes to think of himself as engaged in a branch of preventive medicine, although as a rule he has no special qualifications in public health. Broadly, his job is to try to find answers to the recurrent question "Are people getting enough to eat?" This question has come up repeatedly and urgently in many places, during and since the war. Consequently there has been a good deal of travel to be done by one, such as myself, working in this specialty. Sometimes the journeys have been far from dull.

I remember struggling in the blackout with a large belt-driven centrifuge of antique design, attempting to get a foothold on a jam-packed night train to Scotland . . .

I remember a philosophic discussion in the Conservative club of a Welsh mining town with the Socialist city fathers . . .

On Christmas Eve, in convoy off Sicily, the chief engineer hung a stocking on his cabin door, hopefully including an empty bottle of Johnnie Walker . . .

Down the long dusty road from Teheran to the sea we ran head-on into a whole tribe of migrating Kurds—a pandemonium of sheep, goats, and children, mingled with the shrill cries of women . . .

At the U.S. Army airfield on the Persian Gulf (temperature 105°F), I asked a pilot, "Where are you heading?" "Cairo." "Any room?" "Why sure, climb right in" . . .

Crawling along on the night train to Marseilles, in the last winter of the war, my Canadian colleague heated up a can of C rations and afterwards opened it, spraying everything with pork and beans . . .

Later there were frequent flights about Europe, mostly in Dakotas of varying decrepitude; on one such trip a kindly major-general spent the time showing two small children how to vomit into paper bags . . .

Some views from the air are not easily forgotten: the Bavarian Alps, Corsica, the Bay of Naples, and the mountains of the Peloponnese . . .

On the reconstructed narrow-gauge railway from Sarajevo to Belgrade the train wound painfully up the mountain to a point where there was a sheer drop of a thousand feet down to the Drina River; here the ticket-inspector apologised to us in French: "We have to go slowly here; track still bad" . . .

On a ploughed field outside Budapest we waited, sheltering from the rain, under the wing of the R.A.F. plane that had brought us in. After an hour or so, two Russian N.C.O.'s showed up, with a *supposed list of passengers*; this was solemnly read over in Russian. To be on the safe side, all the passengers answered "Yes" in unison, as each name was called. The inspectorate seemed amused by this and we were allowed to depart for the city without further formalities . . .

Then there was a nightmarish voyage to the States on the *Queen Mary*, with 2000 G.I. brides . . .

This job has a lighter side which compensates for some longish spells at an office desk.

In fact, the job involves a good deal of office work. To arrive at a fair estimate of a community's nutritional state it is necessary to study its food consumption. The current ration scales may tell you a great deal or nothing, according to the extent of the free, grey, and black markets. Certainly if the overall food-supplies provide a retail average of 2500 calories a head daily, or more, it is most unlikely that there will be anything seriously wrong; just as the presence of a measurable amount of vitamin C in the plasma excludes the diagnosis of scurvy. Then there are often long lists of food imports, to be worked out in terms of nutrients per head of population daily. A reliable dietitian is an invaluable help with this. In point of fact it is quite entertaining to divide so many thousand tons of wheat by so many million people, and find out how many calories should get. Just occasionally one is rewarded by a displaced 0 in the previous calculations of other But such armchair analysis does not answer the question, "How is the nutritional health of the pe The only way to find this out is to go and look for

Ideally, the way to set about investigating the of a population is to move in with a team, comp mobile laboratory, technicians, statisticians, di and so on. First of all an adequate sample of the tion is selected by scientific sampling methods: the next thing is to collect detailed medical, bioch social, and economic data on all the individuals prising the sample. This method is fine for the l study of nutrition in stable communities in peace but it was difficult under the confused conditions often confronted UNRRA in post-war Europe. For thing, elaborate data take time to collect and ever to analyse; when eventually they get to be writte the situation has probably changed and their is academic. In any case, we could never have at anything of this kind, if only for the reason that were never enough medical officers trained in nu to cover the whole vast field of UNRRA's operatio Europe.

But one medical officer, on a temporary visit to country, can learn a surprising amount about the state of nutritional health. First, it is worth lis to the doctors on the spot; they may know the death-rate and infant-mortality rate. Have they any famine-œdema or scurvy lately? Someone probably thought of collecting repeated weight m ments on children in schools or feeding centres next step is to look for the worst—in hospitals, ages, schools in slum areas, or devastated villages. that it is a good thing to examine as many peop different kinds, as time and opportunity will allow. quick inspection of the face, eyes, mouth, and extr will reveal most of the clinical signs that are apt to associated with underfeeding and malnutrition. method is not scientific and does not pretend to be it was sufficient to provide rapid answers to m the nutritional questions which previously had surrounded by a fog of uncertainty in London Washington.

Last year, in the months before the harvest, there a potential food crisis in Europe. The grim prospect famine in parts of Greece, western Yugoslavia, and perhaps parts of Poland seemed a definite pos in the early spring of 1946. But, thanks to the volume of foodstuffs imported by UNRRA, these fa did not occur. In fact, in the UNRRA-aided co generally the state of nutrition as we observed it, th often tragic enough, was nevertheless better than had dared to hope. I encountered real famine only —at Belsen concentration-camp. There I had the p lege of being associated with ninety-six medical stu from the London hospitals. In any similar ch desperate situation, I would always ask for the help a hundred students rather than a hundred doctors.

Nutrition as an established part of public-he practice is still in its infancy. Unfortunately it lacks precise methods of epidemiology; one cannot comp the total number of underfed persons in a commun *All that can be said is that some are obviously* well others obviously malnourished or underfed; but th is usually a very large intermediate group, whose nu tional status cannot be defined precisely with exis methods. More research is needed to develop be techniques for assessing this group; more must learned about the true nutritional needs of different of community in different climates; better ways estimating indigenous food production ar

Students Guide

·7 1948

Medical Schools

)XFORD UNIVERSITY the number of new students
icted by decree; the number during the coming
as been fixed at 55 men and 10 women, but
rice men and women are admitted over and above
numbers. Students without war service who
ılated after the end of Trinity Term, 1946, will
ger qualify for the B.A. degree by passing the
M. examination. Instead, they will be required
the second public examination; the course for
amination normally taken by medical students
final honour school of animal physiology. The
school is to become a permanent feature at
, so that students may qualify either at the
ffe Infirmary or by transferring to a teaching
al in London or elsewhere. The clinical adminis-
and social centre is being established in Osler
, which is beside the infirmary.

after the beginning of the late war the UNIVERSITY
MBRIDGE shortened the minimum period of pre-
l study from three to two years and suspended the
tion requiring candidates for a medical degree to
eached an honours standard in a tripos examina-
These war-time concessions have now been with-
. The distinctive character, and indeed the
tion, of the Cambridge school rests on the oppor-
provided to students by the natural sciences
to acquire a sound knowledge of the branches of
al science on which clinical practice must be based.
staff of the department of medicine has been
gthened by the establishment of a readership. A
rtment of experimental medicine was formed in
; and last year an appointment was made to the
chair of radiotherapeutics. A department or sub-
rtment of human ecology is planned; and it is
cted that further departments in various branches
linical science will be established. The School of
cal Research and Postgraduate Training, which
been considerably developed during the past year,
depend for success on close coöperation between
university and Addenbrooke's Hospital; and the
anism for this has been provided by the formation
medical school council, on which the university, the
ral committee, and the honorary staff of the hospital
represented. Since 1939 a unit or branch of the
lic Health Laboratory Service, established by the
ical Research Council for the advancement of know-
e of epidemic diseases, has been quartered in the
rtment of pathology. Proposals have been approved
he university and by the M.R.C. for the incorporation
he senior members of the staff of the Public Health
oratory Service with the staff of the department
pathology, to the great advantage of research
teaching in bacteriology. Readerships have been
blished in bacteriology and in morbid histology.

London Schools

ONDON UNIVERSITY bears a different relation to its
lical faculty from other universities: whereas they
e one school of medicine each, London has the twelve
nomous schools of the teaching hospitals, as well as
versity, King's, and Queen Mary Colleges, all of which
medical students for some part of the course. In
ition, external students of the university may take
r clinical training at the West London Hospital, which
ıot a school of the university. Up till now, apart
n the Royal Free Hospital, which has accepted
nen only, the only London schools to train women have
n Charing Cross, King's College, University College,
West London, and—since 1945—St. George's hos-
ls. From the beginning of the new session, however,
hitherto exclusively male schools are to accept 15%
women students, while the Royal Free Hospital is to
e 15% of men.

At UNIVERSITY COLLEGE the faculty of medical sciences
medical and preclinical years) has now regained its territory, occupied for some years by Government departments, and work and accommodation are on about the same footing as in 1939. Candidates for entry to first and second-year studies are selected by examination early in January. Entry to the premedical course is restricted by lack of accommodation in the departments of the faculty of science, and the number of women students is restricted to a quota of one to about forty men. The faculty gives every encouragement to medical students who wish also to take degrees in the faculty of science, and offers scholarships to that end for a further year of study, leading to a B.SC. (special) degree in anatomy or physiology after passing the 2nd M.B. examination. As in some other schools there is increasing coördination between the various departments, so that the student is presented with a more homogeneous body of knowledge than in the past.

KING'S COLLEGE is one of the largest schools for medical studies in London, supplying students to three hospitals—King's College Hospital, St. George's, and Westminster. Arrangements are made by which patients attend the college for clinical demonstrations in applied physiology, by clinicians. The students' hostel has been reopened.

The arrangements made by the joint committee of QUEEN MARY'S COLLEGE and the London Hospital medical college are working efficiently; and now that the college holds its own special internal 1st M.B. examination the teaching subcommittee has organised the instruction in physics, chemistry, and botany to fit in closely with preclinical teaching. All available places are taken by London Hospital men and women; during the 1946–47 session 56 1st M.B. and 20 premedical (conjoint) students passed through the departments.

Like many other London schools, UNIVERSITY COLLEGE HOSPITAL medical school has been busy drafting a charter in preparation for its legal separation from the hospital. Close coöperation will of course be maintained, just as in the past the school has retained a close voluntary association with the medical faculty of University College. This association has lately been strengthened by the appointment of a joint lecturer in applied pharmacology, with a firm footing in both institutions, and also by coöperation in the difficult work of selecting students. The medical school accepts all students who complete their preclinical university course at University College. The school also keeps vacancies for students from other universities who wish to undergo their clinical training in London. Each year 14 women are to be admitted—10 from University College and 4 from Oxford or Cambridge; this is 2 more than in the past. Additional clinical material will, it is hoped, be obtained by "assimilating" other hospitals in the neighbourhood. Teaching is being increasingly coördinated, and discussions are held between members of the various clinical departments as part of the routine clinical instruction. The three whole-time professors of clinical subjects are now responsible for the coördination of teaching in the hospital as well as in the school. The students' hostel has been reopened and extended, so that the greater part of a year's entry can now be housed on the spot; the hostel includes separate houses for women students.

In order to accommodate as many ex-Service students as possible ST. BARTHOLOMEW'S HOSPITAL medical college is still accepting about 20% more than the likely intake at which it aims when the college is fully rebuilt. Despite repairs to the buildings, which were severely damaged in the war, there is some overcrowding. Plans for permanent rebuilding include a residential hostel. A feature of the teaching is the opportunity given to students to study cases for themselves rather than first hearing the opinions of others. Opportunities for studying patients in their own environment are being developed, with emphasis on the influence of environment on disease, and on the means of maintaining full health.

The peace-time emergencies in the country are those of the farm, the river, and the road. Pliers have been needed before now to rescue a fractured sternum from a truss of hay in a baling machine; and winter storms have necessitated wading to the waist in the fast-flowing floods to reach a pneumonia.

The interludes allow time for professional meditation. Why had we to await the outbreak of war to prove the merits of black-currant tea? Should not the cottager's faith in the raspberry leaf at her confinement have suggested an earlier search for the active principle? While many country remedies are apparently useless, others are not, though they have yet to reveal their secrets to the biochemist. How long was the submerged root of the willow gathered before the synthesis of the salicylates? The little girl fondling her pet lamb had her peculiar "stye" elucidated when our veterinary neighbour told of attending a ewe with vaccine. Medicine in such surroundings recalls that nature is still mistress of much that we claim to rule. You need to be abreast of recent work, though the incentive can readily be lost in the placid environment: perhaps it was only the daily press that helped me to spot the early poliomyelitis the other evening. You need a fairly large medical library at your elbow; and you look to the medical journals for tactful reminders of current views and for original articles on recent work.

In this sad new world an observant eye must be kept on the trend of medical reconstruction. Do we not find that the General Practitioner Obstetrician is to surplant the Family Doctor? But, surely, human nature will be much the same, and the sick body will still look for individual care. It is still true that the patient gets the doctor he deserves.

G. M. LL.

A WANDERER SPEAKS

WHEN one day at the old "King's" in Portugal Street a contemporary H.S. said, "Sammy, I'm going to join the Navy; you'd better come along too," I little thought that that was the beginning of a roll which, in spite of the old adage, has resulted in the gathering of many mossy memories and experiences, if not of fame and fortune.

I think a policy of *carpe diem*, a little unusual perhaps, must have been mine in the Navy, for during my first commission on the China Station, in addition to learning to shoot, I wangled a long leave to Peking. I shall never forget how enormously impressed I was by the work done there by the London Medical Mission—there's another very worth-while suggestion, incidentally, for novices shivering on the brink of professional life. This was followed by an even longer leave with the avowed object of "exploring and reporting on the hot springs of Japan." What a nerve! But it led me all over the Islands before they were hopelessly westernised. Finally, by paying a bit extra, I came home via Canada, Niagara, and New York. This was followed by two years in a boys' training establishment, where one had the experiences of starting and running a pretty successful ship's magazine and of training racing cutters' crews.

During a South African commission, again, one long leave to the Victoria Falls, Kimberley, and Mafeking; another through the big-game country to Nairobi and Naivasha; and a third into German South West Africa were obtained before World War I clamped down on such delights. Whilst on this station I had a little experience of deep-sea diving and can appreciate the intense pain in the ears from too sudden compression. I also went away for a week or so in a Durban whaler and, by way of contrast, worked as a labourer picking fruit on a large farm and also in the Cape vineyards.

During World War I I was seconded for a year to the (then) R.N.A.S. and did a little flying—never solo—over Mudros and the Ægean. Around 1919 I was in a small hospital ship up the Dvina, where we were engaged in protecting the Russians from the Bolsheviks! This led, alas, to initiation into the attractions of black-marketing, and (to my shame) I learnt a bit of the trickery of the fur trade. Incidentally, the little ship was posted as "lost with all hands" on the way home across the North Sea; but this was an exaggeration. Other happy little jobs came my way, such as that of medical officer to the British Olympic teams in Antwerp in 1920. I even got a kick out of being M.O. at the Naval and Mi Tournament.

My first post-Navy venture was an ill-fated cine graphic expedition into French West Africa, cannibals, pigmy tribes, wild beasts, and wh Alas, funds failed and we never even made Timb I worked my passage home to Cardiff with a monkey, Zuzu, as my most cherished possession liquidate debts I was in a cable ship off the west of South America for three years. Apart from trip the Amazon and to the Paulo Alfonzo Falls—fun waterfalls have always attracted me—and a sp practice on a convict island, this was dull going. was almost criminal error on my part *not* to get hom the Andes and up the east coast. It led, howev the next dozen years or more in the Merchant proper, with voyages to North and South China, Japan, India, Australia, and New Zealand say nothing of many cruises round Europe, the New West Indies, and other parts.

In spite of Dr. Brett Young's scathing remar in his *Jim Redlake*, I think, that he characterises the surgeon as a slovenly, elderly man with a scurfy collar and a breath heavily charged with whisk orange-peel—there is much to be said in favour of doctoring, especially for a bachelor. I believe the much-discussed "status of the ship's surgeon" is steadily rising. But he may as well disabuse his right now of the idea that it is possible to "read board. Another fallacy is that a ship's surgeon more or less a sinecure. A modern ship is often a m machinery, and the doctor who has charge of thousand souls or more on board with three or four tious diseases, a couple of confinements, and an ap is not devoid of responsibility. The fact that he no cares of house or car or domestics and almost *night work or bad debts is on the* credit side. There undoubtedly debits, including perhaps a superfic of professional outlook. Many might not care for uniform or the discipline, or for the dictum that passenger is always right." And one *does* weary of with actual or prospective patients. But the surgeon certainly learns to exercise an infinity of tact judgment, and (among other things) to em. Incidentally, I once tried for a few days keeping watch in the stokehold in the tropics, and learnt thing at first hand about fireman's cramp.

Between voyages I used to do "locums" at hospitals—often at the same *friendly one*. The pat greeting, "Glad to see you back, doctor—you're one of us, you know," provided food for refle Anyway, I was stimulated to try for a D.P.M., and my intense astonishment, I got it.

In the last war, apart from a few months in a doing naval experimental work and a brief spell as R.A.M.O., I was mostly engaged in civil-defence But I had some useful experiences, too, as a privat Home Guard. Only fairly recently have I got into habit of taking such novel-to-a-doctor holiday cherry-picking, hopping, and agricultural labour *find in such work real recreation, especially* as I the time being no longer "doctor" or even but, more often than not, "that bleeder, Jim."

In an effort to forget and to round off things after war, I went in a newly built factory ship on an Ant whaling expedition. It was extraordinarily inter and often exciting. My panel was some 1000 men, rather fierce climatic conditions and with a huge f going night and day for five months or so. Oddly the need seemed to be for a psychiatrist rather th a physician or surgeon. There were great opport for research in comparative anatomy and oceanogr Incidentally, the *goodness or badness* of a season not affect the surgeon financially, for he alone personnel is not entitled to bonus.

Many of the delights of a fixed home and practice escaped me; but there is a great store of memories almost every day one finds that the rolling stone's ground helps not a little in the human approac patients—and others. Any road, as they say, from present peaceful backwater of a P.O. cable ship I write "no regrets"—except for the thousand and things that I have *not* done.

J. L.

itional beds are being secured for WESTMINSTER CAL medical school. The Infants Hospital, t Square, and All Saints' Hospital have already amalgamated with the Westminster, and two amalgamations are anticipated. The total r of beds for teaching is expected to rise to 700 years, and eventually to 1000. It is hoped that school, with anatomy and physiology depart- will be completed within five years; the annual may then be increased from 40 to 80 or 100. The ilum has been revised. The number of set lectures en increased, and the teaching, formerly in three has been divided into four terms a year. A three- course is now given in the new pædiatric unit. ime directors of the departments of medicine, y, and obstetrics and gynæcology have been ited to coördinate teaching. The Westminster, ts small number of students, is able to provide ant experience of midwifery, and in future students evote three months continuously to the theory practice of the subject. From September each it will reside for a fortnight in an infectious- es hospital. Proposals submitted to the university le the provision of full-time chairs of biochemistry, ine, and surgery. Wednesday afternoons have been for games; and formal instruction ceases for three in August. A health supervisory service will be ited in October; the scheme will include an annual al inspection, under the direction of a physician will be available for consultation at any time. en students, amounting to 15% of the annual will reach the school from King's College in 1948. Two courses for R.A.M.C. officers have been luring the past year.

he SCHOOL OF DENTAL SURGERY of the ROYAL DENTAL TAL of London the curriculum for the first two years es the study of dental mechanics, dental prosthetics, roperties of dental materials, general anatomy and ology, and special anatomy and physiology. The ny and physiology courses are held at King's College Strand. For the second two years students attend es and clinics on general medicine and surgery at Charing Hospital medical school, and lectures and practice in l surgery at the dental school.

Other English Schools

DURHAM UNIVERSITY up to 95 students are now ted each year. It is very difficult to absorb this er in the clinical departments, and the university l, therefore, welcome a decrease in numbers. The luctory clinical course is being reorganised in dance with the recommendations of the General cal Council. The whole-time chair of psychological cine has now been filled, but teaching for the diploma ins in abeyance until the new department is firmly lished. The teaching of anæsthetics is also under w following the appointment of a reader in anæs- s and director of the anæsthetics department in eaching hospital. The recently established Nuffield rtment of Industrial Health is embarking on its amme of laboratory and field research; in con- ion with the department of medicine it is taking in undergraduate teaching. Postgraduate teaching ublic health is being resumed, and the first e for the certificate and diploma will start in ber.

e UNIVERSITY of BIRMINGHAM * introduced last the teaching of anatomy and physiology as a single rated discipline. The scheme is flexible, and rience may dictate adjustments; but so far the riment has been entirely successful. Among the advantages claimed for this innovation are the breakdown of artificial barriers between the preclinical subjects, and the pruning of unnecessary detail. It is proposed that in future each senior student shall reside for two weeks in the city's infectious-diseases hospital. A course on tuberculosis is to be introduced in the final year. Full-time professors have been appointed in the departments of medicine, surgery, obstetrics and gynæcology, and pædiatrics and child health; and lately a full-time first assistant has been appointed to each of these departments. Chairs have also been established in medical statistics and in neurology; and further chairs are to be set up in psychiatry and in neurosurgery; with lectures in neuropathology, neuro-anatomy, and neurophysiology, the three related departments will form a school of neurological studies. The department of social medicine has got under way; and the course for the D.P.H. has been re-established.

At the UNIVERSITY OF LIVERPOOL * formal lectures during the last three years are to be concentrated into the mornings of two days each week; there is a particular need for this rearrangement because the teaching hospital is composed of four separate units, three of which are at some distance from the university. The teaching of pathology and bacteriology has been spread throughout the fourth, fifth, and part of the sixth years, thus avoiding the professional examination in pathology at a time when students should be concentrating on clinical clerking and dressing. A beginning has been made with the scheme for selecting some half-dozen of the best second M.B. candidates for an honours B.SC. in physiology; competition is keen. Scholarships covering at least the fees of the additional year are granted to the best candidates. In postgraduate teaching full-time courses have been introduced not only for the M.CH.ORTH. and for the M.RAD., but also for the CH.M. This venture aims at a combination of academic and clinical teaching; it is open to graduates of all universities, provided that they have previously covered their instruction in anatomy and physiology, and have held registrarships in surgery and/or lectureships or equivalent experience in anatomy, physiology, and pathology.

MANCHESTER UNIVERSITY * now has well over a thousand applications for the hundred or so places it can offer each year. In line with the establishment of a full-time chair of medicine in 1945, a full-time chair of surgery was established last December, and an appointment has recently been made to the new chair of child health. A pathological director has been appointed to the new centre for the study of chronic rheumatism. Postgraduate training is being developed in a number of special subjects—occupational health, child health, orthopædic surgery, cardiology, hæmatology, neurology, radiodiagnosis, radiotherapy, and ophthalmology.

At the UNIVERSITY OF LEEDS * the intake cannot be increased beyond 75 each year without further building. The undergraduate course once more extends to five years and two terms. The 1st M.B. course is closely integrated with the rest of the curriculum: the teaching in zoology is designed as an introduction to anatomy and physiology, and the standard of organic and physical chemistry studied in this course is in most other schools reached only at a later stage. Under Ministry of Labour regulations the Leeds 1st M.B. course is recognised as "medical course proper"; and the university does not generally grant exemption from it. During the course attendance at a class of medical mathematics is required of all who have not reached "principal" standard in mathematics in the higher school-certificate examination. During the first year of the 2nd M.B. course undergraduates are encouraged to attend classes of general cultural value. For the doctorate of medicine a thesis is now once more required, and usually there will also be an examination. A chair in forensic medicine has been established. For rheumatic research the appointment of a full-time director and of a research fellow has been approved. It is hoped that the recent establishment, with the help of the University Grants Committee, of scholarships enabling gifted students to interrupt their medical training in order to take an honours B.SC. degree in one of the

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entrance requirements for the Universities of Manchester, iverpool, Leeds, Sheffield, and Birmingham are laid down in the amphlet *Qualifications for Entry upon a Degree Course*, copies of which may be obtained from the Secretary to the Board, 315, Oxford Road, Manchester, 13. War Emergency Regulations are lso in operation but will be withdrawn on Dec. 1. Any andidate satisfying those regulations before that date will be ualified to enter upon a degree course at any time. Additional aculty requirements may, however, be imposed: details can be obtained from the dean of the faculty of medicine in each

This autumn the departments of anatomy and physiology are to be reopened at CHARING CROSS HOSPITAL medical school, under the direction of professors appointed by the university. For the past 36 years students have attended King's College for preclinical teaching. Under the new arrangement they will have a better chance of appreciating the vital link between the preclinical subjects and subsequent clinical work; in the wards will be demonstrated the breakdown of some of the normal functions studied in the physiology department, and conversely clinical students will be able to return to the preclinical departments during their clerkships. The change necessitates considerable alterations and extensions to the school buildings; at the same time accommodation will be made for women students, who are now to form 20% of the annual entry. Despite setbacks, it is hoped that the work will be completed in time for the opening of the term on Oct. 13. This extension is designed to cover only the interim period until the new medical centre, with a 1000-bedded hospital and a school for 100 students, is built at Harrow. A feature of the teaching is the emphasis on outpatients' work; all the senior members of the honorary staff teach in the outpatient as well as the inpatient department; and clerks are allotted outpatient cases, which they follow through up to discharge.

ST. GEORGE'S HOSPITAL, with 103 clinical students, is one of the smaller schools. The firms are small, the number in each not exceeding 6–8. Women have been accepted for training since 1945; they have done extremely well. The principal factor limiting intake is the size of the pathology laboratory, which can accept at the most 30 students. The new midwifery department, opened during the past year, has a large enough turnover to provide all the cases needed by undergraduates. During the year a 3-month introductory course to link anatomy and physiology with clinical work has been started; this includes instruction in methods of examination, and emphasis is placed on the normal and variations in the normal. A sister-tutor lectures on some aspects of nursing.

At GUY'S HOSPITAL medical school the aim has always been to encourage students to accept responsibility as early as possible, rather than to spoon-feed with too much organised teaching; but during the war, with fewer beds, increased reliance was placed on systematic lectures and demonstrations, and to some extent this continues. The object is to make good doctors rather than good examination candidates. The policy of encouraging postgraduate appointments has been successful. It was at first thought by some that, with loss of beds from bombing, few postgraduates could be accommodated. This has not proved to be so, and frequent applications for the extension of appointments are believed to reflect the usefulness of these posts rather than uncertainty about future employment.

KING'S COLLEGE HOSPITAL medical school has always included a proportion of women in its annual entry; at the present time this proportion is about 25% of the total. With some overcrowding it would be possible to increase the number; but further building, and especially more student accommodation, such as common-rooms, is needed. The school takes students only for the clinical course. The appointment of directors of clinical and pathological studies foreshadows a closer integration between the different divisions of medicine and surgery. A special feature of the teaching at King's is the system by which members of the honorary staff hold special tutorial classes.

The LONDON HOSPITAL was damaged during the war and is now maintaining 630 beds, but by October 694 will be available; this, under existing circumstances compares favourably with the 894 beds which were maintained before the war. Nevertheless, it is hoped that priority for rebuilding damaged wards will be granted by the Ministry of Health. An annexe of 260 beds is still being maintained at Brentwood, where students attend for special classes and demonstrations, particularly in tuberculous diseases of the chest.

ST. MARY'S HOSPITAL medical school, which completely rebuilt and opened shortly before the has carried out a number of improvements to laboratories in the chemistry, physics, anatomy, physiology departments and to the medical Women students are being admitted in October, a temporary building to give increased accom tion for them will be constructed during the session. The introductory clinical course, was commenced last October to help students the transition from preclinical to clinical has been a great success, and liaison with hospitals has added to the number of beds teaching.

The MIDDLESEX HOSPITAL is still taking advant the resources for clinical teaching at the Central Mi Hospital, Willesden, as well as at the Mount Hospital, Northwood: students attend at one of these hospitals for three months, the remainder clinical instruction being received at the Hospital itself. Twelve women students have accepted for the coming session. Special con held for those intending to sit the exam for the diploma in radiology and for the F.R.C.S. Two new chairs, one in clinical and the other in clinical surgery, have been tuted this year; and readers have been app to the departments of bacteriology, anatomy, physiology, each of which is already headed professor.

The LONDON (ROYAL FREE HOSPITAL) School MEDICINE FOR WOMEN is to admit men this the first time. Accordingly, the title of the has been changed to the Royal Free Hospital of Medicine. Next year the entrance exami is to be abandoned; candidates will be selected interviewing committee. The buildings are very crowded, but repairs to the damage caused by in February, 1945, were completed by the beginn last session, and all departments are open again. hoped that an extension of the buildings on an adj site will soon be possible; this will allow of some sion in numbers. Facilities for clinical teaching been increased by the reopening of still more at the Royal Free Hospital, and by expansion annexe at the old London Fever Hospital in Liv Road.

From next October all ST. THOMAS'S HOSPITAL stu will be taught in London. The division of the into two parts, one in London and the other at Hyd has not been successful, and its continuance would difficult for both staff and students. It was de in 1937–38 that the school should be rebuilt; and hoped that priority may be granted for this pu The hospital is also to be rebuilt and may event have 1000 beds on one site. In the meantime, the is to have 500 beds open by the end of this year over 600 soon after, but some of these will be in temp accommodation. Clinical training is gradually centred round academic units of medicine, sur and midwifery and gynæcology, which will ultim take over the coördination of all teaching in departments.

The WEST LONDON HOSPITAL continues to women students who have completed their prec course. This year entrants will number about 30, is the largest intake possible under present condi The nearby Fulham L.C.C. hospital, where the the school has charge of beds, is being increasingly for clinical instruction. The university has asked school to become a member of the Postgraduate F tion with a view to training specialists in general and general surgery. This proposal, which would the abandonment of undergraduate teaching in near future, is under consideration by the govern the school. There is every prospect that students at the school, and others to whom vacancies have promised will be able to complete their training at the West London Hospital or at one of the London schools.

dmitted by competition in the preliminary examina- and the schools accept women as well as men.

QUEEN'S UNIVERSITY, BELFAST, limitation of entry be continued; and during the coming session 112 nts will be admitted. Applicants numbered over there is a carefully graded system of priority, first ity at the moment being given to ex-Service men vomen of Ulster origin. During the past year a new culum has been introduced in accordance with the ral Medical Council's report. A new full-time chair rgery has recently been filled; and a full-time chair cial and preventive medicine has been created. The al departments are to be rebuilt on the Grosvenor l site, so that they will be near the teaching hospital h is already on this site. It is hoped that at least orary buildings will have been erected within a

The NATIONAL UNIVERSITY OF IRELAND has colleges in Dublin, Cork, and Galway.

At UNIVERSITY COLLEGE, DUBLIN, a new scheme for limiting the number of students has been adopted; students will be selected by the results of the premedical examinations. Owing to increased costs, it has been necessary to raise the college fees payable by new students.

At UNIVERSITY COLLEGE, CORK, zoology has been transferred from the first year of the professional course to the premedical year.

At UNIVERSITY COLLEGE, GALWAY, students must now pass the premedical examination within two years of starting the course; and they must pass the first and second medical examinations within two years of passing the previous examination.

Degrees and Diplomas

EXAMINING BOARDS

ish, Scottish, and Irish Conjoint Boards

IE Examining Board in England of the Royal College 'hysicians of London and the Royal College of eons of England examines candidates for the ifying diplomas of M.R.C.S., L.R.C.P. Candidates fying the board's regulations in regard to the minary examination in general education are ble for admission to the premedical examination in nistry, physics, and biology, and are required to plete the professional curriculum subsequently at a gnised medical school. The emergency regulations oduced as a war measure will hold until further notice. er these, the medical course has been reduced from o 54 months, and candidates are admissible to the subject of the final examination after 30 months linical study instead of 33. The regulation permit- a candidate to enter for one part of the final after months of clinical study still holds. Some other -time concessions are still authorised in the regula- s: for example, clinical study may be undertaken ny hospital provided the dean of the candidate's ol is satisfied as to the instruction available and s the certificate of study. Other modifications will ound in the Emergency Regulations, copies of which, 1 a calendar showing the dates of examinations, may obtained, free of charge, from the secretary to the mining Board in England, the Examination Hall, en Square, London, W.C.1.

he Royal College of Physicians of Edinburgh, the al College of Surgeons of Edinburgh, and the Royal ulty of Physicians and Surgeons of Glasgow have an ngement by which, after one series of examinations, l in Edinburgh or Glasgow, or both, the student may ain the diplomas—designated by the letters L.R.C.P.E., .C.S.E., L.R.F.P.S.G.—of all three bodies. Candidates y work for the examination of the Scottish Con- it Board at any of the recognised medical schools reat Britain and Ireland. The course lasts only five rs and includes, in addition to the pre-registration mination, four professional examinations: the pre- dical examination (biology, chemistry, and physics); second examination in anatomy and embryology, siology, biochemistry, and biophysics; the third in hology and bacteriology and pharmacology; and final in medicine, surgery, midwifery, forensic dicine, and public health. Details may be had from registrar, 18, Nicolson Street, Edinburgh.

he Conjoint Board of the Royal College of Physicians Ireland and Royal College of Surgeons in Ireland epts candidates for the L.R.C.P.I. and L.M., L.R.C.S.I. l L.M. from most of the recognised medical schools at ne and abroad. Full details of the regulations can be ained from the registrar, Royal College of Surgeons Ireland, Dublin.

othecaries' Licences

The Society of Apothecaries of London grants the I.S.S.A. Lond. to candidates who pass in the primary examination (which is held quarterly) and the final examination. Final examinations are held monthly, except in September. The minimum period of study is normally five years. The four parts of the final examination may be taken together or in any order. Regulations and a schedule of the required courses of study may be obtained from the registrar, Apothecaries' Hall, Black Friars Lane, E.C.4.

The Apothecaries' Hall of Ireland grants the diploma L.A.H. Dubl. to students who have passed the three professional examinations. The diploma confers on holders the right of registration on the Medical Registers of Ireland and Great Britain. Examinations are held three times yearly, in March, June, and November. Further information may be had from the registrar, 95, Merrion Square, Dublin.

UNIVERSITY DEGREES

Bachelor of Medicine and Surgery

All the universities in the United Kingdom offer baccalaureate degrees in medicine and surgery, conferred on the results of examination.

HIGHER QUALIFICATIONS

Those who have graduated in medicine and surgery are at liberty to seek higher qualifications if they wish.

Doctor of Medicine and Master of Surgery

Graduates holding a bachelor's degrees can take the degree of Doctor of Medicine or Master of Surgery. All the universities in Great Britain and Ireland confer such degrees. The requirements vary and can be obtained from the different universities. London University offers the M.D. in general medicine, and in pathology, psychological medicine, midwifery and diseases of women, hygiene, and tropical medicine; the M.S. is obtainable in general surgery, and in dental surgery, ophthalmology, and laryngology, otology, and rhinology. At the University of Durham the degree of Doctor of Surgery (D.CH.) is offered in addition to the degree of Master of Surgery (M.S.). Liverpool offers the orthopædic degree of M.CH. ORTH.

Master in the Science of Obstetrics and Master of Midwifery

The Irish universities grant the degree M.A.O. The Society of Apothecaries of London grants the Mastery of Midwifery (M.M.S.A.) upon examination in obstetrics, pædiatrics, and public health. The examinations are held in May and November, and regulations may be obtained from the registrar, Apothecaries' Hall, Black Friars Lane, E.C.4.

MEMBERSHIP AND FELLOWSHIP

The Royal College of Physicians of London confers the Membership (M.R.C.P.), which is obtained by examination. Examinations are held four times in each year, and medical graduates and licentiates of the college over twenty-three years of age may sit for it. Details can be obtained from the secretary, Royal College of Physicians, Pall Mall East, London, S.W.1. Fellows of the college are elected annually at a general meeting of the college.

preclinical or ancillary sciences, will help to augment the supply of research-workers.

At SHEFFIELD UNIVERSITY * a revised curriculum will be introduced in October. The conditions under which exemption from the 1st M.B. examination may be granted have been extended. Five terms in the second and third years will be devoted to anatomy and physiology, followed by the 2nd M.B. examination, in these subjects, in March of the third year. This will be followed by a three-month introductory clinical course and instruction in the elements of pathology, bacteriology, and pharmacology. The subsequent period of clinical study will occupy 36 months. Students will sit the final examination (in medicine, surgery, and midwifery and gynæcology) in June of the sixth year. The first part of the third examination (in pathology, bacteriology, and pharmacology) will be held in the preceding June, and the second part (in forensic medicine, social medicine, and public health) in December. A number of full-time clinical teachers, including professors of medicine and child health, have been appointed. The departments of anatomy and physiology have been considerably extended, and the anatomy department is to take over the teaching of histology. A full-time dean of medicine has been appointed in view of the increase in administrative work. Plans have been prepared for a new medical school and a new teaching hospital.

BRISTOL UNIVERSITY, like others, has problems of accommodation. Temporary additional buildings have been erected for the departments of anatomy, physiology, and pharmacology; and the pathology department has been expanded by adaptation of an existing building. New construction for the departments of medicine and surgery is under way. These additions will enable the school to take, in moderate comfort, an entry half as great again as the pre-war number. Additions have also been made to the students' halls of residence, and the university has purchased a number of houses which are being let as flats to members of the staff. Departmental staffs are being considerably augmented. With the object of lightening the heavy burden in the part-time post of dean, the university has decided that the office shall rotate among the professors in the faculty. Responsibility for preclinical students will pass to the new post of preclinical tutor; the clinical dean will become responsible for clinical students; and administration of the faculty will pass to the university registrar. The director of postgraduate students will continue as hitherto, to deal with all postgraduate business. The new chair of child health has just been filled, and two new full-time dental appointments have been instituted —a chair in dental surgery and a lectureship in children's dentistry.

Wales

The WELSH NATIONAL SCHOOL OF MEDICINE, like other schools, is trying to increase its intake but is badly cramped for accommodation. More clinical than preclinical students can be accepted because the large municipal hospital at Llandough is in use as a supplementary centre for clinical teaching; and a scheme is on foot for enlarging this hospital. There is also a larger plan for a 1000-bedded teaching hospital in the centre of Cardiff; attached to it will be a new medical school, including departments of anatomy and physiology. Medical education in Wales has hitherto been divided between the University College of South Wales and Monmouthshire, and the Welsh National School of Medicine; every student is required to graduate in arts or science at the college before beginning his clinical studies in the School of Medicine. It is felt by some that this arrangement prevents the proper dovetailing of preclinical and clinical work, and that the growth of the clinical curriculum might be compensated to some extent by encroachment on part of the two years now entirely devoted to anatomy, physiology, and organic chemistry. It is conceded that the most promising students should be encouraged to read for an honours degree in science; but as this would involve still another year's work it should be confined to a few of the best.

Scotland

The UNIVERSITY OF ABERDEEN has established chairs in child health and in biological chemistry; these are expected to be filled during the next New building is planned for the departments of health and of child health, in which chairs have set up; and the halls of residence are to be extended take all final-year students, instead of one-third present.

SURGEONS HALL, the school of medicine of the Colleges of Edinburgh, is a teaching body only, and no professional examinations of its own; it offers for the qualifying examinations of the Scottish, E and Irish Conjoint Boards. The school is not of the university.

Each year now the UNIVERSITY OF EDIN receives about 1600 applications for 102 places in first year. A diploma in industrial health was inst last year; and courses for the new diplomas in m radiodiagnosis and medical radiotherapy were also st Under new regulations candidates for the diplo psychiatry are required to spend at least three yea preliminary training, at the end of which they an intensive course at the university.

The medical school of GLASGOW UNIVERSITY is now largest in Britain. The intake to first-year class been increased to allow for the candidates no accepted by the two extramural colleges—Anders St. Mungo's—which have amalgamated with the sity. Since the present students of these colleges be absorbed into the university classes there will very heavy pressure on the school. The university still lasts five years, but it will certainly be extended six years from October, 1948.

At the UNIVERSITY OF ST. ANDREWS emphasis is on premedical subjects, which are taught mainly introduction to scientific discipline, though not with some vocational bias. In the period of c training every effort is made to maintain the in of the student in the laboratory services of the d ments of pathology, pharmacology, and bacteriolog for example, in the systematic course on surgery study of the pathology, bacteriology, and therap of inflammation is correlated. The teaching of p health and bacteriology has for many years been simil coördinated so that together these constitute a course preventive medicine. The final clinical year is d to intensive courses in the three main divisions of final examination. During these courses undergrad are attached to and take part in the day-to-day work surgical, medical, and obstetric wards for periods of months in each. The value of this arrangement has enhanced by the appointment during the past y of whole-time lecturers responsible for ensuring these courses are arranged to best advantage and performed conscientiously.

Ireland

TRINITY COLLEGE, DUBLIN, is accepting a consid number of ex-Servicemen, including students of school who voluntarily interrupted their studies to in the British Army. The authorities insist on a general education as being the best background for medical graduate. The long-standing practice wh all medical students are required to take modified c and examinations for the degree of B.A. is still follo Some teaching in general science at school is a preliminary to admission; but all students are requ to take at Trinity College the full premedical cou chemistry, physics, botany, and zoology. For the time Trinity College is receiving an annual grant the Irish government. This will make it possible fo number of teachers to be increased and for ce departments to be developed; priority is to be gi the establishment of a department of social medic

The SCHOOLS OF SURGERY, DUBLIN, incl Carmichael and Ledwich Schools, are attached by to the Royal College of Surgeons in Ireland. St ynx, and larynx. The final examination for the .s. may be taken in otolaryngology.

sthetics

e English and Irish Conjoint Boards offer diplomas næsthetics (D.A.). Candidates must have special ience in giving anæsthetics.

l Health

plomas in child health (D.C.H.) are granted by the sh and Irish Conjoint Boards; also by the National ersity of Ireland, with a course at University ge, Dublin.

rculous Diseases

aminations for the diploma in tuberculous diseases D.) of the University of Wales have been ned.

eriology

plomas in bacteriology are granted by the univer- of London and Manchester. The London course. at the London School of Hygiene and Tropical cine, has been resumed; it begins in October and one academic year. The Manchester course is to sumed this October.

cal Pathology

e University of London offers a diploma in clinical ology (D.C.P.), for which a year's course of study is ired.

lical Medicine

e English Conjoint Board offers a diploma in ical medicine (D.PHYS.MED.). Candidates must have a registrable qualification for two years, and must had two resident appointments occupying not less a year.

opædics

verpool University offers the degree of M.CH.ORTH.; course for it lasts fifteen months.

strial Medicine

e University of Edinburgh, the Society of Apothe- s of London, and the English Conjoint Board offer omas in industrial health (D.I.H.). The course for the burgh diploma, instituted last year, lasts nine ths.

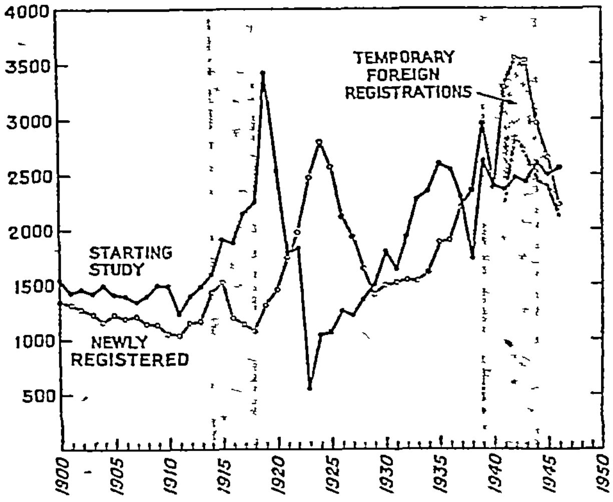
DENTAL DEGREES AND DIPLOMAS

ere are schools of dentistry at the universities of London, am, Birmingham, Liverpool, Manchester, Leeds, Sheffield, ol, St. Andrews, Belfast, and Dublin; and at the Univer- Colleges of Dublin and Cork, in the National University eland. London University offers a B.D.S., and an M.S. ntal surgery; it also prepares students for the L.D.S. of Royal College of Surgeons. This college has lately insti- d a fellowship in dental surgery (F.D.S.) Leeds grants a oma (L.D.S.), a baccalaureate degree (B.CH.D.), and master- (M.CH.D.). The University Colleges of Dublin and Cork t a B.D S. and a M.D.S., and Trinity College, Dublin, offers DENT.SC. and a M.DENT.SC. All the other universities tioned offer L.D.S., B.D.S., and M.D.S.; St. Andrews s a diploma in public dentistry (D.P.D.) in addition. nces in dentistry are granted by the Royal College of eons of Edinburgh, the Royal Faculty of Physicians and eons of Glasgow, and the Royal College of Surgeons in nd.

. . . Throughout the mammalian world the perpetuation he species has depended entirely, and in all but the latest e of human history mainly, on sexual not on parental ncts, the latter being unfolded in due course, through nological sequences, only upon the birth of the young. fact that many births, and possibly an increasing pro- ion, are planned does show, however, that parental incts are not without their effect; and the only serious blem is whether, *after contraception has severed them from sexual precursors*, they can be made effective enough to ent race suicide."—*Eugenics Review*, editorial, July, 1947,

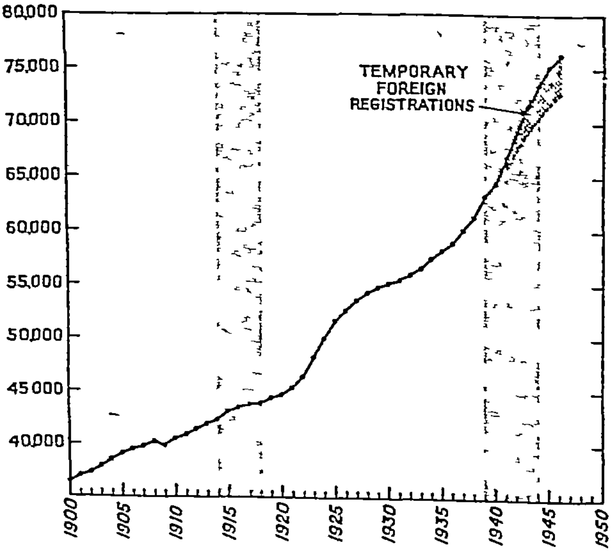
REGISTRATION

No-one is a legally qualified medical practitioner unless his name appears on the Medical Register kept by the General Council of Medical Education and Registration of the United Kingdom. The council is a standardising body, ensuring that there is a prescribed minimum of medical education and examination requirements; it is also responsible for discipline within the profession.



Numbers starting study and qualifying.*

The approximate number of second-year students admitted to medical schools in the United Kingdom and in Eire during each of the academic years 1945–46 and 1946–47 was 2600. The number of newly qualified in 1945 was 2277 and in 1946 was 2237. When temporary registration of colonial and foreign doctors ceased on Feb. 24, 1946, 825 colonial practitioners and 3551 foreign practitioners had been temporarily registered since 1940. Temporary registrations were to have been withdrawn on Dec. 31 of this year; but under the Medical Practitioners and Pharmacists Bill, now before Parliament, their duration is to be extended to allow of application for transfer to the permanent register.



Numbers on the Medical Register.

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*The numbers shown as starting study are taken from the Medical Students' Register up to 1938; and since then from returns made by the medical schools to the General Medical Council. Both forms of registration are incomplete, but latterly returns have been received from almost all schools.

The Royal College of Surgeons of England grants a fellowship to those passing the primary and final F.R.C.S. examinations. The primary examination is open to those who hold *a qualification registrable in the British* Medical Register and to graduates in medicine and surgery of universities and medical colleges recognised by the council. Subjects of the primary examination are anatomy (including normal histology), applied physiology, and the principles of pathology. The final examination can be taken in general surgery, ophthalmology, or otolaryngology. To be admitted to the final examination in general surgery candidates must produce evidence of having been engaged in acquiring professional knowledge for not less than two years (increased to three years as from 1919) after taking a medical qualification, and of having held the requisite resident surgical posts during a part of that time. Candidates for the final examination in ophthalmology or otolaryngology must have been qualified for three years and must have held general and specialist resident posts during an aggregate period of eighteen months. The primary examination is now held in April and October; but from the beginning of 1948 it will be held in January and July. The final examination is still held in May and November. The college also grants a fellowship in dental surgery for which there is a primary examination in applied anatomy, and applied physiology and the principles of pathology, with special reference to the teeth and jaws, and a final examination in surgery, oral pathology, and bacteriology, and dental surgery. Copies of the new regulations and full particulars may be obtained from the examinations secretary, Examination Hall, Queen Square, London, W.C.1.

Medical graduates who have been registered, or eligible for registration, for at least three years may apply for examination for membership of the Royal College of Obstetricians and Gynæcologists (M.R.C.O.G.). Particulars of the regulations may be obtained from the secretary, Royal College of Obstetricians and Gynæcologists, 58, Queen Anne Street, London, W.1.

The fellowship (F.R.C.O.G.) is granted to members who are judged by the council to have advanced the science and art of obstetrics and gynæcology.

Graduates may become members of the Royal College of Physicians of Edinburgh (M.R.C.P.E.) on passing an examination, particulars of which may be obtained from the secretary, 9, Queen Street, Edinburgh, 2.

The fellows are selected from among the members *by the council of the college, and receive the designation* F.R.C.P.E.

Fellowship of the Royal College of Surgeons of Edinburgh (F.R.C.S.E.) is granted to medical graduates who pass the required examination; particulars of the regulations may be obtained from the clerk of the college, Surgeons' Hall, 18, Nicolson Street, Edinburgh.

The Royal Faculty of Physicians and Surgeons of Glasgow grants, after examination, *a fellowship registrable* by the G.M.C. as an additional qualification (F.R.F.P.S.G.). Admission is by examination and subsequent election. The candidate, who must be a licentiate of *the faculty or a graduate in medicine of a university or* medical college approved by the faculty, may be examined either in medicine or surgery. A candidate having practised a specialty for at least seven years may be examined in that special subject if the council of the faculty approves. A candidate may also submit original published work, and if this is of sufficient merit he may be excused part of the examination. Details may be had from the secretary of the Royal Faculty of Physicians and Surgeons, 242, St. Vincent Street, Glasgow, C.2.

Membership of the Royal College of Physicians of Ireland (M.R.C.P.I.) is granted on the result of an examination, the details of which may be obtained from the registrar of the college, 6, Kildare Street, Dublin.

Fellows are elected by ballot from among the members, and receive the designation F.R.C.P.I.

Graduates seeking the fellowship of the Royal College of Surgeons in Ireland (F.R.C.S.I.) must pass in two examinations, a primary in anatomy, physiology, and the principles of pathology, and a final in surgery. Further particulars may be obtained from the registrar, the Royal College of Surgeons in Ireland, Dublin

The Faculty of Radiologists offers a fellowship (F.F.R.) to medical graduates of five years' standing who have spent at least one year in general clinical work at an approved hospital, have practised radiology exclusively for three years, and have held a radiological diploma for at least two years. Candidates are required to pass an examination and submit a thesis. Candidates who hold higher medical or surgical qualifications may be exempted from the examinations in general medicine, general surgery, or pathology. Full particulars may be obtained from the warden, the Faculty of Radiologists, Lincoln's Inn Fields, London, W.C.2.

SPECIAL DEGREES AND DIPLOMAS

The regulations for the following diplomas can be obtained by applying to the examining bodies concerned.

Public Health

A diploma in public health (D.P.H.) is granted by the English and Scottish Conjoint Boards, and all the universities of the United Kingdom, except Oxford, Cambridge, and Sheffield.

Courses for the D.P.H., suspended during the war, have been resumed in most places, with curricula revised to meet the new G.M.C. requirements.

Psychological Medicine

The universities of London, Durham, Leeds, Manchester, Bristol, Edinburgh, Belfast, Ireland (National University), and the English and Irish Conjoint Boards offer diplomas in psychological medicine. (*The University of London also grants a diploma in psychology* taken chiefly by social workers.) The courses for the diploma have not all been resumed.

Radiology

The Faculty of Radiologists grants a fellowship (F.F.R.), which has already been mentioned. The University of London grants the D.M.R. Bristol and Edinburgh Universities and the English Conjoint Board offer two diplomas: one in medical radiodiagnosis (D.M.R.D.) and one in medical radiotherapy (D.M.R.T.). The Leeds University course has been extended from one to two years; the Bristol and Edinburgh courses for the D.M.R.D. last eighteen months, and for the D.M.R.T. two years. The M.RAD. of Liverpool University is granted in either radiodiagnosis or radiotherapy after a two-year course. An eighteen-month course for the D.M.R.D. is to be started at the Welsh National School of Medicine in October.

Tropical Medicine

A diploma in tropical medicine and hygiene (D.T.M. & H.) is granted by Liverpool University jointly with the Liverpool School of Tropical Medicine, by the University of Edinburgh, and by the English Conjoint Board. Courses are held at the Liverpool School of Tropical Medicine and at the London School of Hygiene and Tropical Medicine.

Gynæcology and Obstetrics

Medical graduates who are on the British Register or eligible for registration on it, may apply to the Royal College of Obstetricians and Gynæcologists for examination for the diploma in obstetrics (D.OBST.). The University of Dublin also offers a diploma (D.G.O.) for which a course is held at Trinity College; candidates spend six months as residents in one of the three Dublin maternity hospitals. The Mastery of Midwifery granted by the Society of Apothecaries of London has already been mentioned.

Ophthalmology

Three examining bodies issue diplomas in ophthalmology—the University of Oxford (granting the D.O.) and the English and Irish Conjoint Boards (granting the D.O.M.S.). The final examination for the F.R.C.S. Eng. can now be taken in ophthalmology.

Laryngology and Otology

The English Conjoint Board offers a diploma (D.L.O.) for those who have made a special study of the ear, ospital administration has been one of the main ccupations of the M.O.H. of the large county borough ounty in the last sixteen years. The National Health ice Act provides for the transfer of hospital and ialist services to new regional boards. There will be ical administrative posts in the hospital service of future, but the public-health service, as such, will be l from the burden of hospital administration and led to concentrate on preventive medicine. The ts of contact with the specialist services will be y, and full development of the social services of ital and health department should lead to closer gration in the future.

he mode of entry to the service will probably not, as he past, be through the clinical side but through stant administrative posts concerned with control of ctious diseases and organisation of clinic services. s there will be far less likelihood of medical officers have taken postgraduate qualifications in public th devoting the rest of their professional lives to ical work in a limited field. The very fact that e who undertake clinical preventive work will also ngaged in curative work will bring the administrative lical officer responsible for the organisation of clinic ices into far closer contact with his professional eagues.

he curriculum for the diploma in public health now vides a first part which is suitable for men engaged uberculosis or veneral diseases. A certificate is given those who pass the examination for part I only. course for part II provides for those who intend to e the diploma and enter the public service. Possession a D.P.H. is necessary for anyone now seeking ointment as a medical officer of health.

INDUSTRIAL MEDICAL SERVICES

HE term "industry" includes not only work in tories but also that in mines and quarries, transport lertakings, agriculture, and fisheries. The industrial dical services are at present unevenly developed, but re is growing realisation that the health of industrial rkers should be safeguarded in their work-places as ll as in their homes. The reasons for this recognition not wholly altruistic, for it is now recognised that tput depends on the health and wellbeing of the rkers. In this period of transition it is not possible forecast the final form of the industrial medical vices, but it is likely that they will be integrated with National Health Service. In any case, many doctors the future will find their life's work in industrial or cupational medicine. University chairs devoted to subject have been set up at Manchester and Durham, d readerships at Glasgow and Edinburgh. The newly ablished chairs of social medicine at Oxford and rmingham also include industrial medicine within their rms of reference, and students are likely to hear more out this subject in their undergraduate courses. Postaduate courses are held from time to time in London, rmingham, Sheffield, and Manchester. Diplomas in dustrial health have recently been instituted by e Society of Apothecaries, the Conjoint Board of e Royal Colleges of Physicians and Surgeons, and linburgh University.

Several Government departments deal with various pects of the industrial medical services. For instance e Post Office, which employs more workers than any her department, has had a medical service since 1855; d since it deals with engineering and manual workers addition to office staffs, it is partly an industrial edical service. The Ministry of Fuel and Power has a ines medical service, described below, which is responble for the health of miners; in addition, the newly rmed Coal Board is setting up its own medical service. he Ministry of Supply has a staff of medical officers hich deals mainly with the health of workers in the oyal ordnance factories. The Silicosis and Asbestos edical Board, which works under the Ministry of ational Insurance, consists of 11 whole-time and some art-time medical officers. In addition about 10 wholeme temporary doctors are employed in the South ales area to assist in dealing with outstanding claims rom miners for compensation for pneumoconiosis. The embers of the board have special experience in dust diseases, and issue compensation certificates to workers who develop silicosis or asbestosis; they also carry out pre-employment and periodical medical examinations of workers in certain industries liable to produce silicosis and asbestosis. A separate board consisting of 3 doctors was set up in Manchester in 1941 to supervise cottonworkers who develop byssinosis and to issue compensation certificates. All workmen's compensation schemes used to come under the Home Office, but they are now administered by the Ministry of National Insurance.

FACTORY DEPARTMENT

The main Government department supervising the health of industrial workers is the Factory Department of the Ministry of Labour and National Service. This department, which dates from 1833, administers the Factories Act, 1937, with its regulations on accident and sickness prevention, hours of work, amenities, first-aid and ambulance rooms, and canteens. The staff numbers about 400, of whom 16 are medical inspectors. All members of the department, whether lay or medical, take part in activities directed towards preventing illnesses and maintaining the health of the factory population. The medical inspectors are at present stationed in London, Birmingham, Liverpool, Manchester, Glasgow, and Wolverhampton; and from these centres they are able to deal with factory health and conditions in any part of the country. Under them 1750 general practitioners give part-time service as factory examining surgeons, examining all young entrants into industry, and periodically all those engaged in specified dangerous processes. They also issue certificates under the Workmen's Compensation Act for scheduled industrial diseases.

WORKS MEDICAL OFFICERS

At the end of 1945 there were 143 whole-time and 903 part-time factory officers. Compared with the 1943 figures, there were 33 fewer whole-time but 153 more part-time doctors engaged in industry. More recent figures are not available, but it can be said that the wartime expansion of factory medical services is being maintained in peace-time. At present works' doctors, except those in Government factories, are paid by private employers or firms; and the workers sometimes tend to distrust the doctors' opinions on this account. In a comprehensive medical service it should be possible to arrange that the doctor is employed by the State or by some other neutral body. Medical officers of factories who are interested in social problems have wide opportunities for their study and can also undertake the teaching of health and hygiene. They can strengthen the bonds between the factory service and the general medical and hospital services, treat accidents, reduce the chances of sepsis, follow up serious cases, and ensure that patients all return to work in the shortest time compatible with adequate treatment and reablement. Inevitably they will have to play an important rôle in the schemes for resettling disabled persons (whether from the fighting or civilian services) in industry. With their first-hand knowledge of the processes carried out and of the physical and mental capacities of the workers, they will be able to place the disabled persons in suitable jobs and keep them under observation.

RESEARCH

Apart from investigations and research into industrial diseases conducted by medical inspectors of factories, mines' medical officers, works' medical officers, and examining surgeons, much fundamental research into environmental conditions has been carried out by investigators of the Industrial Health Research Board of the Medical Research Council. Problems investigated include those of hours of work, lighting and vision, heating and ventilation, accident proneness, and sickness-absenteeism. The investigations have been mainly physiological and statistical, but clinical studies have also been made under the ægis of the Industrial Pulmonary Diseases Committee of the Medical Research Council, and include inquiries into the pneumoconiosis of coalminers and the byssinosis of cotton-workers. It became apparent that more clinical research into occupational diseases was needed, and the council in 1942 appointed a director of research in industrial medicine. In 1943 a department for research was established under the council at the London Hospital, and more recently, in conjunction

The Defence Services

Royal Naval Medical Service

Medical officers are now admitted to the Royal Navy on a short-service engagement of four years or, in the case of National Service candidates who do not wish to serve for this period, are granted temporary commissions in the Royal Naval Volunteer Reserve. Candidates must have had at least six months' experience in a house-appointment. At present no women medical officers are employed. Candidates for the Royal Naval Dental Service are entered on short-service engagements of four years only.

Opportunities are given to medical and dental officers during their temporary service or short-service engagement to apply for transfer to the permanent service. Copies of regulations and forms of application may be had from the Medical Department of the Navy, Queen Anne's Mansions, St. James's Park, London, S.W.1.

Royal Army Medical Corps

No direct applications for regular commissions in the R.A.M.C. are being invited at present. On the nomination of the Central Medical War Committee doctors are appointed to emergency commissions with the rank of lieutenant. After serving as emergency commissioned officers, medical officers have an opportunity of applying for a regular short-service commission under conditions set out in Army Council Instructions, and they may subsequently be considered for permanent Regular Army commissions. Revised conditions for the granting of these short-service commissions are to be announced shortly. Recently qualified doctors wishing to be appointed to emergency commissions should apply to the secretary of the Central Medical War Committee at B.M.A. House, Tavistock Square, London, W.C.1; or, if resident in Scotland, to the Scottish Central Medical War Committee, 7, Drumsheugh Gardens, Edinburgh, 3. Applicants should have held an appointment either as house-surgeon or house-physician for six months.

ROYAL ARMY DENTAL CORPS

As in the R.A.M.C., no direct applications for regular commissions in the Royal Army Dental Corps are being invited at present. On the nomination of the Ministry of Health dental surgeons are appointed to emergency commissions with the rank of lieutenant. Such officers may apply at once for a regular short-service commission under existing regulations, and if selected are eligible for appointment at any time to a permanent Regular Army commission. Revised conditions governing the grant of short-service commissions will be announced shortly. Immediately on qualification dental surgeons wishing to enter the Royal Army Dental Corps should notify the secretary, Ministry of Health, Whitehall, London, S.W.1.

Royal Air Force Medical Branch

A scheme to grant short-service commissions to registered medical men of British nationality who wish to serve in the R.A.F. Medical Branch, or who wish to re-enter the Service, has now been approved. By its terms doctors under 30 years of age on application (for the next few years the age will be 32) will be considered for the grant of commissions for a period of four years on the active list, followed by a period of four years on the reserve. During his service on the active list a medical officer will be considered for the grant of a permanent commission. Should he not be selected for a permanent commission he will be eligible for a gratuity of £600 on completion of four years' active-list service on the short-service commission.

The rank on entry will normally be that of flying officer, but allowance will be made for the full period of any previous service as a medical officer in the Royal Navy, the Army, the R.A.F., or the Indian Medical Service. There are also provisions under which entrants may first engage in a whole-time postgraduate appointment in a recognised hospital, or complete such an appointment if already held; in either case the period of the appointment, up to a maximum of one year, will count towards seniority in the rank of flight lieutenant. Similarly, an entrant who has previously held such a postgraduate appointment may receive an antedate of his commission equivalent to the period of the appointment, but exceeding one year. Accepted applicants will be req to serve in any part of the world and will be required pass an examination by a Service medical board assess their fitness to do so, and also their fitness as passengers. Further particulars can be obtained application to the Under-Secretary of State for (D.G.M.S.), Awdry House, Kingsway, London, W.C.1

R.A.F. DENTAL BRANCH

Those wishing to join the Dental Branch of the R should notify the secretary, Ministry of Health, Wh London, S.W.1. The granting of regular commis suspended during the war, has now been resumed, to satisfactory service in a short-service commission.

Health Services at Home

PUBLIC HEALTH

THIS year is the centenary of the appointment of first medical officer of health. In the past century improvements in environmental hygiene have achieved under the direct control of medical officers health. Gradually the standards they demanded been generally accepted and applied, and the present M.O.H. has less need to supervise this work in than his forerunner. Nevertheless much still remains be done—for instance, in improving rural water-su and urban housing. The medical officer must general control and supervision of this environm work, but its detailed execution he largely delegates sanitary inspectors, health visitors, and others. So long the general control remains with the medical officer in public health, there can be nothing but good in this.

Control of infectious diseases has always been one the main concerns of the M.O.H. The old emphasis on isolation of infected persons has now been replaced by the provision of modern hospital treatment, but there remains the active home follow-up. Bacteriologists made great advances in the identification of diff strains within certain of the pathogenic species, these new techniques, applied to epidemic control, ha given the M.O.H. an instrument of precision in much of his epidemiological work. The application of spec prophylactic measures against various of the acu infections is now a major function of health departments; and already the control of such diseases as diphtheria and enteric fever is in sight.

During the last thirty years most of the medical officers of public-health departments have been occupied in preventive clinic work. The organisation of maternity infant welfare, and school health services occupies muc of the time of the M.O.H. of a county or county borough Part III of the National Health Service Act will add responsibility for home nursing and ambulance services and will give more scope for care and aftercare. Schemes for immunisation and vaccination, health visiting, and maternity and child welfare must also be prepared. these services become obligatory for the new local heal authorities. Probably there will be a steady increase in the part played by experienced general practitioners in the clinical work, but the administration must clearly remain with the M.O.H., who is responsible for the gener organisation of preventive measures. It is probable, too that counties will devise a system of administrative through divisional subcommittees of the health com mittees, and that divisional medical officers will under take the detailed administration of the preventive services in these divisions and usually the environmental hygiene of parts of the divisions at least. This should lead to closer association between public-health medical officers and general practitioners.

The tuberculosis and venereal-disease services ar specialist clinical services which must be closely linked with epidemiological and preventive work, in which both clinician and M.O.H. are concerned. The provision of treatment is a hospital function, whether outpatient or inpatient, but more is required than this. The follow-up of contacts in both diseases is of the highest importance and in tuberculosis there is a special field of family care. This common ground should lead to closer association between M.O.H. and clinician, even though the hospital service now passes to another authority.

nistrative officers, H.M. inspectors of mines, mine ıgements, other Government departments, medical s, and other concerned.

e work of the mines medical officers is directed to -ing that the health of the mine-workers is main- d at the highest level, particularly in relation to pational factors. They are therefore concerned with vision of medical arrangements (including first-aid) ines themselves, and with ensuring that medical ment and rehabilitation are available for mine- ers following injury or illness and that these facilities sed to the best advantage. Where the provision of essary service falls short of need, it is their duty to ose improvements. They are also concerned with tigation and research into illness among miners.

ring the war years, the Ministry of Fuel and Power's cal staff was necessarily concerned with certain orary work, such as the medical aspects of recruit- , and conservation of man-power. Certain per- ent schemes, however, were put into effect, prominent ıg which is that whereby workmen who are injured e mines, where they are often not readily accessible doctor, can have morphine administered to them by ally selected certificated first-aid men employed at nines. Long-term policies were also developed, and of these are now well established, such as the ıgements for medical examination of all entrants to nning below 18 years of age and the medical iination, including X ray, of all entrants, irrespective ge, to the South Wales coalfield. Another develop- of significance is the provision at certain mines of ical-treatment centres staffed by a State-registered e who will be under the direct supervision of a or. This scheme is already in operation at a number of mines; when it is functioning fully it will provide workers with early treatment of a very high standard.

Since Jan. 1, 1947, the National Coal Board has operated the coalmines of the country in accordance with certain statutory requirements, one of which is to secure the health of the persons they employ. To implement this requirement, the Board are in the process of engaging medical staff to advise them on matters of health and to exercise medical supervision of their employees by continuing the development of the scheme initiated by the Ministry of Fuel and Power. As the work of the National Coal Board doctors develops the Ministry's Mines Medical Service will be freed to devote more of its attention to additional constructive work which has had to be left in abeyance while temporary but immediate problems were dealt with.

PRISONS AND BORSTAL INSTITUTIONS

At the larger prisons whole-time medical officers are appointed, and at the most important ones principal medical officers are assisted by one or more medical officers. Salaries are in accordance with the general Civil-Service scales, and appointments are pensionable; unfurnished quarters are provided at most prisons, at a moderate rental. Candidates with a diploma in psychological medicine are given preference, provided they have good all-round experience. Appointments are made by the Civil Service Commission, 6, Burlington Gardens, London, W.1, to whom all inquiries should be addressed.

At the smaller prisons no whole-time medical officers are employed; local practitioners are usually appointed as part-time officers. Further particulars of these appointments can be obtained from the Prison Commissioners, Horseferry House, Thorney Street, London, S.W.1.

Services Abroad

COLONIAL MEDICAL SERVICE

ACANCIES in the Colonial Medical Service occur most ı in tropical Africa and Malaya. Medical officers required, to replace normal wastage and to provide for expansion; they must be British subjects ing a medical qualification registrable in the United gdom, with at least twelve months' experience since ifying, preferably in hospital appointments. Candi- s must have been born on or after Jan. 1, 1907, in addition, special contract terms are available for up to the age of 45 or for younger candidates who ld prefer to serve in the Colonies for a term of years er than for their whole career.

edical Officers are appointed in the first instance for ral service or for health duties. There are oppor- ties for field investigation, and posts are filled from ıin the service for work in special branches of icine and surgery and in public health. Medical arch departments exist in the larger Colonies. cialist appointments are usually reserved for officers ling higher appointments who have shown out- ıding merit in a particular branch of medical practice. pecial grade of medical officers has been created in st Africa for those holding higher qualifications, to ch direct entry is made. Opportunities to gain e qualifications will be made available whenever sible, and selected candidates may be required to nd a course of instruction in tropical medicine and ıene before proceeding overseas, or else to attend h a course during their first leave period. Vacancies occur in greater numbers in future for women with erience in gynæcological and maternity work, school lic health, and child welfare.

arious government medical departments employ ut 700 European medical officers, including some 30 nen, and about 1200 locally appointed medical cers. Depending upon the territory, such diseases malaria, yaws, leprosy, sleeping sickness, plague, low fever, cholera, and other conditions associated h the tropics are encountered in addition to the usual eases experienced in any medical practice. An officer the Colonial Medical Service has special opportunities the practice of preventive medicine, as well as ortunities for teaching and research.

The medical and health services will be considerably expanded in order to fulfil the schemes for public-health development already planned. Full particulars of terms and conditions of service may be obtained from the Director of Recruitment, Colonial Office, 15, Victoria Street, London, S.W.1.

SOUTHERN RHODESIAN MEDICAL SERVICE

The government of Southern Rhodesia maintains a medical and public-health service with an establishment of 18 whole-time administrative, specialist, or public-health officers and 49 government medical officers.

Rates of pay for the whole-time officers are:

	Annual Salary
Medical director	£1900
2 assistant health officers	£1450–£50–£1600
School medical officer (man)	
Field officer	
3 radiologists	
2 directors of laboratories	
Government pathologist	
Government psychiatrist	
Medical superintendent, mental hospital	
Medical superintendent, leprosy hospital	
Assistant medical superintendent, mental hospital	£1100–£50–£1250
School medical officer (man)	£935–£33–£1100
2 school medical officers (women)	

Government medical officers are graded as follows:

2 senior government medical officers	£1450–£50–£1600
47 government medical officers	£660–£27 10s.–£990

In addition to the salary scales shown, cost-of-living allowances at the rate of 10 % of salary up to a maximum of £100 are paid at present.

Whole-time medical officers and the two senior government medical officers are not permitted private practice but are allowed consultant practice. Government medical officers, except those stationed at Salisbury or Bulawayo, are allowed private practice, the value of which varies from £100 per annum upwards, according to the station. The duties of government medical officers include supervision of the 18 government hospitals and 74 native clinics, and attendance on police, boarders in government schools, and prisoners. They also undertake medicolegal work and public-health duties. Leave may be granted at the rate of one-eighth of service, and may be taken in periods not exceeding 184 days at a time. Study leave may also be granted.

After two years' service medical officers under the age of 45 can be appointed to the fixed establishment with the Ministry of Fuel and Power, a bureau for research into pneumoconiosis among South Wales coalminers was established at Cardiff. Research into industrial-health matters is also being undertaken by the university departments mentioned above.

The Association of Industrial Medical Officers was formed some years before the war by doctors interested in industrial health, and branches have been established in various parts of the country; the *British Journal of Industrial Medicine* is sponsored by the A.I.M.O. in conjunction with the British Medical Association. Information about the association may be obtained from the secretary, c/o Standard Telephones and Cables Ltd., New Southgate, London, N.11.

LONDON COUNTY COUNCIL HOSPITALS

THE hospitals service of the London County Council provides special facilities for undergraduate instruction, and opportunities for experience for medical graduates who intend either to be general practitioners or consultants or to enter the L.C.C. Public Health and Hospital Service. At the beginning of the war the service contained 97 hospitals with beds for 71,694 patients. The 79 hospitals now in use consist of 37 general hospitals, 22 special hospitals, and 20 mental hospitals and institutions for the mentally defective.

Treatment is provided in these hospitals for all kinds of acute and chronic illnesses, including fevers, tuberculosis, and mental and nervous disorders.

HOSPITALS BRANCH

Medical superintendents of the hospitals, who are expected to be experienced hospital administrators, receive £1000 to £1800 a year in hospitals with accommodation for from 160 to 1300 patients. In addition, medical superintendents are provided with an unfurnished house or quarters with payment by the Council of local and water rates.

The other full-time medical staff are classified as:

Grade	*Annual salary (basic)*
Deputy medical superintendent, class I	£850–£50–£1000
Deputy medical superintendent, class II	£800–£30– £950
Deputy medical superintendent, class III	£725–£25– £825
Deputy medical superintendent, class IV	£650–£25– £750
Senior resident surgeon, physician, or obstetrician, and senior assistant medical officer	£650–£25– £750
Assistant medical officer, class I	£455–£25– £555
Assistant medical officer, class II	£325
Senior house officers	£260
House-physicians and house-surgeons	£155

These officers are provided with board, lodging, and laundry. Clinical assistants, who are non-resident, receive £195 a year, with meals when on duty. In addition to basic salary, the foregoing medical staff at present receive the appropriate cost-of-living addition. Vacancies in the higher grades are filled as far as possible by promotion from the existing staff.

A large number of part-time consultants and specialists are employed in the various hospitals, as well as some whole-time non-resident specialists at a salary of £1500–£100–£1800 inclusive. The number of such whole-time specialist posts has recently been greatly increased, and a new grade of assistant specialist (salary scale £1000–£50–£1400 inclusive) created. These posts are in substitution for certain existing positions of medical superintendent, deputy medical superintendent, and senior resident surgeon and physician. Whole-time specialists who undertake the administrative duties of medical superintendent, also, receive an unfurnished house or an allowance in lieu thereof of £150 a year. Whole-time specialists, or assistant specialists who act as deputy to the medical superintendent receive an allowance of £50 a year.

A central histological laboratory and seven group laboratories of the pathological service serve a number of hospitals. Attached to the group laboratories are subsidiary laboratories situated in the various hospitals. Normally a medical staff of 30 is attached to these laboratories.

TEACHING FACILITIES

Courses in fever-hospital administration for the diploma in public health, which were suspended during the war period, are now being held when required; refresher courses for medical officers released from H.M. Forces are held by arrangement with the British Postgraduate Medical Federation, University of London; other postgraduate facilities remain as they were. The Postgraduate Medical School of London is at the Council's Hammersmith Hospital.

Increased use is being made of the Council's hospitals for teaching purposes. Arrangements have been made whereby maternity students have training and experience in the maternity departments of the Council's general hospitals. The fever hospitals also provide for undergraduate instruction, and, when patients are available, for demonstrations in the diagnosis and treatment of smallpox for both undergraduate and postgraduate students. Students are resident during their course of instruction in some of the fever hospitals.

26 of the general hospitals are recognised training centres for candidates for the University of London M.D. examination; 23 of them for the final F.R.C.S. examination and the diploma in anæsthetics; and 9 for the diploma and membership of the Royal College of Obstetricians and Gynæcologists. Seven general hospitals and Queen Mary's Hospital for Children, Carshalton, are partially recognised for the diploma in child health by the Royal Colleges of Physicians and Surgeons.

MENTAL HOSPITALS SERVICE

THE public mental hospitals in England and Wales are at present the responsibility of local authorities. Apart from those hospitals administered by the London County Council, there are 65 hospitals under the control of county councils, and 26 hospitals under the control of county borough councils. The hospitals vary in size from the small borough mental hospitals with about 400 beds to the large county mental hospitals with over 2000 beds.

According to the interim revision of the Askwith memorandum published this year, assistant medical officers to mental hospitals receive a minimum commencing salary of £455, rising by annual increments of £25 to £555 yearly, with emoluments which must include board, lodging, laundry, and attendance. In addition, those medical officers who possess a diploma in psychological medicine receive a further £50 per annum. Suitable provision is made for the accommodation of married assistant medical officers. In the higher posts of deputy medical superintendent and medical superintendent no uniform scale of salaries is laid down, and these vary between the different hospitals. In addition to salary, emoluments are provided which usually consist of a house, furnished or unfurnished, fuel, and light. Permanent medical appointments are in all cases established posts within the meaning of the Asylums Officers Superannuation Act, 1909.

Posts at these hospitals offer medical officers scope for initiative and promotion. Very few new appointments were made during the war, when medical staffs were much curtailed. There are now good openings.

The mental health services of the L.C.C. are responsible for a large medical service, vacancies in which are advertised from time to time. An applicant enters the service as assistant medical officer at a salary of £575 a year, rising by annual increments of £25 to £675. Salaries are graded through the various ranks to £1600, plus a cost-of-living bonus of £90 (£72 to £82 for women), paid to superintendents of large hospitals; a superintendent is also provided with an unfurnished house on the hospital premises. Assistant medical officers may be required to live in the institution which they are serving and to pay fixed rates for board, lodging, and laundry. Officers contribute to a superannuation fund. They are required to take a diploma in psychological medicine within three years of entering the service, and the diploma carries with it a payment, in addition to salary, of £50 a year. Promotion is reasonably rapid.

MINES MEDICAL SERVICE

THE Mines Medical Service of the Ministry of Fuel and Power since its inception in 1913 has consisted of a chief mines medical officer and his deputy at headquarters, and a medical officer in each of the eight main coal-producing regions of the country. These officers have been selected primarily on account of their experience of and qualifications for mining medical work; and by virtue of their special knowledge of the environmental factors in mines they act in an advisory and consultative capacity to the Minister of Fuel and Power and his administrative officers, H.M. inspectors of mines, mine managements, other Government departments, medical bodies, and other concerned.

The work of the mines medical officers is directed to securing that the health of the mine-workers is maintained at the highest level, particularly in relation to occupational factors. They are therefore concerned with supervision of medical arrangements (including first-aid) at mines themselves, and with ensuring that medical treatment and rehabilitation are available for mine-workers following injury or illness and that these facilities are used to the best advantage. Where the provision of a necessary service falls short of need, it is their duty to propose improvements. They are also concerned with investigation and research into illness among miners.

During the war years, the Ministry of Fuel and Power's medical staff was necessarily concerned with certain temporary work, such as the medical aspects of recruitment and conservation of man-power. Certain permanent schemes, however, were put into effect, prominent among which is that whereby workmen who are injured at the mines, where they are often not readily accessible to a doctor, can have morphine administered to them by specially selected certificated first-aid men employed at the mines. Long-term policies were also developed, and some of these are now well established, such as the arrangements for medical examination of all entrants to coalmining below 18 years of age and the medical examination, including X ray, of all entrants, irrespective of age, to the South Wales coalfield. Another development of significance is the provision at certain mines of medical-treatment centres staffed by a State-registered nurse who will be under the direct supervision of a doctor. This scheme is already in operation at a number of mines; when it is functioning fully it will provide workers with early treatment of a very high standard.

Since Jan. 1, 1947, the National Coal Board ha operated the coalmines of the country in accordance with certain statutory requirements, one of which is to secure the health of the persons they employ. To implement this requirement, the Board are in the proces of engaging medical staff to advise them on matters o health and to exercise medical supervision of thei employees by continuing the development of the scheme initiated by the Ministry of Fuel and Power. As the work of the National Coal Board doctors develops the Ministry's Mines Medical Service will be freed to devote more of its attention to additional constructive work which has had to be left in abeyance while temporary but immediate problems were dealt with.

PRISONS AND BORSTAL INSTITUTIONS

At the larger prisons whole-time medical officers are appointed, and at the most important ones principal medical officers are assisted by one or more medical officers Salaries are in accordance with the general Civil-Service scales, and appointments are pensionable; unfurnished quarters are provided at most prisons, at a moderate rental. Candidates with a diploma in psychological medicine are given preference, provided they have good all-round experience. Appointments are made by the Civil Service Commission, 6, Burlington Gardens, London W.1, to whom all inquiries should be addressed.

At the smaller prisons no whole-time medical officers are employed; local practitioners are usually appointed as part-time officers. Further particulars of these appointments can be obtained from the Prison Commissioners Horseferry House, Thorney Street, London, S.W.1.

Services Abroad

COLONIAL MEDICAL SERVICE

Vacancies in the Colonial Medical Service occur most often in tropical Africa and Malaya. Medical officers are required, to replace normal wastage and to provide staff for expansion; they must be British subjects holding a medical qualification registrable in the United Kingdom, with at least twelve months' experience since qualifying, preferably in hospital appointments. Candidates must have been born on or after Jan. 1, 1907, but, in addition, special contract terms are available for men up to the age of 45 or for younger candidates who would prefer to serve in the Colonies for a term of years rather than for their whole career.

Medical Officers are appointed in the first instance for general service or for health duties. There are opportunities for field investigation, and posts are filled from within the service for work in special branches of medicine and surgery and in public health. Medical research departments exist in the larger Colonies. Specialist appointments are usually reserved for officers holding higher appointments who have shown outstanding merit in a particular branch of medical practice. A special grade of medical officers has been created in West Africa for those holding higher qualifications, to which direct entry is made. Opportunities to gain these qualifications will be made available whenever possible, and selected candidates may be required to attend a course of instruction in tropical medicine and hygiene before proceeding overseas, or else to attend such a course during their first leave period. Vacancies will occur in greater numbers in future for women with experience in gynæcological and maternity work, school public health, and child welfare.

Various government medical departments employ about 700 European medical officers, including some 30 women, and about 1200 locally appointed medical officers. Depending upon the territory, such diseases as malaria, yaws, leprosy, sleeping sickness, plague, yellow fever, cholera, and other conditions associated with the tropics are encountered in addition to the usual diseases experienced in any medical practice. An officer in the Colonial Medical Service has special opportunities for the practice of preventive medicine, as well as opportunities for teaching and research.

The medical and health services will be considerably expanded in order to fulfil the schemes for public-health development already planned. Full particulars of terms and conditions of service may be obtained from the Director of Recruitment, Colonial Office, 15, Victoria Street, London, S.W.1.

SOUTHERN RHODESIAN MEDICAL SERVICE

The government of Southern Rhodesia maintains a medical and public-health service with an establishment of 18 whole-time administrative, specialist, or public-health officers and 49 government medical officers.

Rates of pay for the whole-time officers are :-

	Annual Salary
Medical director	£1900
2 assistant health officers	£1450–£50–£1600
School medical officer (man)	
Field officer	
3 radiologists	
2 directors of laboratories	
Government pathologist	
Government psychiatrist	
Medical superintendent, mental hospital	
Medical superintendent, leprosy hospital	
Assistant medical superintendent, mental hospital	£1100–£50–£1250
School medical officer (man)	£935–£33–£1100
2 school medical officers (women)	

Government medical officers are graded as follows :

2 senior government medical officers	£1450–£50–£1600
47 government medical officers	£660–£27 10s.–£990

In addition to the salary scales shown, cost-of-living allowances at the rate of 10 % of salary up to a maximum of £100 are paid at present.

Whole-time medical officers and the two senior government medical officers are not permitted private practice but are allowed consultant practice. Government medical officers, except those stationed at Salisbury or Bulawayo, are allowed private practice, the value of which varies from £100 per annum upwards, according to the station. The duties of government medical officers include supervision of the 18 government hospitals and 74 native clinics, and attendance on police, boarders in government schools, and prisoners. They also undertake medicolegal work and public-health duties. Leave may be granted at the rate of one-eighth of service, and may be taken in periods not exceeding 184 days at a time. Study leave may also be granted.

After two years' service medical officers under the age of 45 can be appointed to the fixed establishment and contribute to a pensions' scheme. The retiring age is 60. On appointment government medical officers are usually stationed at Salisbury or Bulawayo where they are paid an allowance of £200 per annum in compensation for not being allowed to undertake private practice. They are usually required to do relieving duties at various out-stations until a permanent vacancy occurs. Appointments in Great Britain to the service are made through the High Commissioner for Southern Rhodesia, Rhodesia House, 429, Strand, London, W.C.2, who will supply further details on request.

SUDAN MEDICAL SERVICE

The Sudan Medical Service aims at providing a complete health service for the Sudanese peoples, for government officials, and for the Sudan Defence Force. The area of the Anglo-Egyptian Sudan is about a million square miles—almost one-tenth of the African continent—and the total population is probably still less than 8,000,000. In accordance with the terms of the Anglo-Egyptian Agreement of January, 1899, the country is under the joint administration of Great Britain and Egypt, and its connexion with the British Government is through the British Ambassador in Cairo and the Foreign Office.

The country is embarking on a new period of development in every sphere, and it is the policy of the government that Sudanese shall fill all government posts when they are fitted to do so by personality, ability, and training. It is therefore necessary that newly appointed British officials should be sympathetic to this policy and should be ready and willing to play their part in assisting towards its achievement.

The personnel of the Medical Service on the British side consists at present of about 40 doctors, 32 nurses, and some public-health inspectors and laboratory and X-ray technicians. On the Sudanese side there are more than 80 doctors—trained at the Kitchener School of Medicine in Khartoum—some of whom have had postgraduate experience in London, as well as public-health officers and sanitary overseers, medical assistants in charge of dispensaries, and a large number of hospital orderlies, nurses, and midwives.

The headquarters of the service are in Khartoum; and here, and in the adjacent town of Omdurman, are the central hospitals and specialist services, the Kitchener School of Medicine, the Stack Laboratories, and midwives' and nurses' training schools. The project for an entirely new hospital of over 400 beds for Khartoum has been initiated, and construction will be started as soon as circumstances permit. Outside Khartoum the country is divided into seven provinces, and in the principal town of each there is a large and well-equipped hospital. In the smaller towns there are other hospitals, each in charge of a Sudanese doctor; and there are some 400 dispensaries serving the still smaller towns and rural areas. British medical inspectors are attached to the main hospitals and may also supervise the areas in which they serve.

As there are hardly any private practitioners in the country, most medical, surgical, gynæcological, and public-health and preventive work is carried out by members of the service. There is also a varying amount of administrative work to be done: medical boards must be held, and school-children examined. Though it may be possible for work in the out-stations to be arranged so that a man who is keen either on medicine or on surgery may be able to devote himself more to the branch he prefers, all junior members of the service should be competent to undertake whatever comes their way. At present most specialist appointments are filled by selection from the more senior medical inspectors, and such promotion, which depends on the occurrence of vacancies, is rare before 12 or more years of service. All specialist appointments are held in the Khartoum-Omdurman area, and the holders may be called upon to act also as lecturers and teachers in the Kitchener School of Medicine, receiving fees in addition to their pay for their services in this capacity.

The Sudan Government having decided to suspend, for the present at least, all appointments on probation for pension, medical inspectors will now be appointed on probation for a provident-fund contract or on short-term contract. If appointment is on the former, the time-scale applicable starts at £E.840 per annum (£E = 20*s.* 6*d.*) and rises by five biennial increases to £E.1270, followed after three years at that rate by an increase to £E.1400, the grant of increases of pay being subject to satisfactory work. If appointment is on a short-term contract, the salaries will be approximately 6½% higher than the equivalent provident-fund rate. Appointment on a provident-fund contract provides (subject to an initial probationary period of two years) security for a minimum period of seven years or up to the age of 38, whichever is the later date. Subscription to the provident fund is at the rate of 7½% of salary, the official qualifying on reaching the age of 38 or completing seven years, whichever is the later date, for a government contribution equivalent to his own, accumulated at 4% compound interest. Service under short-term contract is initially for two years, but may be renewed. A cost-of-living allowance at the rate of £E.225 a year is being paid at present. Medical inspectors have prospects of promotion to posts carrying higher maxima. No income-tax is at present payable in the Sudan.

Private practice is permitted, provided that it does not interfere with official duties, but except in a few of the larger towns opportunities for private practice are few. A doctor is not allowed to charge private fees for work performed in a government hospital.

Annual leave of 80 days per annum in the United Kingdom is now being granted after the first tour of service, with free air passages from and to the Sudan. Full pay is drawn during leave periods. No free quarters are provided. Government houses can usually be obtained on payment of rent and other charges. These vary according to the station and the accommodation available, but are usually between £E.40 and £E.80 per annum.

The service provides good professional work combined with an open-air life. Work may mean travelling on inspection-tours by rail, steamer, air, car, or animal transport. The climate varies from the hot dry northern zone, through the central area which has a 3–4 months' rainy season, to the southern zone, in which conditions become increasingly tropical as the southern border of the Sudan is approached. The general level of the country rises from 1200 feet at Khartoum to 2000 feet above the sea at Nimule, on the Uganda frontier. There are good opportunities for exercise—tennis, golf, and polo being the main afternoon games. There are swimming-pools in the larger towns. In the southern zone there is plenty of shooting, and in many places very good fishing.

Applicants in the United Kingdom must be British-born and should preferably be under 35 years of age, with a good general experience. Special experience in medicine or surgery, and possession of a higher qualification will be regarded as an additional asset. An official is allowed to take his wife out to the Sudan after reaching the age of 27 or, on completing four years' service, whichever happens first, though it is not usually possible to provide family accommodation during the first tour. Candidates selected for appointment will as a general rule be required to undergo a course of instruction at either the London or the Liverpool School o Tropical Medicine before sailing. The tuition fees ar borne by the government, and a subsistence allowanc of not less than £25 a month is paid during the course

Candidates selected for appointment are given fre transport from their homes to their station in the Sudan Salary becomes payable only from the date of arriv at the Sudan frontier, but candidates are granted a allowance of half-pay up to a maximum of £20 pe month for the period of waiting in the United Kingdo for a passage until the date of sailing, and a furthe allowance up to a maximum of £E.40 to cover travellin expenses and Sudan customs dues and to compensa partly for the period of the journey during which pay not being earned.

The conditions of service given here are liable t alteration in accordance with government regulations Further particulars and information about vacanci may be obtained from Dr. H. C. Squires, C.M.G. consulting physician to the Sudan Government, 93 Harley Street, London, W.1. (Tel.: Welbeck 3423.)

Postgraduate Education

In London

The BRITISH POSTGRADUATE MEDICAL FEDERATION will a school of the University of London. For the graduate o has already started his specialist training, university artments at the Postgraduate Medical School, Ham- smith, and at institutes in association with special pitals provide organised teaching. Advanced instruc- n in general medicine, general surgery, obstetrics and ecology, and pathology is provided at the Post- duate Medical School. Institutes which are now ctioning satisfactorily are those of Laryngology and logy, Child Health, Neurology, Ophthalmology, and chiatry. Institutes of Orthopædic Surgery, Urology, eases of the Chest, Cardiology, Dermatology, and ntal Surgery are at various stages of development, l are able to provide training for limited numbers. e usual resident appointments are available at the pitals associated with these schools and institutes.

he *Postgraduate Medical School of London* (formerly the tish Postgraduate Medical School) is associated with the mmersmith Hospital, and has university departments in dicine, surgery, obstetrics and gynæcology, and pathology. tinuous teaching, based on ward-work, is supplemented lectures during three fourteen-week sessions. A course the university diploma in clinical pathology, lasting one r, begins in October. Refresher courses are held in practical esthetics. Courses are also provided for the diplomas medical radiology of the university and Conjoint Board.

The *Institute of Child Health* is in association with the spital for Sick Children, Great Ormond Street, and the tgraduate Medical School at Hammersmith Hospital, and has an arrangement with the Queen Elizabeth Hospital Children, Hackney. The institute provides tuition oughout the year in three terms of three months each.

The *Institute of Neurology* is in association with the National spital for Nervous Diseases, Queen Square. The teaching mainly by attendance on the hospital practice, and there are o terms annually. In addition, whole-time courses, each ting ten weeks, are held in the autumn and spring terms.

The *Institute of Laryngology and Otology* is in association th the Royal National Throat, Nose, and Ear Hospital at y's Inn Road and Golden Square. A comprehensive course ting twenty weeks and designed to cover the whole field of specialty is held twice a year in January and July.

The *Ophthalmic Institute* is in association with the Moor- lds group of hospitals (Royal London Ophthalmic, Royal stminster Ophthalmic, and Central London Ophthalmic spitals). In addition to teaching by means of hospital ctice, a course lasting four to five months is held twice year, starting in March and October.

Institute of Psychiatry (medical school of the Maudsley spital).—The present short course will be the last of its nd. The future training in psychiatry will be a long-term ining covering two or three years, after preliminary experi- ce elsewhere in general medicine, and it will be based on ponsible hospital duties under supervision. The ultimate n is to provide a wide clinical training in psychiatry, with ecial experience in one or more of its subdivisions.

Institute of Orthopædic Surgery (medical school of the yal National Orthopædic Hospital).—In addition to the spital practice, courses lasting six months are to be held.

Institute of Urology (combined school of St. Peter's and Paul's hospitals).—Three courses of fourteen weeks' ration are held annually.

Institute of Diseases of the Chest (medical school of the mpton Hospital).—The teaching is primarily by means of tendance on hospital practice. A whole-time programme n be arranged, but the numbers are restricted for the present r lack of accommodation. There are three terms annually.

Institute of Dermatology (medical school of St. John's ospital for Diseases of the Skin, Lisle Street, W.C.2).— inical teaching takes place in the outpatient department ce daily. A course is to be arranged for the winter.

Institute of Cardiology (medical school of the National eart Hospital, Westmoreland Street, W.1).—The aim of the stitute is to train cardiological specialists and to provide urses of instruction in cardiology for general physicians. hysicians in training as cardiologists are expected to tend whole-time for at least one year. There are three terms nually. Three intensive courses of lectures and demon- rations, each lasting a fortnight, are held in February, July, and November. In addition there are series of weekly lectures in the summer and winter for general practitioners.

In all the institutes considerable expansion is planned as soon as the necessary trained staff and accommodation are obtained. It is essential for prospective students to make their arrangements well in advance. Those sponsored by their governments or by other official bodies and selected for training in one of the specialties will receive first consideration in the allotment of vacancies. Established specialists from overseas who wish to see something of the practice of this country, and who are here for a relatively short time, are always welcome. They are regarded as visiting colleagues, and the experts in their specialties are always ready to receive them and let them accompany them in their work and teaching.

The work at the institutes is of an advanced type and is sufficiently comprehensive to enable graduates with suitable practical experience to prepare for higher degrees or diplomas. Emphasis is placed on clinical and laboratory teaching, supplemented by lectures and demonstrations. Advanced revision courses in general medicine and general surgery for graduates who have already completed their practical training and wish to sit for higher degrees and diplomas are being developed.

In addition, refresher courses for general practitioners are held at non-teaching hospitals in London and the Home Counties.

The federation has a central administrative office at 2, Gordon Square, London, W.C.1, to which inquiries should be directed. An information bureau of postgraduate medical activities in London and the other university centres is maintained.

The FELLOWSHIP OF POSTGRADUATE MEDICINE, which has a bureau at 1, Wimpole Street, London, W.1, provides general information on postgraduate work, and arranges, at various hospitals, courses of instruction which may be classed under two main headings:

1. Weekend courses, occupying the whole of a Saturday and Sunday, for general practitioners. These are given in various general and special hospitals in such subjects as general medicine and surgery, obstetrics and gynæcology, ear, nose, and throat conditions, children's diseases, and rheumatic diseases.
2. Short clinical courses for candidates for the M.R.C.P. and F.R.C.S. (final) given shortly before the examinations.

Twice a year revision courses in anæsthetics are arranged in Oxford and in London; also lecture-demonstrations for primary F.R.C.S. candidates, and occasional courses for D.C.H. candidates.

Other courses are arranged from time to time in proctology and urology. It is hoped to add to the number and variety of courses as facilities permit.

In Scotland

The EDINBURGH POSTGRADUATE BOARD FOR MEDICINE, representing the University and the Royal Colleges of Physicians and Surgeons of Edinburgh, arranges programmes of graduate studies. Two courses in internal medicine lasting eleven weeks are held, starting in April and October of each year. These classes comprise lectures, lecture-demonstrations, and clinical teaching, and are suitable for graduates wishing to specialise in medicine or who require a refresher course in the current outlook on internal medicine. Two courses in general surgery are held each year, starting in March and October. These courses are of $4^1/_2$ months' duration; they include lectures on surgical anatomy, surgical pathology, and selected surgical subjects, as well as clinical demonstrations and ward visits for sections of the class. In addition to the Edinburgh Royal Infirmary, other general and special hospitals in the city coöperate in the provision of clinical teaching facilities. General refresher courses lasting two weeks, for N.H.I. practitioners and demobilised general practitioners, are conducted according to the demand; and ten classes of this type, in addition to two short courses in obstetrics, gynæcology, and pædiatrics, have so far been held. Open postgraduate lectures on subjects of wide biological interest are arranged each term in connexion with the other organised teaching of the Board. Future plans include the further extension of hospital facilities for clinical teaching, and the provision of hostel accommodation for graduates.

The postgraduate courses are attended by large numbers of graduates from all over the world, and applications are so numerous that classes are usually filled many months in advance. Applicants wishing to attend should write, giving particulars of their medical qualifications and postgraduate experience, to the Director of Postgraduate Studies, University New Buildings, Edinburgh, 8.

GLASGOW UNIVERSITY offers the following full-time postgraduate courses: in medicine and in surgery, each lasting from Oct. 13 to Dec. 6; in obstetrics and gynæcology, from Nov. 3 to 22; and in ophthalmology, from Sept. 22 to 27. All these courses consist of clinical meetings, pathological demonstrations, and lectures. Similar courses in medicine and in surgery will commence in April, 1948. Shorter courses in ophthalmology, dermatology, and other subjects will be advertised in the medical journals from time to time. Courses are also conducted in diagnostic and therapeutic radiology.

For general practitioners refresher courses of a fortnight's duration are held throughout the year; the next such course is confined to obstetrics and pædiatrics and commences on Sept. 22. Inquiries should be addressed to the Convener, Committee on Postgraduate Medical Education, The University, Glasgow.

Some Special Courses

SURGERY

The *Royal College of Surgeons of England* has arranged a number of lectures and demonstrations to be held at the college. In surgery, two series, each of 12 lectures, will be given between Oct. 1 and 16, and between March 16 and April 2; three series in anæsthesia, each of 12 lectures, will be given between Oct. 6 and 21, April 5 and 20, and July 1 and 16. Two series in otolaryngology, of 12 lectures each, will be given between Nov. 3 and 19, and April 26 and May 11. In anatomy, applied physiology, and pathology, a series of 40 lectures will be delivered between Nov. 24 and Dec. 19, and of 72 lectures between April 5 and May 25; in ophthalmology, two series, each of 12 lectures, will be given between Dec. 29 and Jan. 13, and June 1 and 16; and in orthopædics, two series, each of 12 lectures, will be held between Jan. 14 and 29, and July 1 and 16. In March, April, and May there will be practical demonstrations in anatomy, applied physiology, and pathology. The college maintains a library, museums, and laboratories for the use of medical graduates from all parts of the world. Fellows and members enjoy these facilities by right, but they have also been made open, on suitable introduction, to other graduates of medicine, and to undergraduates. The Arris and Gale and the Hunterian lectures provide opportunities for the presentation of original work in anatomy, physiology, pathology, and surgery. The college awards several prizes for meritorious work, as well as many fellowships for those who wish to engage in practical work in the museum and laboratories or to devote some time to research.

At *St. Mark's Hospital*, City Road, London, E.C.1, surgeons wishing to specialise in proctology may attend a six-month course, and postgraduate students working for higher degrees may come for 1–4 weeks' whole-time study. Intensive courses, each lasting one week, are held, in conjunction with the Fellowship of Medicine, three or four times a year.

The *Royal College of Surgeons in Ireland* has lately held a two-month full-time course in surgery; and a further course is planned for this autumn. In October, 1947, a one-year course in anatomy, physiology, and pathology is to be instituted as a preparation for the primary fellowship examination.

PUBLIC HEALTH

Most university courses in public health have now been revived. New requirements by the G.M.C. have caused universities to revise the course for this examination, which is now taken in two parts, the first leading to a certificate in public health (C.P.H.), taken after three months' work, and the second to the diploma. The *London School of Hygiene and Tropical Medicine* offers a course beginning in October and lasting nine months, and designed primarily for those intending to seek posts as medical officers of health. All vacancies for the full course for the diploma have been filled, and there is a waiting-list, but in view of the development and subdivision of medical work in the public-health service, some places in the course for the certificate have been reserved for doctors who intend to undertake public-health work other than that of a M.O.H. The *Royal Institute of Public Health and Hygiene* also offers courses for the diploma, conforming to the new regulations: the next course begins in September.

PSYCHOLOGICAL MEDICINE

Courses for the diploma in psychological medicine are at present in abeyance at some universities. At the Maudsley Hospital medical school, now the *Institute of Psychiatry* in the British Postgraduate Medical Federation, the usual six-month course of instruction will not be given in future. Instead, there will be lectures, lecture-demonstrations, seminars, and practical work in the laboratories, which will cover the relevant aspects of psychology, anatomy, and physiology of the nervous system, psychiatry of children and adults, delinquency, pathology of nervous and mental disease, and related matters. The subjects of these lectures will be grouped so that they will meet the needs of postgraduate students at different stages of their training. At the Maudsley Hospital and associated hospitals and clinics, clinical training will be provided for a limited number of students in the various branches of psychiatry. Information can be obtained from the Dean, Institute of Psychiatry, Maudsley Hospital, Denmark Hill, London, S.E.5.

At *Edinburgh University* candidates for the diploma are now required to spend at least three years in approved hospitals, clinics, laboratories, and other institutions. At the end of this period they attend an intensive five-week course before examination. Intending candidates should enter their names with the dean of the faculty of medicine before starting special study.

At the *Tavistock Clinic* the psychotherapy of both adults and children as outpatients, based on analytical concepts, which has characterised the clinic's activities in the past, is being developed, and particular attention is being given to group psychotherapy. In addition to therapeutic work, the clinic and the associated Tavistock Institute of Human Relations are studying techniques in preventive psychiatry. These include mothers' discussion groups, selection techniques, and techniques for improving interpersonal relations in school and industry and similar psychological and sociological procedures.

Study and training are organised in three main fields: (1) individual methods, (2) social methods, and (3) child guidance. Courses, each lasting one year, are held in all three branches. The course in individual methods is designed as an introduction or supplement to specialist study in psychological medicine or clinical psychology. The course in social methods is concerned with the integrative application of psychological and other social-science techniques for the prevention, diagnosis, and treatment of community, educational, and industrial problems. Particulars are obtainable from the Training Secretary, 2, Beaumont Street, London, W.1.

The *Institute of Psycho-Analysis*, 96, Gloucester Place, London, W.1, provides training in psycho-analytic theory and technique. The course is part-time and lasts about four years. It includes a personal analysis, attendance at lectures and seminars (held in the evenings), and clinical work done under supervision. Students are required to obtain general psychiatric experience at other clinics and hospitals, since the institute does not set out to teach all aspects of psychiatry. Completion of the course to the satisfaction of the training committee qualifies the student for election as an associate member of the British Psycho-Analytic Society. In addition to this main course designed for those intending to specialise, the institute gives briefer courses from time to time on the application of the principles of psycho-analysis to medical problems. These are advertised in the medical press.

TROPICAL MEDICINE

A diploma in tropical medicine is required by those seeking appointments in the tropics. Courses are held at the *London School of Hygiene and Tropical Medicine*, the *Liverpool School of Tropical Medicine*, and *Edinburgh University*.

MEDICAL STATISTICS

In January and April, if sufficient applications are ceived, the department of medical statistics of the ondon School of Hygiene and Tropical Medicine offers a ort course, occupying two days a week for three months, the principles of medical statistics and statistical ethods. Application should be made not less than e month before the course is due to begin to the egistrar, London School of Hygiene and Tropical edicine, Keppel Street (Gower Street), London, W.C.1.

FITNESS IN INDUSTRY

At *Roffey Park Rehabilitation Centre* courses lasting e and two weeks are held for doctors, works managers, ade-union officials, and social workers. The syllabus is vided broadly under two headings: (1) maintaining ness at work, and (2) rehabilitation and resettlement. asses are modelled on the lines of the open discussion oup. Inquiries should be addressed to the Secretary, raining Department, Roffey Park, Horsham, Sussex.

THE MEDICAL WOMEN'S FEDERATION

ALL qualified medical women are eligible as members the *Medical Women's Federation*, which has active cal associations all over the country and in Northern eland, as well as a large London association and an erseas association linking up members all over the orld. The federation is non-political. It provides edical meetings for its members and publishes a arterly journal reviewing subjects of special interest women doctors. These naturally cover a wide tract social medicine, including maternity and child welfare, omen in industry, the care of children and of difficult d delinquent children, the management of nursery hools and day-nurseries, women in prisons, children in pproved schools and remand homes, the illegitimate uld, and many related subjects. Advances in obstetrics d gynæcology, and psychological studies of women and ildren are also naturally of special interest to women ctors; and recent work in these branches of medicine reviewed in the journal. From time to time the deration undertakes social studies and publishes the sults. It is also able to protect the interests of its embers by presenting arguments in any cases where ere has been discrimination against women doctors.

RITISH MEDICAL STUDENTS' ASSOCIATION

THIS association was founded in 1941, and now with he exception of three London hospitals it includes in s membership students from all the schools in England, cotland, Wales, Northern Ireland, and Eire.

The association is a purely professional body, with the le object of providing machinery at the national level promote the interests of medical students. It provides method of communication between medical students on he one hand and, for example, British and foreign udents of other faculties, the British Medical Association, d Government departments on the other.

The association has representatives expressing the tudents' point of view as members of many committees. t publishes its own journal; and it has issued a catalogue f medical films.

But perhaps the most valuable aspect of its work is o be found in the clinical conferences which it has made ossible. Three have already been held this year, at heffield, Edinburgh, and Leeds; and have given students n opportunity to meet other students, to see other ospitals, and to hear other teachers.

Expenditure last year was in excess of income; and unless he income can be increased it will be necessary to restrict ctivities. The rate of subscription from student members as been increased, but it is estimated that it will be mpossible to raise the whole of the sum needed in this way.

At the last annual general meeting it was decided to reate a new category of membership for qualified men, ho would be invited to make a donation to the association and who would receive a copy of the journal.

Any readers who feel that the work is of value are therere asked to encourage the association by becoming ssociate members. The president is Mr. Denis R. Cook, nd the office is at B.M.A. House, Tavistock Square, London, W.C.1.

In England Now

A Running Commentary by Peripatetic Correspondents

As a student I was wise enough never to lose touch with my general interests. Mark you, not every examiner shared my balanced view; some had a narrow partisan attitude to their subjects—an attitude that I and the Goodenough Committee deplore—so there were occasional misunderstandings. But I never regret my ten years as a student. In my time I picked up several useful tips, which I'll pass on for what they're worth. First of all, there should be no compunction about getting a friend to sign you up for lectures; any professor who counts an hour listening to him as an hour's study is just asking for it. Never go to afternoon lectures; if you've had a decent lunch you'll sleep, and if you haven't you'll be in no trim to listen. Just a word of warning here: always get to know by sight the man who's giving the lectures. Towards the end of the summer term of my ninth year I foolishly decided to look in at a forensic-medicine lecture; I stopped a white-coated lab. assistant to ask the way, which he told me—very civilly, I must say. I sat down in the front row (there's another useful hint —one attendance with an earnest look in the front row is worth three further back) and I waited. Then the lab. man, who, it seemed, was the professor, came in and started lecturing; so all that hour I looked kind of naturally earnest. But it was O.K.; I'd read up the right three chapters in the great man's book, and when the exam. came he raised no objection to my passing on to the final year. To the finals candidate I would say this: when you're given a case to take, get to know the patient; go right up to him and say in an easy, friendly way: "Now, old chap, the first thing I want you to tell me is your diagnosis." Very often he does, and then you can do the rest by induction. As to the written exam.— always be careful about your speling; I never had any trouble with mine, but I knew lots of poor blighters that did. Then, examiners invariably appreciate the capacity of a potential medical graduate to construct his sentences with a facile lucidity reflecting the optimum which can be made available from his educational facilities. Finally, examiners like a straight answer; if you don't know, say so and retire; it's no use throwing the ball back at them, as I once did: "well, what do *you* think, sir?" I was given six months to look up the answer for myself.

I hope these few hints will help; and I guarantee that anyone acting on them will have no more trouble than I did.

* * *

I'm not going to write about tattoos. I might just as well start to cram all about hearts into one peripatetic column. The subject merits nothing less than an entire special number of THE LANCET, with articles on *The Histopathology of Tattooing*, *The Psychology of the Tattooed*, *Tattoos and Social Medicine*, and so forth. I merely want to submit an interesting case—more interesting, I think, than the not uncommon row of blue dots across the root of the neck with "Cut Along The Dotted Line" above them: certainly more so than the quite frequent "I Love Mary" altered to an indelible declaration of affection for Katie. This tattoo was a hunt in full cry. The scene began at the umbilicus with a line of pink-coated horsemen galloping towards the right shoulder—all executed with a skilful impression of the dash and vigour of the chase. The meet continued on to the back, the hounds having got ahead as far as the spine of the scapula. The pack filled the remaining space as far as the buttocks, where the fox's brush could be seen disappearing into the anus. The tableau was labelled, sure enough, "Gone to Earth."

* * *

A wet Sunday afternoon is one of Nature's treats for hard-working doctors, and it's worth waiting for. It's strange, though perhaps natural, that few seem to dare disturb their doctor during those sacred sabbath hours twixt dinner and tea. Maybe all save the nearly moribund are replete and drowsy after their weekly roast or its post-war equivalent if such exists. Maybe they feel that a doctor is out of place on a Sunday: he disturbs the peace and would certainly upset the digestion. Whatever the cause, apart from fractures, fits, and sudden death, Sunday afternoon is comparatively calm.

And a wet one is full of possibilities. There are half a dozen birthday letters still to answer. The lino in the surgery needs nailing down. My winter coat must be altered. The dog should have his annual bath, and there ought to be time for a few more chapters of *War and Peace*. But here comes the rub. As all the world knows, two to five on a weekday is three hours; but on a wet Sunday it seems more like three minutes; and with the best will in the world even a doctor can't do more than sink into a chair, open the *Observer*, and listen to the start of the symphony concert in 180 seconds.

* * *

More Hints for Prospective Brides.—Very soon after her introduction to the practice the young wife will have to cope with Other Doctors' Wives and with Social Life. The first essential step is to write down Who's Who. The Upper Crust differ in each practice. Take the local paper and the parish mag. The people you natter to in the High Street and entertain to tea must be given a talking point. They like to be able to say something "safe" about you. Let it be known that you etch beautifully, write for *Comic Cuts*, do gouache on stretched linen (that will fetch 'em), make lovely lardy cakes, collect foreign stamps, play the bagpipes (when on holiday), have a new recipe for leek soup, sometimes have second sight, &c. &c.

Let the Other Wives know enough about your husband that is safe for them to pass on to their husbands the moment they get home, but never *talk* about him. Suggest by innuendo that his batman would have died for him and that other women find him dull (this is far from true of course).

When they come to tea (separately, always) have your husband ring you up at least four times from a call box and on one of these calls chatter away loudly in Afrikaans, Dutch, or Celtic and then return to the tea-cups sighing. This goes down well in a big-city practice. In the country you need only replace the receiver and say: "Lady Argle-Bargle in trouble again." An air of bored efficiency should be cultivated. The subject must be changed rapidly. Soon after this your husband must come in briskly, gulp a cup of tea and go, after a display of exquisite manners that would put any other husband to shame. This should not last more than two minutes, he couldn't stand it any longer anyway.

"... Lady Argle-Bargle in trouble again ..."

Then you will listen to the Other Wife's troubles (she will have a sackful, if I know her) with a wide-eyed innocence of the "Gosh! I have a lot to learn" variety.

If you are in a big-city practice a really good line is to know at least one member of the Savage Club and to have dined there often enough to be able to mention a well-known name. Or, truth can be served if one of the panel men is, say, an electrician at the Colossal Theatre. When dressing his whitlow you are sure to hear some endearing story of a favourite star. Nowadays I suppose the Stock Exchange is rather a dead letter, but when I was a girl . . . my dear, they can be worth *millions*. . . . When you've got on a bit, hyphenate the surname and pretend your husband had an Aztec grandfather. It'll fetch 'em faster than a membership and fellowship.

In the country you will find that Doctors' Wives are either well dressed or absolutely unspeakable. Decide at the outset to which class you will belong. It costs money at first but its worth it. Cultivate a taste for and knowledge of country life and all that appertains thereto—dogs, horses, saddle-back churches, elderberry wine, and antique furniture, not to mention signs and portents of the weather, the local dialect and superstitions. Remain aloof from all things political and remember that the cottager's pain is every bit as bad as the Squire's.

If you happen to be the wife of the assistant with a view (acting assistant's unpaid assistant), you will find the view often obscure and dim. It is usually a question of whose carefully prepared lunch is to spoil. The principal's wife will ring up distracted, of course, saying she can't find her Old Man anywhere and there's been an accident . . . &c. You hear the Old Man's racking cough in the middle distance, but if you are unfortunate enough to know on which side your bread is buttered you must say: "My dear, of course, right away.". If you are a hard-headed little woman (as I know you are, otherwise you wouldn't be where you are now), you just apply my method How to Deal with an Unwanted Telephone Call (see previous notes).

Of all the Other Doctors' Wives the most pleasant are Specialists' Spouses. I'm never quite sure why this is. You will count them among your real pals. On the rare occasions that they visit you, pâté de fois gras is not enough. Get up early and toss off those well-tried recipes of yours—Chinese Cake, Hungarian Bread, or Bear Biscuits. If I know these spouses they will enjoy it, and (what is really pleasant) they will say so.

* * *

If you can stand and see your patients running
In headlong scurry to the other man,
And not ascribe to evil low-down cunning
His gifts of healing far beyond your span:
If you can watch his income upward rocket
While yours is small, as all the world can see;
If you can thrive, though sadly out of pocket,
On tending back-street paupers free of fee.

If you can lend an ear to old folks stealing
Your precious time with tales of aches and pains;
If you can let each patient have the feeling
He's found in you warm heart as well as brains:
If you can say a prayer when patients need
Some ghostly comfort as they near Death's shores;
If you can tell them of some golden creed,
And gently let them feel it's also yours.

If you can tell the truth in spite of fears
That telling it will earn your patients' curses;
If you can shoulder blame, ignore the jeers,
And not make scapegoats of your loyal nurses:
If you can lie, when lying makes for healing,
And so-called truth would cloud your patient's sight;
If you can ease his going by concealing
The gruesome phantoms of the coming night.

If you can worship science as a virtue,
And keep its standards lofty, without fail;
Yet somewhere hide (for fear that it may hurt you)
A mystic's sense of things beyond the veil:
If, lastly, you will make confession
Of all the blinking flaws which make you feel
Unworthy of a great profession;
Then sure enough, my son, you'll learn to heal.

* * *

I escorted the M.D. candidate behind the screen and directed him to examine the patient's testicles. All sorts of lesions were discovered that were not present. I had hoped for the simple observation that the right was the lower, an abnormality which would have sent him looking for all the other features of complete transposition of viscera. There was even an appendicectomy scar in the left iliac region. . . .

* * *

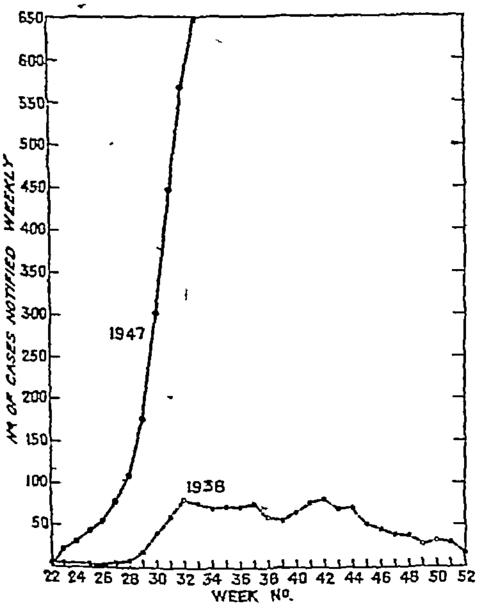
More about Emigration.—"When shall we realise the fact that the great thing needful to the prosperity of England is, not almshouses, and hospitals, and private charities, but the establishment, advocated by Mr. Carlyle, of a regular and efficient emigration! The crassest ignorance only prevents the listless pauper, the frozen-out mechanic, and the wretched agricultural labourer from quitting a scene of misery, and from finding scattered over Earth's surface spots where the memory of privations endured in the hole which he calls his home would make his exile a paradise."

Social security 1947? No, Sir Richard Burton 1863.

Public Health

Poliomyelitis and Polioencephalitis

E number of cases of poliomyelitis notified in and and Wales during the week ended Aug. 16 646. This is an increase of about 14% on the e for the previous week (568) which suggests that steeply rising curve of incidence is beginning to n out. Figures for some of the most affected ty areas are not notably different from those of previous week (given in parentheses)—e.g., London



(84), Lancs 71 (71), Durham 39 (36), Middlesex 32 (35); stantially increased notifications were reported from East Riding of Yorkshire 18 (5), Surrey 39 (24), and arwick 37 (23); there was a continued decline in the ekly figure from West Riding of Yorkshire 44 (57).

Notifications of polioencephalitis were lower than in previous week 45 (56). The distribution of notified es of this condition does not appear to be closely lated to that of the notified cases of poliomyelitis. out half the 45 cases of polioencephalitis notified in e week ended Aug. 16 occurred in areas mentioned ove by reason of their having a heavy or rising incidence poliomyelitis.

Beds for Poliomyelitis

The Queen Elizabeth Hospital for Children, Hackney oad, London, E.2 (Tel.: Bishopsgate 4633) has set side, equipped and staffed, a ward of 15 beds for the eatment of anterior poliomyelitis.

Infectious Disease in England and Wales

WEEK ENDED AUG. 16

Notifications.—Smallpox, 0; scarlet fever, 614; hooping-cough, 1870; diphtheria, 145; paratyphoid, ; typhoid, 8; measles (excluding rubella), 4468; eumonia (primary or influenzal), 253; cerebrospinal ver, 60; poliomyelitis, 646; polioencephalitis, 45; ephalitis lethargica, 4; dysentery, 66; puerperal rexia, 127; ophthalmia neonatorum, 65; relapsing ver, 0. No case of cholera, plague, or typhus was tified during the week.

Deaths.—In 126 great towns there were no deaths from eric fever, scarlet fever, or diphtheria, 2 (0) from easles, 5 (0) from whooping-cough, 66 (3) from diarrhœa d enteritis under two years, and 3 (0) from influenza. he figures in parentheses are those for London itself.

The number of stillbirths notified during the week as 253 (corresponding to a rate of 28 per thousand tal births), including 29 in London.

Notes and News

THE POLIOMYELITIS FILM

As we mentioned last week, a film has been made at the request of the Ministry of Health to help general practitioners in the early diagnosis of acute anterior poliomyelitis during the present epidemic. This film, which was made with commendable speed and has now been released, is not so much a balanced study of its subject as a "newsreel" intended to supplement the advice and information which the G.P. can get from his textbooks and journals. It opens with a graphic demonstration of the recent age-incidence of cases in London hospitals. After brief mention of the usual presenting symptoms (headache, fever, vomiting) it goes on to portray the common early signs: cranial-nerve palsies are beautifully illustrated, as also are the methods of eliciting spasm of the muscles of neck, back, and limbs; a word is spared, too, for early changes in tendon reflexes. Then comes a demonstration of lumbar-puncture technique, followed by brief observations on methods of disposal of fæces, precautions by the attendant, isolation of doubtful cases, and methods of spread; finally practitioners are adjured to notify cases, and when in doubt to consult the M.O.H.

Though the film is intended for the general practitioner there are no shots calculated to help him specifically in his encounter with the disease in the home—apart from one showing a housewife protecting her food from flies, and another portraying a doubtful case comfortably isolated in a garden. The practitioner would welcome some suggestion of the time-sequence, which would lend itself to visual presentation. Perhaps, too, he would like an explanation of how the attendants' precautionary steps, illustrated in the film by masked and gowned nurses and doctors, are to be applied in the home; and especially he wants to know what advice to give the families of established or unproven cases. As a rule he will not be undertaking lumbar puncture. If the diagnosis is in doubt (and it is on this score that the film advises the procedure) he is likely to refer the patient to hospital. Always, except occasionally deep in the country, lumbar puncture should be undertaken in hospital, where the risk of infection can be minimised; this is made clear in the spoken commentary which accompanies the film.

UNIVERSITY COURSE ON MEDICAL ILLUSTRATION

THE University of Edinburgh announces a three-year course in medical illustration, to begin in October, 1948. The course, which will be particularly suited to those considering this work as a profession, will include training in half-tone and line work, and in anatomy. Candidates, who must be aged at least 18, are required to have had a good secondary education and must have a fair knowledge of general art. Applications should be submitted to the dean of the faculty of medicine.

University of Cambridge

On Aug. 2 the following degrees were conferred:

M.D.—J. R. Bignall, G. A. Emmerson, E. M. Griffin, W. P. U. Jackson, T. W. Letchworth, R. G. Mathers, M. G. P. Stoker.

M.B., B.Chir.—W. E. C. Astle, *W. H. Barker, S. B. Bennett, M. A. J. Browne, *J. H. S. Buchanan, *J. D. Burton, *H. W. Cornford, *A. F. Crick, *M. de B. Daly, *A. B. Douglas, *M. C. Edmond, *G. R. Faber, A. W. Ferguson, N. B. Finter, *D. K. Ford, *W. D. Foster, *A. G. Freeman, J. H. Garson, K. O. George, *R. V. Gibson, J. G. Goodhart, C. L. Grandage, Michael Harington, J. G. Harrison, *R. E. D. Harvey-Samuel, *F. G. Herman, *C. W. Hollingsworth, *S. H. F. Howard, *D. J. Howell, H. B. Kidd, *B. T. Kieft, *R. G. Law, *M. H. Lessof, *J. A. McDonald, *John McFie, *L. E. McGee, I. D. Mackichan, *K. M. McNicol, G. C. Manning, *T. R. Maurice, *J. L. Moffatt, D. C. Morley, *T. G. Osmond, *J. M. Palmer, *B. G. Parsons-Smith, J. K. P. Perera, *E. E. Philipp, G. S. Plaut, *R. C. N. Pointon, *R. H. B. Protheroe, *P. K. Pybus, R. C. Read, D. H. Richards, *A. W. Robinson, *M. G. Rolfe, *A. J. Russell, *Evan Sherrah-Davies, E. P. H. Shortt, *M. P. Spence, *F. O. Stallybrass, *I. W. Stoddart, G. W. Sykes, *Norman Tate, *G. E. Thomas, *P. G. Treharne, *J. A. Tutton, S. M. Vine, *L. G. R. Wand, *A. P. Waterson, *Pow-Meng Yap, *P. M. Yeoman, *R. E. V. B. Young.

* By proxy.

Dr. R. M. Fry has been appointed university director, and Dr. Joan Boissard university assistant director, of the Public Health Laboratory Service at Cambridge.

Regional Board Appointments

The *Manchester Regional Hospital Board* has appointed Dr. F. N. Marshall (a senior M.O., Ministry of Health) as senior administrative medical officer, and Mr. J. Gibbon (deputy clerk of the Lancashire Mental Hospitals Board) as secretary.

Queen's University of Belfast

On July 9 the following degrees were conferred:

M.D.—Thomas Freeman (with high commendation); R. D. G. Creery, *G. W. Csonka, F. G. C. Walker (with commendation); J. H. Adams, J. L. Blair, C. F. Campbell, J. S. Elwood, P. A. H. M. Foster, J. G. Gibson, E. H. Gordon, Wilson Johnston, R. J. Kernohan, Alice I. M. Leach, A. R. Lyons, W. J. McLeod, R. P. Maybin, *R. S. Murray, A. S. Ramsey, *B. E. Swain, N. H. Wass, R. J. Wright.

M.B., B.Ch., B.A.O.—C. A. G. Armstrong, Joan G. H. Bennett, H. C. Boyd, J. S. Brown, J. A. Byrne, Pauline M. Charlton, J. G. Clearkin, R. T. Cooke, John Erwin, Joseph Fulton, R. S. Gibson, F. S. Grebbell, Mary Gunning, Mary E. C. Henry, George Hughes, G. J. G. Irvine, Anne W. Kilpatrick, W. G. Liggett, T. E. C. Linton, H. M. McAdoo, Irene S. McCaughey, E. G. McClean, R. L. McCorry, Charles McDowell, D. J. McSparran, J. D. Morrow, P. N. Newsam, G. S. Parkes, Austin Reid, Kathleen J. Reid, P. N. Ronaldson, James Shanks, R. L. Turner, John Weatherup, Elizabeth M. Wells.

* In absentia.

University of Manchester

Mr. J. H. Kellgren has been appointed clinical director of the new research centre for chronic rheumatism, to which the Nuffield Foundation gave a grant of £100,000 (see *Lancet*, 1946, ii, 609).

Mr. Kellgren, who is 36 years of age, took his M.B. Lond. from University College Hospital in 1934, his M.R.C.P. in 1935, and his F.R.C.S. the following year. After serving for a time as chief assistant in the electrotherapy department of St. Thomas's Hospital, he returned to U.C.H. as a research-worker under Sir Thomas Lewis in the department of clinical research, and later he was appointed assistant in the surgical unit. During the war he was an E.M.S. surgeon at Leavesden Hospital and later served in the R.A.M.C. as a surgical and orthopædic specialist. On demobilisation he was appointed to the scientific staff of the Medical Research Council, and he is at present working at Oxford upon the problem of pain in rheumatic disease. His published work includes a number of papers on the localisation of deep pain and on the clinical applications of this work in diseases such as sciatica and fibrositis.

Mr. A. Morgan Jones has been appointed lecturer in cardiology and deputy director of the department, Mr. John Loewenthal lecturer in surgery, Dr. Alan Stanworth lecturer in ophthalmology, Mr. N. A. J. Young lecturer in diseases of the ear, nose, and throat, and Dr. G. S. Graveson lecturer in medical neurology.

Royal College of Surgeons of England

The honorary fellowship of the college has been conferred on Dr. Victor Veau (Paris) and on Prof. Robert Danis (Brussels). Diplomas will be presented to Dr. Leopold Mayer of Brussels, the president of the International Society of Surgery, who was awarded the honorary fellowship in December last, and to these two newly elected fellows during the forthcoming congress of the International Society of Surgery.

During September the following lectures will be delivered at the college, Lincoln's Inn Fields, London, W.C.2: Dr. Arthur W. Allen (president elect of the American College of Surgeons), Duodenal Ulcer—a comparative survey of two groups of patients, one treated by subtotal gastric resection and the other by vagus nerve interruption (Moynihan lecture, Sept. 22); Dr. Frank H. Lahey (Boston), Hyperthyroidism (Cecil Joll lecture, Sept. 23); Prof. William E. Gallie (Toronto), Recurring Dislocation of the Shoulder (Moynihan lecture, Sept. 24); Prof. Evarts Graham (Washington), Bronchiogenic Carcinoma (Lister oration, Sept. 25); Mr. Hassan Ibrahim, Bilharziasis and Bilharzial Cancer of the Bladder (Hunterian lecture, Sept. 29); Mr. Harold Wookey (Toronto), Surgical Treatment of Malignant Disease of the Pharynx and Œsophagus (Hunterian lecture, Sept. 30). The lectures, which will all be held at 5 P.M., are open to doctors, dentists, and advanced students.

Infantile Paralysis Fellowship

The National Foundation for Infantile Paralysis of America have sent the English fellowship a copy of a standard-size sound film, on the treatment of infantile paralysis, entitled New Horizons. The film is at the disposal of the medical profession, free of charge, on application to the secretary of the fellowship, 37, Tavistock Place, London, W.C.1.

Remuneration of Consultants and Specialists

The committee which under the chairmanship of Sir Will Spens is considering the range of remuneration of doctors engaged in consultant or specialist practice in any publicly organised hospital and specialist service is inviting evidence from the organisations directly interested. It will, however, be prepared to receive evidence from interested bodies or persons other than those specially invited. Memoranda should be sent to the joint secretaries of the committee, Ministry of Health, Whitehall, London, S.W.1, before the end of September.

Army Medical Exhibition

This exhibition at Stanley Park, Blackpool, which will remain open, Saturdays and Sundays included, until Sept. 6, includes demonstrations of the evacuation of casualties, water purification, and preventive medicine in the field. A small historical section contains Florence Nightingale's coach and famous lamp. The proceeds will go to the R.A.M.C. War Memorial Fund which has been formed to help the families of the officers and men of the corps who were killed or disabled in the war.

REGISTER OF CHIROPODISTS.—The sixth edition of this register has now been published by the Board of Registration of Medical Auxiliaries. Copies may be had free of charge from the Registrar, Tavistock House North, Tavistock Square, London, W.C.1.

CORRIGENDUM.—In the list of references following Dr. J. D. Paulett's paper on Low Back Pain (Aug. 23, p. 272) the fourth item should have read: Ellman, P., Savage, O. A., Wittkower, E., Rodger, T. F. (1942) *Ann. rheum. Dis.* 3, 56.

Appointments

AIDIN, A. R., M.D. Dubl., D.T.M., D.C.P.: morbid anatomist, public-health department, Bristol.

DEVAS, M. B., M.B. Camb.: senior surgical officer for orthopædic work, Oldchurch County Hospital, Romford, Essex.

LACEY, J. W., M.D. Camb., M.R.C.P.: pathologist, St. John's Hospital, Chelmsford.

LOCKET, SIDNEY, M.B. Lond., M.R.C.P.: specialist medical officer (physician), Oldchurch County Hospital, Romford, Essex.

MACQUEEN, I. A. G., M.B. Edin., D.P.H.: M.O., Department of Health for Scotland.

PATERSON, J. T., M.B. Edin.: tuberculosis officer, Barking and Dagenham, Essex.

PHILLIPS, J. J., M.B. Leeds: M.O., Nigeria, Colonial Service.

SMITH, JOHN, O.B.E., M.B. Camb., M.B. Glasg.: M.O., Department of Health for Scotland.

TAYLOR, H. B., M.B. Edin.: district M.O., Bahamas, Colonial Service.

Births, Marriages, and Deaths

BIRTHS

DEMETRIUS.—On Aug. 22, at Reading, the wife of Dr. L. F. Demetrius—a son.

FATTI.—On Aug. 11, the wife of Mr. L. Fatti, F.R.C.S.—a son.

INGRAM.—On Aug. 22, at Thames Ditton, the wife of Dr. Frank L Ingram—a daughter.

JACK.—On Aug. 20, the wife of Dr. Ronald Jack—a son.

JOHNSON.—On Aug. 18, at Romsey, the wife of Dr. Peter Johnson—a daughter.

LOWN.—On Aug. 18, at Ewell, the wife of Dr. J. F. Lown—a son.

MYERS.—On Aug. 21, at Cambridge, the wife of Dr. Geoffrey Myers—a daughter.

NORTH.—On Aug. 17, at Weybridge, the wife of Dr. John North—a son.

O'HIGGINS.—On July 22, at San Sebastian, the wife of Dr. P O'Higgins—a daughter.

PINKERTON.—On Aug. 16, in Berlin, the wife of Captain J. R. H Pinkerton, R.A.M.C.—a daughter.

POND.—On Aug. 17, in London, the wife of Dr. Desmond Pond—twin daughters.

POOLE.—On Aug. 19, at Teddington, the wife of Dr. D. S. Poole—a son.

SHARPLEY.—On Aug. 15, at Oxford, the wife of Dr. John Sharpley—a son.

SHEPHERD.—On Aug. 18, at Oxford, the wife of Mr. J. A. Shepherd F.R.C.S.E.—a son.

STEEN.—On Aug. 20, in London, the wife of Dr. Patrick Steen—a son.

TOLHURST.—On Aug. 20, at Bournemouth, the wife of Dr. D. A Tolhurst—a son.

WASS.—On Aug. 14, in London, the wife of Mr. S. H. Wass, F.R.C.S—a son.

MARRIAGES

FRYER—MCCONNELL.—On Aug. 16, at Uxbridge, Graham Joh Firth Fryer, M.R.C.S., to Catherine Hunter McConnell, Q.A.I.M.N.S./R.

GARVIE—WARDLAW.—On Aug. 23, at Sunningdale, James Macken Garvie, B.M., to Kathleen Hope Wardlaw.

HOTSTON—CARR.—On Aug. 23, at Southport, Richard D. Hotston M.R.C.P., to Mary Carr.

MARX—MOUNSEY.—On Aug. 20, at Bromsgrove, Lothar Marx M.B., to Barbara Ann Mounsey.

MAYER—LESSER.—On Aug. 21, in London, John Henry Mayer F.R.C.S., to Sheila Joan Lesser.

WILSON—AINSWORTH.—On July 28, at Bury, Lancs, Willi Weatherston Wilson, M.B., to Ruth Audrey Ainsworth, M

DEATHS

COOPER.—On Aug. 17, at Brisbane, Lilian Violet Cooper, M.D. Du aged 80.

MCMILLAN.—On Aug. 20, Arnold McMillan, L.R.C.P.E.

MURDOCH.—On Aug. 22, at Croydon, John Murdoch, M.D. Dubl.

COALMINERS

J. N. MORRIS
M.A. Glasg., M.R.C.P., D.P.H.

> "The present crisis underlines the basic importance of coal—our national existence becomes quite impossible if we cannot produce enough coal: the whole industrial programme depends upon the miners."

THE anxiety expressed in the Economic Survey for 1947[7] reflects a new situation in our society. In the inter-war years there was a reservoir of 150,000–200,000 unemployed miners—now there are not enough. Output per man, moreover, is lower and attendance less regular than it has been. The coal problem today is thus, in large part, the problem of the miners. This paper deals with some aspects of the problem: first, in terms of economics, industrial relations, and occupational hazards; and secondly, by describing the responses which followed from these and combined with them to make up the recent history of mining people. Present difficulties are considered in the light of this history and in the context of a society with full employment; and some contributions which medicine might make are indicated.

The Inter-war Years

How British industry was brought almost to a standstill for lack of coal can only be understood by reference to the past. Fortunately there is little advantage in tracing events beyond the slump of 1931 and the strikes of 1926 and 1921—events within the experience of perhaps half the men now working in the mines. During those years the industry was contracting.[48] It was faced by a steep fall in demand from abroad, and the exporting districts—South Wales, Durham, and Scotland—suffered severe unemployment. Meanwhile competition by other sources of fuel and power, together with economy in coal utilisation, the mechanisation of coal-getting and conveyance, closure of unprofitable pits and exhaustion of local measures, all proceeding at a time of severe economic depression, led to their own forms of unemployment which affected also the districts catering for the home market. The contraction of the industry thus widely, if unequally, spread over the coalfields was a stormy process involving great hardships to the miners and their families. One man in three was out of work during the worst years of the slump (fig. 1), and some mining localities suffered unemployment of two-thirds or more. Short-time working was common. Wages were low (fig. 2). Poverty, insecurity, and the frustrations of acute and chronic unemployment are thus at the root of this history.

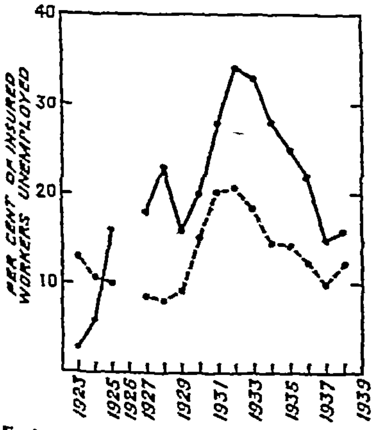


FIG. 1—Unemployment of coalminers (continuous line) and of other insured workers (interrupted line).[1 4 61]

Industrial Relations

The inter-war period opened with bitter disappointments for the miners. The Government set aside the majority recommendations of the Sankey Royal Commission that the industry should be nationalised and, instead, the mines were returned to their owners. In 1921, following drastic wage cuts, there was a three-month strike. During 1923–24 a temporary revival in the demand from abroad produced an artificial boom, and deceptive quiet in the coalfields. The years from 1925 onwards, however, were years of unceasing conflict open and suppressed, with the employers, "whose solution for slumping sales and profits took the form of an attack upon labour costs by the most simple and direct ways, the alteration of wages and hours"[9]; conflict that in the isolation of miners and mining villages "took on the character of a social war." The colliery owners were allowed by the Governments of the day "to win an unqualified victory," and the miners soon lost the fruits of many years of struggle—the national minimum wage and the seven-hour day. Industrial relations, always bad in coalmines, did not recover from this breakdown. Indeed, of the three broad phases in the history of labour relations—nineteenth-century master and man, early twentieth-century welfare and paternalism, and, now, the transition to cooperative participation—mining, it is fair to say, hardly shared in the middle phase at all. It was characteristic that the Government found it necessary to take more direct responsibility for the welfare of this than of any other industry; whence the great achievements of the Welfare Commission. The opacity of the owners to the needs of their dependants, as represented by Lord Londonderry's description of the industry as "the best managed in this country,"[29] aggravated the atmosphere of bitterness in the coalfields. Fig. 3 compares the incidence of disputes in coalmining with the rest of British industry.

A Dangerous Trade

The occupational hazards of coalmining are a permanent burden on the lives of miners and their families and form an essential part of the history of any period. A few figures must suffice to describe the magnitude of the problem and to compare the lot of coalminers with other workers. During 1938, the last year for which general statistics are available,[47] underground workers in coalmines had by far the worst record, about one man in five receiving compensation for accident or disease. Dock- and quarry-workers were next with about 10% affected, and surface mine-workers followed with 6½%, a rate substantially higher than for factories, constructional works, and railways. Fig. 4 shows that young persons were at even greater disadvantage than their elders. Table I deals in more detail with recent years to show what still remains to be done. Little progress was made throughout the inter-war period,[13 32 49a 49c] though fatal accidents have fallen by almost a half in the past few years.[55]

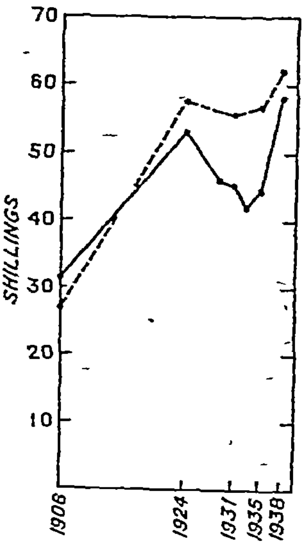


FIG. 2—Average weekly earnings of coalminers (continuous line) and of all male industrial workers (interrupted line). The figures for coalminers include cash value of allowances in kind.[5 22 27a 61]

* * *

Retreat from the Mines

The background of mining history between the two wars was made up of material privation and political defeat, along with the ever-present dangers of the trade. During those years the miners developed a discontent that was spiritual as well as economic.[23a] There was "a revolution in mining psychology. In place of the old pride of craft and pride in the industry, a revulsion of feeling has taken place against colliery life and colliery work."[19b] The miners reacted in what ways they could, in conflict with the employers as already seen, in a drift from the mines and mining districts, and in a determination that their children's future should lie elsewhere.

Population of Coalminers Falls

In 1920 almost 1,250,000 men were on the colliery books. From that year numbers fell, reaching 700,000 in 1941, about which figure they have since fluctuated.

Drift from Mining Districts

The population of England and Wales increased by about 10% during the inter-war years, mostly as a result of the superiority of birth-rates over death-rates. An attempt is made in fig. 5 to estimate the population trends in the five principal coalfields. It was possible to follow only two regions through till 1939; in the others extensive boundary changes cut short the inquiry. In each case the population trend was compared with that of the whole country over the same period. The coalfields, without exception, had an unsatisfactory record; and, though they also had higher birth-rates than death-rates, they did not enjoy the natural increase of their population that might have been expected. In Yorks, Derby, and Notts, and in the Midlands the rise in numbers was below the average; in the North East the population remained almost stationary; in Lancashire numbers actually fell; the exodus from South Wales reached the remarkable figure of 21%—miners were escaping, as one of their leaders wrote, from a "medley of patronage, charity-mongering and poverty,"[13] and this despite the high level of unemployment in other coalfields, in other industries, and in other parts of the country.

TABLE I—OCCUPATIONAL MORBIDITY AND MORTALITY AMONG COALMINERS [27b 55]

Year	1943	1944	1945
Man-power	708,000	710,000	709,000
Accidents:			
Incapacitating for over 3 days	173,716	176,847	181,059
"Serious"	2596	2553	2353
Fatal	713	623	550
Diseases:			
"Beats"	7478	7448	..
Nystagmus	2006	1809	..
"Dermatitis"*	1207	1506	1867
Pneumoconiosis	1322 (1278†)	2048†	5310†
Deaths from silicosis ..	276	311	387

* All miners, including some other than coalminers † South Wales

Young People Turn Away

These population movements affected especially the younger people. Despite an overall reduction of close on 40% in the past quarter-century, numbers over 35 years of age have hardly changed; but that of young persons is less than a third of what it was, and of the younger adults only a half. The reduction of young persons has proceeded sixteen times as fast as that of persons older than 35, and of younger adults nine times as fast. The age-distribution of the industry in 1945 was less favourable than will be that of the country as a whole in 1980, according to conservative estimates.[15 15a] Parallel to this movement, table II shows how, in the two regions (unfortunately not the most representative) where some estimate could be made, the decline of population was similarly dysgenic and was again due in disproportionate degree to the emigration of the young.

TABLE II—YOUNG MEN LEAVE THE MINING VILLAGES

Estimate of residuum, as indicated in the National Register,[56] of the cohorts aged 5–14 and 15–24 in 1921, males

—	1921	1939	Decline
Cohort aged 5–14 in 1921			
England and Wales	100%	87%	13%
Lancashire mining areas	100%	50%	50%
South Wales and Monmouth mining areas	100%	74%	26%
Cohort aged 15–24 in 1921			
England and Wales	100%	88%	12%
Lancashire mining areas	100%	60%	40%
South Wales and Monmouth mining areas	100%	67%	33%

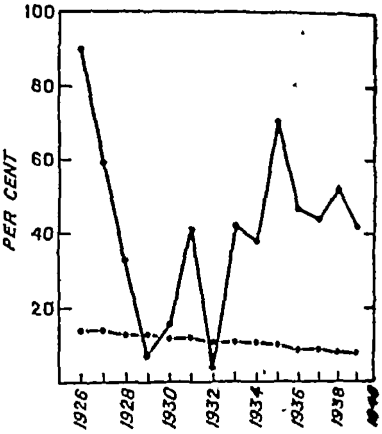


Fig. 3—Industrial disputes 1926–39: upper curve, proportion of all time lost which was lost by coalminers; lower curve, proportion of all insured workers who were coalminers.[54 61]

HEALTH OF COALMINERS

During the inter-war period miners had an unfavourable record in sickness and mortality. The Scottish reports[44] are the main source of information on the comparative morbidity of different occupational groups. Table III shows among the miners an abnormal load of incapacity due to acute and chronic sickness. Analysis shows that miners uniformly returned higher rates for all the commoner conditions. It would be interesting to inquire for each complaint why miners should be more affected than others. Much more interesting, however, is the evidence which this gross overall excess may provide of a psychological as well as physical dis-ease. Several authorities have commented on the high incidence of psychoneurosis and psychosomatic disturbances among miners,[10 17 25] and some have claimed that these increased between the two wars.[10 17] Unfortunately no data exist that would permit the separation of occupational from more general environmental influences which might have helped to produce such disorders or to increase their prevalence.

TABLE III—MORBIDITY OF MINERS IN SCOTLAND

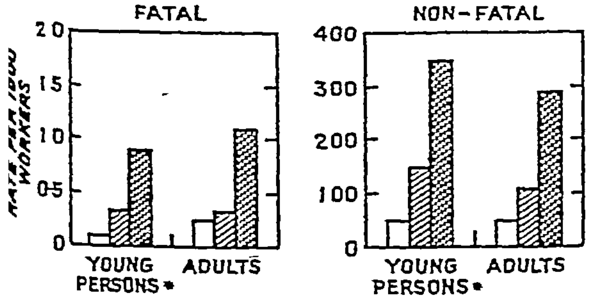
Occupational group	1930–33		1935–36
	Annual incidence of sickness (rate/1000)	Average duration of sickness (days/person)	Incidence of chronic sickness (rate/1000)
Miners	405	18·0	20
Other males in mining areas.. ..	189	8·5	..
All males less miners	190	8·7	..
All males	..	..	17

Differences in age structure were insubstantial at a count, 1933–34.

Deterioration in Trend of Mortality

The course of mortality among miners in recent years is of great interest in view of what has already been described. Death-rates are of value as a measure of healthiness; but deaths by accident form such a high proportion of the mortality of miners that total death-rates are unsatisfactory for this purpose. In the first place, therefore, death-rates from "natural" causes, excluding accidents, were calculated, and fig. 6 compares the progress among miners and other males; the scale used enables this to be done easily—equal vertical distances denote equal percentage changes. In 1890–92, 1900–02, and 1910–12 the mortality of miners under

5 years of age was substantially less than the others, nd during this time at the lower level had fallen, on the hole, as fast. From 1910–12, however, the curves iverge. Between 1910–12 and 1921–23 mortality in ther men under 24 remained at the pre-war level. nd in those aged 25–54 the steady decline continued; ut the miners under 44 registered an appreciable icrease, and those aged 45–54 a relatively small decline. n the latest period, from 1921–23 to 1930–32, the death-ates of other young men recovered sharply, whereas the eterioration among the miners persisted or was replaced y a negligible improvement. Among the adolescents ho illustrate these trends most clearly the death-ate from natural causes in 1930–32 was actually higher han in 1890–92. Miners, that is, participated to an ltogether exaggerated degree in the unsatisfactory end of mortality among young people between 1910–12 nd 1921–23; during the next ten years the trend among he miners was different from, and inferior to, that of the est of the population. Comparison of the rates of last entury and this is not altogether satisfactory, because f improvements in the Registrar-General's allocation of en to *occupations* and not merely to *industries*, though oalmining is one of the few instances where some omparison is justifiable.[40] In any event strictly com-parable *occupational* groups are available for 1910–32.



4—Industrial accidents in 1944 in coalmines and in factories: blank, factories; single hatching, mines (surface); double hatching, mines (underground).[42, 53]

* Miners, 1942–45, estimated.

In 1885 Farr's successor[37] remarked on the "surpris-ingly low" death-rates of miners and quoted a similar bservation made as far back as 1858. The explanation f this superiority, which lasted till 1930–32, probably ay in the traditional method of recruitment to the ines: "the weaker members of the population in mining areas are in practice excluded (from the industry) by the action of their parents who recognise that, while the mine may be the traditional, or at least a suitable career for their stronger and more robust children, some other occupation must be found for delicate members of the family."[49a] Many things may have contributed to the setback in the 1920's and 30's (which is analogous to some other unsatisfactory inter-war trends).[21, 23, 35] Its spread over many different causes of death, its occurrence among surface as well as underground workers, and the fact that it was most prominent in the youngest age-group, was irregularly related to later ages, and was seen not at all in the oldest make it unlikely that occupa-tional causes were responsible. More probably, other forces were at work: less healthy recruitment to the industry, and emigration of the healthier from it. Its waning attractions in these years may have induced a departure from the traditional practice to recruit the fitter youngsters to the mine. There was, in any case, a considerable dilution of mining labour during the 1914–18 war. Between 1921 and 1932 many young miners, particularly young hewers and getters, left the industry: the fitter among these, again, may well have been the readier to leave.[40]

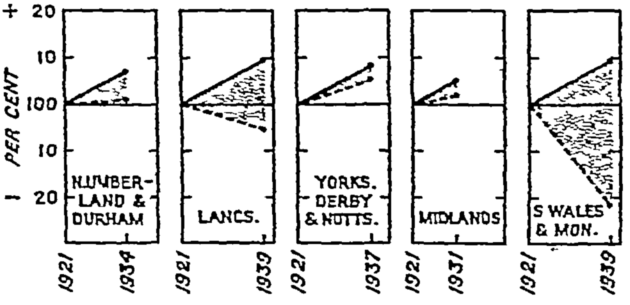


Fig. 5—Population of coalfields in inter-war period. A coalmining area was defined as an area which at the census of 1921 had over half its employed males employed in coalmining. The continuous lines represent the population trend of England and Wales, the interrupted lines represent the trends in the coalfields; the stippled areas represent the deficits in the coalfields.[34a, 35b]

DECLINING BIRTH-RATE IN MINING COMMUNITIES

Finally, the changes in the birth-rate of mining communities should be seen in their social and economic setting. The period under review saw a steady fall in the national birth-rate, but this was particularly heavy in the mining districts, where birth-rates fell by about a third more than the national average. Such crude rates are liable to be misleading in view of the selec-tive emigration of younger people from the coalfields. Martin[31, 31a] investigated the (legitimate) "fertility" of mining and other districts from 1860 to 1932, relating births to the female population of childbearing age. He found that the mining districts had the highest fertility-rates between 1860 and 1892, and the least decline during those years; they had the highest rate also in 1910–12 but the greatest decline, over 40%, between then and 1930–32. In fact, this decline occurred mostly between 1920–22 and 1930–32. Innes[24] found that the reduction in this decade was particularly well marked in the families of the semi-skilled miners, whose birth-rate fell by half.

SUMMING-UP THE INTER-WAR PERIOD

The pattern of the miners' history in the twenty years between the wars was made up of the related and interacting elements of low living standards, ill health, conflict, and withdrawal. Coalminers were a depressed class. Wages ranked 82nd among the

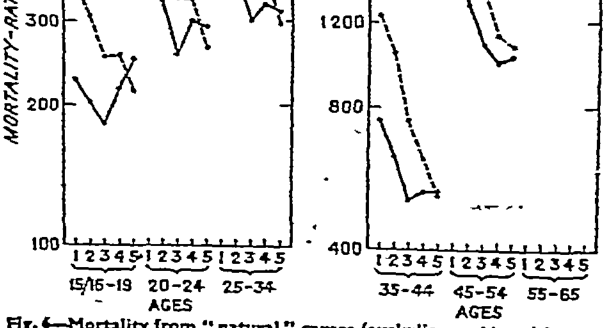


Fig. 6—Mortality from "natural" causes (excluding accidents) in coal-miners and in other men. Semi-logarithmic scale.[40] Continuous lines represent coalminers; interrupted lines, all other men. 1 = 1890–92; 2 = 1900–02; 3 = 1910–12; 4 = 1921–23; 5 = 1930–32.

country's industries, even after their rise late in the 1930's.[61] During much of this period most miners, though over half were reckoned as skilled workers and none as unskilled, whether in work or out of it, on full time or short time, could not provide their families with the minimal needs for healthy living.[26] Miners' infants in 1930–32 had a death-rate 32% higher than that of the infants of other workers [41]; in 1939 the excess was 37%.[39] The (standardised) mortality of miners' wives, young and middle-aged, in 1930–32 was 27% worse than that of other working-class wives. The most important group, the wives of the skilled hewers and getters, recorded at 20–45 years of age one and a quarter times the rate of the rest of their own social class in mortality from puerperal causes, almost one and a half times for respiratory tuberculosis, and almost twice for (rheumatic) heart disease.[41] The miners themselves, relative to other men, had regressive mortality trends, and they had four times their share in compensatable disease and accident, and, as far as information is available, twice the sickness of other workers. Disputes amounted to over 260,000,000 days, two-thirds of the total lost in the country, though miners were about 10% of the labour force.[1 54 61] The unpleasant features of the work, the poor and uncertain living it offered, the squalor of the villages in the depressed areas, the chronic state of war with the owners, all combined to put off new entrants: "I had four boys," said a miners' leader,[19a] "and . . . I would sacrifice anything rather than allow any of my boys to enter the industry." The severance of this traditional link between mining families and the mines, the shrinking number of miners, the loss of population from the mining districts, with the break-up of family life that this involved, represent a large-scale withdrawal from the industry. And "withdrawal," operating at deeper levels, may be a common factor of these more obvious responses and of others more subtle, the excessive illness, the psychosomatic reactions, the deteriorating mortality, and the declining birth-rate.

* * *

Continuing Effects: the War and Since

The coal industry entered the war 1939–45 unprepared for the struggle that lay ahead: the miners burdened with a store of unhappy, but soon to be irrelevant, memories; the owners unwilling to discard long outworn modes of thought. Conditions in the industry were transformed in the course of the next few years. Wages rose, though slowly at first, and by 1945 were twice the 1938–39 level. At the instigation of the Government great advances were made in the organisation of training, welfare, safety, health, and rehabilitation. Yet coalmining was a constant source of trouble on the home front, with excessive absenteeism and recurrent strikes which were out of keeping with the spirit and needs of the time.

More serious, and ironic commentary on the record described, by 1941 there was no longer any question of *un*employment and, soon after, there developed an actual shortage of man-power in relation to needs. The community suddenly awoke to the importance of the miner in its life. There was much "prestige" talk, and coalmining was put on a par with the Armed Forces as a form of national service. But this belated recognition did not carry conviction with the mining community; it failed, at any rate, to overcome the forces that had been maturing in the previous twenty years and could now, with war and booming employment, for the first time achieve full expression. Juvenile recruitment reached new low levels, numbers under 18 years of age falling from 70,000 in 1938 to 34,000 in 1945; these youngsters were insufficient to fill half the places rendered vacant by miners who died, retired, or were "freed" because of sickness and disablement. Most significant of all, perhaps, examination of the war-time fluctuations in the age-distribution of the industry [55] suggests that a disproportionate part of the small army who left for "medical" reasons were younger men. Many miners joined the Forces, in particular when the collapse of France temporarily reduced the demand for coal, and later had to be conscribed back; many left for other occupations. "Were it not for the operation of the Essential Work Order," said a Member of Parliament from a coalfield which was relatively prosperous in the inter-war years, "there would be an exodus from the industry greater than that of the children of Israel from Egypt."[18] "The main prop of the industry's man-power (became) the State's action in directing unwilling men, ex-miners, and Bevin boys into an industry which no power short of State direction would have made them enter."[61] The Bevin boys shared the repulsion felt by the community at large; they entered without enthusiasm, and it has been estimated that only about 1% of them intended to remain in the industry.[2]

This difficulty in recruiting man-power epitomises the social problem of the industry today. It is, in effect, the delayed and cumulative consequence of the quarter-century of history which has been examined. Recently, with nationalisation and the five-day week, and in response to the dire shortages of the fuel crisis of February 1947, the number of recruits, both juveniles and ex-miners, has improved. As yet, however, there is no evidence that a final solution has been found. The miners, sensibly enough, consider recruitment will only reach satisfactory levels when coalmining can offer attractions compatible with the most progressive of other industries. There is no doubt that medicine with its many disciplines could contribute more than it has done in eliminating some of the unattractive features of the industry, and could help to increase the well-being of miners and mining communities. Equally, medicine should be concerned with the larger questions of social health that are raised by this problem.

* * *

Medical Relations

The first need is for organisation. The case for a special association of medicine with mining has been demonstrated; as yet this association is poorly developed. The mining areas were at a disadvantage before the war when competing in the money market which, for the most part, determined the distribution of doctors. In consequence, they were served, almost without exception, by less than the national average of 1 doctor per 1000 of population, and many by less than 1 doctor for 5000.[30] Hospital facilities were often on a similarly inadequate scale, as the hospital surveys have shown.[33] Occupational health services were deficient in most industries before the war; in conformity with what has already been seen of coalmining this industry was among the backward.

Recent legislation should improve this situation, though the reforms in local-government finance which are yet to come will be almost as important as the National Health Service Act. Responsibility for industrial health now lies with the Ministry of Fuel and Power and the National Coal Board, and funds should also be available under the National Insurance (Industrial Injuries) Act. The workers, moreover, are deeply interested: the unions, for instance, now support pre-entry medical examinations which they opposed before the war.[49b]

The Need for Knowledge

Information on many of the medical aspects of this industry is urgently needed. On the physiological side, for example, the nutritional requirements for optimal output are not yet settled,[28b] and the changing relations of hours, shifts, output, absenteeism, and fatigue deserve tinuing investigation. The idea so strongly held by ners that they are "past their best" at 35 requires partial examination. A job analysis of the industry uld be carried out; and if, when work is fully chanised, it still remains true that miners in their ies or even forties are "old," the case for the diversi-ation of industry in the mining villages will become n more pressing. Apart from some rather conflicting dence on the greater liability of older men to acci-nts,[19f, 59] particularly at high temperatures,[59] there little to go on. As regards morbidity, there will be portunity for a fresh start soon, nationally and locally; d, in view of the importance of verifying and bringing to date the pre-war Scottish figures, this industry ght be selected for prior attention. (Some recent all-scale surveys have controverted the Scottish dings and suggest that miners are particularly lthy.[33]) Among occupational disorders, only pneumo-iosis is receiving at present the attention it deserves, ugh major recommendations of the 1944 Advisory mmittee remain to be implemented.[42] The problem the "beat" diseases needs restating; there is nothing the report of the Medical Research Council's inquiry er the war of 1914–18 [22b] to suggest that it need have oved so refractory—and in the interval the oppor-nities for prophylaxis have increased as pit-head ths have multiplied, first-aid organisation has improved, d chemotherapy has developed. Meanwhile, though e proportion of thinner seams, in whose working these eases tend to occur, is rising, protection of knee and ow with pads, &c., is not compulsory. "Fibrositis" so much commoner among miners [16] that it might most be included among the occupational disorders. far it has been little studied in relation either to ysical conditions underground or to washing and ying facilities. "Dermatitis" has increased seven-ld during the war,[6] though it is not known whether is is a real increase or not. Occupational and social ass death-rates are unlikely to be available for another n years. The possibility of anticipating the next ecennial Supplement by sample studies of infant ortality in mining communities and of the mortality ends of miners should therefore be considered.

The past twenty years have seen a great advance in e understanding of psychosomatic disorders, but little tention has been paid in this country to nystagmus, hich, surprisingly, is commoner again after its decline the 1930's. It would be revealing to know the istribution of the new cases and how many are in x-miners. Among psychological aspects, however, pplication of the theory and knowledge of accident-roneness is most urgent. (In general, coalmining cidents, which should be a major preoccupation of dustrial medical research in this country today, are ather neglected.) Several problems in the field of indus-rial psychology demand attention: the special quali-cations of management, above and below ground; the most effective methods for developing the mine as a coöperative effort; and, equally important perhaps, the elations to output of systems of payment that are a onstant irritant [8] might be investigated. The psycho-ogical implications of mechanisation in personnel election and in counteracting the new tensions it intro-duces,[56] also await exploration. The career which the industry is already offering the new entrant is that of ngineer. "Under certain conditions," it has been said, "machinery can make a colliery a mechanised hell." [19c] If there is any truth in this sort of statement, it is medicine's business to intervene in good time.

A Miner Medical Service

Whatever the future will bring in other industries, and elsewhere in this industry, there is already a more than sufficient case for the establishment by the State of an industrial-health service for coalminers in South Wales. The usual functions in placement, environmental hygiene, and accident prevention need to be carried out. Coöperation of the workers in the many protective measures must be assured; and since the Davy lamp was introduced it has been known [16] that this cannot be assumed but demands intensive education, in which the health service should surely be of the greatest usefulness. In South Wales periodic radiological and clinical examinations in relation to working conditions need to be instituted, together with a follow-up of disabled workers. Such steps, as much as the perfection of dust suppression, will be necessary if public confidence in the industry is to be restored. South Wales has suffered the greatest losses in man-power, and recruitment there lags behind the national average, despite the absence of alternative employment in the valleys and the relatively high unemployment there. Resettlement is a general problem, though most acute also in South Wales. Rehabilitation of injured men is now a highly organised service, but the arrangements for the resettlement of the disabled are inadequate. There is no worse advertisement for the industry than the derelicts with nystagmus, old injuries, silicosis, and now pneumoconiosis, who hang around the street corners and labour exchanges of the mining villages.[20a, 20b] The Government have the machinery to provide employment, but the sense of urgency seems to be lacking.[20a] If many of these men are to find work again in the industry, a complete job analysis becomes all the more necessary.

A School of Mining Medicine

It is clear that a many-sided attack on the medical problems of the industry is needed. The suggestion has been made that research and teaching might gain by being centred in an appropriate institution.[26a, 51]

The Young Miner

The record of the young miner has been even less happy than that of his elders. Youngsters have been unwilling to become miners, particularly underground workers,[45] either in the progressive mechanised coalfields or in the more backward ones. When enrolled they have displayed high rates of sickness, accident, absenteeism, and wastage. The retreat from the industry has been in large measure a withdrawal by the young. Combined operations by workers from a school of mining medicine might be of great help in adapting this ancient industry to the needs of the youth of today. Meanwhile Great Britain lags behind other countries, who have prohibited the employment of adolescents underground.[34]

* * *

Larger Issues

Recruitment

Our dilemma is simple. With full employment it is difficult to attract recruits to a "dark, dangerous, and dirty" [191] trade like coalmining; unless the number of coalminers is increased there will be no full employment. The traditional reservoir of mining labour has been the mining village. Today "the mining community is not willing to accept a special responsibility for the supply of new mining labour." [33] Hitherto miners, the mines, and mining villages have tended to form a closed system within our society. The extension of recruiting to the whole community is therefore a healthy development.

Immediate Remedies

The short-term approach to this challenge is to offer material and economic inducements, and the Government have accepted this principle, if rather half-heartedly and rather late. Coalmining is still only 16th on the industrial wage ladder, but there is now a tendency, at least, to regard it as a "most favoured" industry. There is evidence, however, of much muddled thinking in public discussion of these issues. To give all men, whatever their work, the *same* rations, for example, may be convenient, but physiologically it is not equitable.

Short-term policies need not be mere expedients. The Government have promised the mining districts some priority in housing, and this can inaugurate the long-term programmes that are needed for what is unlikely to be a short-term difficulty. The country has paid little attention to the general "uncivilisation"[60] of its mining villages. Yet, in the long run, this is likely to matter as much as the need for relieving the congestion of London. It is a common criticism of miners that they are sometimes content with less than they might earn, and absenteeism has often been ascribed to this. It is difficult to say whether there is any truth in the claim, or if it belongs to the mythology, often politically inspired, which envelops the industry. But if a clue were needed to the explanation of such limited needs and restricted horizons it might well be found in the present character of the mining village.[3]

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Mining offers its workers many satisfactions in its purposeful and successful struggle with nature. But here, as elsewhere, prestige and the regard of others is a condition of contentment.

> "The fundamental problem is to raise the status of the industry in the public mind. Its neglect between the wars went so far that miners were often held in contempt by other workers and came to feel themselves the whipping-boys of industry. Miners' sons found work elsewhere to secure self-respect and standing in the eyes of their fellow men—and women."[58]

Some of the factors in the decline of the miner's status have been described in the first sections of this paper; but other and deeper issues were involved. During the inter-war period the forces making for social change were acting against such trades as mining. The community, including the workers, increasingly adopted the values of its lower middle classes; and the "little man" of those days did not wield a pick and shovel. This development was an outcome of 150 years during which labour had been "alienated" from the ownership and control of industry and in which the way of life of the employers had become separate and far removed from that of the men who did the manual work and dirty jobs. In this sense the adoption of lower-middle-class standards represented a movement upwards. The movement of ideas was promoted by a genuine and widespread misunderstanding of the changes which were taking place in society. There was some swing from primary production to distribution, personal services, and "tertiary" industries; some decline of craftsmanship; and a growth of technical and white-collar grades; but their extent was greatly overrated.[11]

In mining this problem of status is not new: "We are an insulted, oppressed and degraded body of men," complained a miners' leader 100 years ago; "miners as a class are not looked on with respect by the public . . . we have had no respect for ourselves."[14] It originated in the peculiar derivation of a great industry not from ancient crafts with a guild organisation but from a later and semi-slave system.[50] During the second half of the nineteenth century the miner's status improved, but in the 1920's and 30's it deteriorated again. The community has now awakened to the importance of this industry to its survival, and nationalisation provides an opportunity for reform. In so far as status depends on material security, much has already been done, and more will be; but equally urgent is the other approach that is now open. The status of an industry rises as it acquires the character of a "profession"—i.e., it can regulate entry and training, has codes of conduct and standards of performance and responsibility for observance. In view of the backwardness of coalmining an acceleration of development in this direction may be as important to its future as the assurance of its living standards and its transformation into an "engineering" industry. The need for the development of a more "professional" status is not restricted to coalmining, and it involves more than the relative attractiveness of any industry. It involves, for example, the methods to be adopted in attaining maximum output and the whole question of industrial discipline in a society with full employment and social security. Tawney, with remarkable foresight, has anticipated these difficulties." "Collectivism by itself," he wrote 25 years ago, "is too simple a solution"; if the public is to get efficient service, industry must be carried on with the active coöperation of the organisation of producers. Coöperation involves responsibility of the workers for maintaining and improving the character of the service. And responsibility involves power—the power of the workers' associations to enforce upon their members the obligations of their craft.

In the last analysis, however, the problem of status can only be partly solved by reforms within an industry, including in this instance its increasing mechanisation. The community as a whole must either discard an irrational, antisocial, and now positively dangerous prestige system, or this country cannot survive as a great power, certainly not as a free power. The alternatives are either a more healthy scale of social values, or economic disaster, from which conscription of labour or the importation of foreign labour is unlikely to save us. The social sciences, social medicine included, can surely help us to understand this very real sickness of our society; and with understanding can come, for the first time, a conscious attempt at control and cure.

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PENICILLIN AS AN AID IN PROSTATECTOMY *

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THE value of chemotherapy and penicillin in the atment of infections after surgery of the prostate nd is well recognised and established with a gratifying ver mortality in all operations. It is recognised also t the mortality before prostatectomy (including doscopic methods) remains high, probably over 15% ey 1945), and that death is almost invariably the result infection.

Power (1946) considers that the prophylactic prerative administration of penicillin, combined with the llin operation, has revolutionised prostatic surgery. I ve had the good fortune to have penicillin available these cases from 1945, and hope to show that penicillin a prophylactic can lower the preprostatectomy rtality.

Hæmorrhage has for some time ceased to be the gbear of prostatic surgery, with the adoption of the rris operation. In most surgeons' hands the best ures were from the two-stage operation, but this rries with it a high mortality for the suprapubic stotomy. Further, there was a definite morbidity-rate om sepsis, which usually took the form of urinary fection, including urethritis, from the long use of an dwelling catheter, which might later produce a stricre. Rarer complications include osteochondritis of the mphysis pubis (in 4 of my patients), a most distressing condition requiring some four months' recumbency before the patient can begin to walk. It probably does not arise, as Riches (1946) has suggested, from injury of the periosteum at operation, but from a lymphatic spread from a low-grade pelvic cellulitis. In one of my cases the osteochondritis developed three months after the operation, two months after the patient had returned home. Osteochondritis may also arise in the tuber ischii (2 of my cases) and then could only be lymphatic in origin.

The newer operations of Hey (1945) and Millin (1945) have been welcomed because, while controlling hæmorrhage at least as well as a Harris, both of them have reduced the postoperative morbidity-rate; and, though neither is an easy operation, both of them are safer than the Harris in cases of difficulty, such as profuse bleeding when a ureter may be included in the trigonal stitch. It may therefore be instructive to consider, for each operation, possible reasons for the lowered morbidity.

The Millin operation, including either wedge-resection or stitching down of the trigonal flap, which is essential to prevent bladder-neck obstruction (Millin 1946), has a very short period of indwelling catheter and no deep sutures through the pelvic cellular planes.

Hey's operation also has a very short period for the indwelling catheter and no stitches through the pelvic fascia, hæmostasis being obtained by diathermy coagulation.

Hey strongly emphasised the risks of cystoscopy, catheterisation, and suprapubic cystostomy in causing preoperative infection and high mortality, and he was the first to affirm that uræmia does not often develop except secondarily to pyelonephritis (and sometimes secondarily to a low blood-pressure, such as might result from auricular fibrillation). Renal function therefore is important only in that pyelonephritis is more severe when kidney tissue is already damaged. Hey draws attention to the very high preprostatectomy mortality in most hospitals and claims that his aseptic operation cuts out this mortality by excluding infection without increasing his mortality for the major operation: in fact his figures compare well with statistics for prostatectomy in selected cases. This, however, is achieved by excluding cystoscopy, whereby the commonly associated bladder lesions (papilloma, carcinoma, stones, &c.) might be discovered before operation and more information obtained about the suitability of the gland for removal or endoscopic resection. The exclusion of catheterisation for acute retention may mean the loss of a valuable week or fortnight in which a fibrillating heart could be treated or remedial exercises given to the chesty subject; these measures are often highly beneficial in the less urgent case and are likely to be even more valuable in patients with acute retention, provided always that infection is not introduced.

PROPHYLACTIC PENICILLIN

In an attempt to lower the preoperative mortality, while permitting catheter drainage and cystoscopy to be carried out, I tried penicillin as a prophylactic. It was hoped that preliminary cystostomy could be avoided, in view of its high mortality and the additional disadvantages of a long stay in hospital, some increase in the technical difficulty of all second-stage operations, and the discomfort of the patient.

The first point to be decided was the dosage suitable for routine use in all cases. The concentration of penicillin in the urine was estimated after various doses, and the figures obtained were correlated with renal function tests in each patient. It was obvious that different doses would be required to produce the same concentration in patients with different degrees of renal function, but for practical purposes it seemed wise to

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* Based on a paper read at the Conference of the International Society of Urology at St. Moritz, August, 1947.

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cystostomy was left in only 0 9% of cases whereas previously 10·4% of all patients with simple enlargement d not have a prostatectomy after drainage, either ause they died, or because they could not be made for another operation.

From a mechanical point of view, drainage by urethral heter (of the five-eyed Tieman type) is as satisfactory by suprapubic tube. The limitation to drainage by e urethral catheter in the past was the short period er which it could be used without the development urinary infection. This limitation is almost entirely moved by the use of penicillin. In only a very few es was cystostomy needed when penicillin was used. nsequently one-stage operations, which are more isfactory to both patient and surgeon, can be done more often.

The points already put forward are further emphasised the postoperative mortality and morbidity. The uses of death in all groups of cases in which penicillin e not used show clearly that most patients die from emia consequent on an ascending pyelonephritis, as y (1945) has contended. A difficulty met with in alysing causes of death from a series of case-records that many patients die from some concurrent disease e.g., coronary or cerebral thrombosis—while they are æmic and have a urinary infection. In the following alysis deaths due to extra-urinary conditions are ssified separately, even if the patient had uræmia at e same time:

Uræmia and pyelonephritis	43
Malignant cachexia	8
Pulmonary œdema	3
Paralytic ileus	3
Hæmatemesis	3
Coronary thrombosis	2
Cerebral thrombosis	2
Pulmonary embolism	2
Empyema	1
Chronic renal disease	1
Pyelonephritis	1
Sulphapyridine anuria	1
Hæmorrhage	1
Anæsthetic	1
	72

Of the 72 deaths when penicillin was not used 44 ere attributable to pyelonephritis; undoubtedly many these would be avoided under the present system. onchopneumonia was not recorded as a cause of eath in any case. It often occurred but was invariably condary to urinary infection or some other more portant condition.

With penicillin there were only 8 deaths, and in only of them could pyelonephritis be said to have been the rect cause. This man had a twelve years' history nd was heavily infected (temperature 101°F) on admission. He was drained with an indwelling urethral atheter and given penicillin for two weeks. After a ne-stage Harris prostatectomy he ran a high fever (up o 103°F) and died of uræmia on the fourteenth day fter operation. In reviewing the case it has been ecided that had drainage and penicillin been continued a longer period (say three or four weeks) the man would have survived. This, then, is not so much a ailure of penicillin as a failure to use drainage and enicillin long enough.

The other fatal cases during the penicillin period are instructive. One man had complete heart-block and diabetes ellitus. He died after nine weeks' catheter drainage, no peration being performed because of his general condition. It was suspected that pyelonephritis and uræmia would have been the ultimate condition causing death, but surprisingly necropsy did not reveal any evidence of gross renal infection; this undoubtedly being due to the fact that penicillin was used. Two of the deaths following retropubic prostatectomy were the result of errors in technique mentioned above. The third patient died from morphine idiosyncrasy. In two of these cases necropsy revealed a surprising absence of pyelonephritis. One who had undergone resection died of bronchopneumonia. The seventh patient had a secondary hæmorrhage following transurethral resection, the treatment of which needed three anæsthetics in forty-eight hours. The man was a publican and died of circulatory failure. In the last case, a carcinoma of prostate, the patient collapsed with a dilated heart soon after his return to the ward.

The cases in which penicillin was used showed much less postoperative morbidity than did the earlier group. Only a very few cases presented the old-fashioned problem of the leaking suprapubic wound. Modern methods of prostatectomy have gone far to ensure this by their improved technique, but it is probably fair to attribute to penicillin a proportion of the success which has been attained in the recent series since it eliminates wound infection. In the few cases in which a fistula did develop penicillin allowed the use of an indwelling urethral catheter for ten days or more, by which time the wound healed well. This point is well emphasised by the methods used in closing suprapubic fistulæ in traumatic paraplegia. In some instances there was great difficulty in getting the abdominal wall to heal, and on occasion the fistula had to be excised and sutured; after a further period of catheter drainage it was possible to get all these wounds to heal. This process was invariably slow, and a catheter has been used many times for several months (being changed every fifth day) without recurrent flares of urinary infection. Again a few cases of traumatic paraplegia were treated with an indwelling catheter from the onset without having cystostomy. The catheter was left in place until some form of automatic micturition was re-established. The success in both these types of cases is attributed to the prophylactic use of penicillin.

Another disadvantage of the catheter is the possibility of urethritis, with the late development of a urethral stricture. It is too early to give figures for the incidence of stricture, but it is very rare to see signs of urethritis when penicillin is being used. No longer is it common to find pus caked round the meatus and catheter.

No attempt was made to discharge the prostatic patients from hospital early, and figures for the time spent in hospital after operation are of little value. This is particularly the case in this series, since most of the patients were treated in an E.M.S. hospital and were discharged on a weekly convoy.

ROUTINE TREATMENT

The lessons of these investigations have led to the following routine for prostatic obstruction, allowing for individual variations called for by special circumstances.

Patients with acute retention are admitted to hospital preferably without prior catheterisation; a five-eyed Tieman catheter is passed and tied in and the bladder emptied; slow decompression as a risk of renal failure is ignored, but very rapid emptying is avoided owing to the danger of bleeding—about an hour is allowed. Penicillin 20,000 units is given four-hourly for two days, and afterwards six-hourly as long as the catheter remains in situ †; should pyrexia develop, the penicillin is given three-hourly for a while in conjunction with a course of sulphadiazine. Great attention is paid to satisfactory mechanical drainage by the catheter, which must be inspected twice a day by the house-surgeon to prevent obstruction. Breathing-exercises are started, smoking is controlled, and the patient is assessed clinically as regards his suitability for resection or removal of the gland. Intravenous pyelography is important as a select a dose high enough to give an effective concentration in all cases. As a result of trials a routine dosage of 20,000 units of penicillin intramuscularly every six hours was chosen. It must be remembered that most men with enlarged prostates have a relatively poor renal function, so a greater interval can be allowed between doses than would be necessary in normal people, because the delay in excretion helps to maintain the penicillin level in the urine.

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† More recently 200,000 units eight-hourly has been found equally efficient and less disturbing to the patient (Peeney 1947).

TABLE I—MORTALITY IN CASES OF PROSTATIC OBSTRUCTION TREATED WITHOUT AND WITH PENICILLIN

Treatment	No. of cases	No. of deaths
All cases, including carcinoma:		
No penicillin	608	72 (*14·1*%)
Penicillin	217	8 (*3·7*%)
Cases of simple enlargement:		
No penicillin	433	49 (*11·3*%)
Penicillin	192	6 (*3·1*%)

Once this basic dose had been decided on, all patients with an indwelling urethral catheter were given penicillin routinely as long as the catheter was in place. This was continued into the postoperative period until the catheter was removed or the temperature normal. With a few exceptions this was the principle used in the present series of 217 cases. If the temperature was over 100°F for more than forty-eight hours, the penicillin was given in larger doses, and this treatment was supplemented with one of the sulphonamides. In this way it seemed possible to control the great majority of urinary infections.

The combined use of penicillin with sulphonamides is of the greatest importance. It is often found that a man with an indwelling catheter who is having penicillin will, after being afebrile for four or five days, suddenly develop a temperature of 101° or 102°F. Culture of the urine at this stage invariably shows a good growth of coliform organisms. This can be quickly and easily dealt with by a short course (30 g.) of a sulphonamide. Recurrences of coliform infections at short intervals in these circumstances are not common.

There are other possible reasons why the penicillin itself is of great value in the prevention of infection. The concentration attained in the urine is high enough to prevent the penicillin from being totally destroyed if *Bact. coli* are present, and some strains of *Bact. coli* are sensitive to penicillin in this concentration. A culture of the urine of a man with an indwelling catheter and a urinary infection most often shows an overwhelming growth of coliform organisms, but other organisms, more sensitive to penicillin, may be responsible for maintaining the infection; if these are removed by penicillin the bladder may become more capable of dealing with the coliforms. This is particularly likely since the bladder is relatively resistant to infection by coliform organisms in pure culture and in many cases, if the history is long, will have developed a local immunity to them.

RESULTS

In the figures given below, the mortality and cystostomy rates substantiate clearly the claims which have been made. Further, the temperature charts of the series show a remarkably quieter course in the group in which penicillin has been used. Unfortunately it is impossible to standardise the degree of preoperative and postoperative fever and so illustrate this point with figures, but it has been noted time and time again. Also, though again no figures are available, postoperative chest complications have been far less severe in the penicillin group.

The cases fall into two main groups. In neither was any selection made, and all cases of prostatic obstruction under my care, whether in general or private practice, have been included. The first group, consisting of 508 cases (both simple enlargement and carcinoma), were treated between November, 1939, and November, 1945, during which time penicillin was not used. The second group, of 217 cases, fall between November, 1945, and June, 1947, and in all of them penicillin was used on the principles described above. Table I illustrates the great improvement in mortality.

Table I is concerned with the mortality of all cases admitted during the given period and is not merely the mortality after surgical operation. The cases are analysed further in table II, in which the mortality for all different forms of treatment is given.

Table I shows that the total mortality in all cases of simple enlargement fell from 11·3% to 3·1% after the introduction of penicillin. The mortality after operation in simple enlargement fell to a similar extent. Table II shows that of 189 patients operated on and treated with penicillin 5 (2·6%) died. This series includes 57 patients treated by retropubic prostatectomy of whom 3 died. Two of these deaths can be attributed to technical *failures (postprostatectomy obstruction due to not* excising the V) in the early stages of trying out a new operation, so it is probably fair to exclude them. If this is done, the mortality in operation cases treated with penicillin becomes 2·1%, which is a satisfactory reduction from the 5% without penicillin. The mortality in one-stage Harris prostatectomy fell from 9·7% in 72 cases to 2·6% in 38 cases; the numbers are small for such comparisons, but the mortality for transurethral resection is also slightly lower in the penicillin group.

In table II no account has been taken of the cases in which cystostomy was the sole operation done (though they are included in the mortality figures given above), because they give a misleading impression unless cases in which cystostomy was followed by prostatectomy or by transurethral resection are included. In the first period 160 (36·9%) of 433 patients had cystostomies, and 24 (15%) died. In 45 of the 433 cases cystostomy was the only operation performed, because either the patient died or he was unfit for further operation. In the second period, out of 192 cases only 21 (10·9%) had cystostomies, many of which had been done elsewhere; in only 2 cases was the patient left with a suprapubic fistula, and there were no deaths. It can therefore be said that since the adoption of penicillin there was a decrease in the number of cystostomies done (10·9% as opposed to 36·9%). Further, a permanent

TABLE II—ANALYSIS OF RESULTS OF TREATMENT OF PROSTATIC OBSTRUCTION: 463 CASES WITHOUT PENICILLIN, AND 215 CASES WITH PENICILLIN

Surgical treatment	Simple Enlargement		Carcinoma	
	Cases	Deaths	Cases	Deaths
Without penicillin:				
None	32	7 (*21·9*%)	31	8 (*25·8*%)
Steinach only	34	1 (*2·9*%)	..	..
Two-stage Harris prostatectomy (completed) ..	82	4 (*4·9*%)	6	1 (*20·0*%)
Cystostomy followed by transurethral resection	43	1 (*2·3*%)	9	1 (*11·1*%)
Transurethral resection ..	117	2 (*1·7*%)	28	6 (*21·4*%)
One-stage Harris ..	72	7 (*9·7*%)	2	1 (*50·0*%)
Freyer's operation ..	4	3 (*75·0*%)	..	..
Suprapubic resection ..	4	0	..	..
With penicillin:				
None	3	1 (*33·0*%)	8	0
Two-stage Harris ..	11	0	..	..
Cystostomy followed by transurethral resection	7	0	1	0
Transurethral resection ..	71	1 (*1·4*%)	9	1 (*11·0*%)
One-stage Harris ..	38	1 (*2·6*%)	1	0
Suprapubic resection ..	1	0	1	0
Retropubic prostatectomy	57	3 (*5·3*%)	2	1 (*50·0*%)
Second-stage retropubic	1	0	..	..
Hoy's prostatectomy ..	3	0	..	..

paper the hæmopoietic responses to folic acid and to the combined liver and iron therapy are compared in cases of nutritional macrocytic anæmia.

LIVER AND IRON

The response of 12 cases of nutritional macrocytic anæmia to parenteral liver, 5 c.cm. of either ' Hepatex ' (Evans) or injectio hepatis (*U.S.P.*) intramuscularly on alternate days, and gr. 30 of ferrous sulphate by mouth daily, is shown in table I and fig. 1. All were Indian males below the age of 35 and strict vegetarians. The anæmia was macrocytic and the colour-index greater than 1; 2 had a mean corpuscular Hb concentration of less than 30% and were considered to be iron-deficient also. All had free HCl in the gastric juice; 4 had ankylostomiasis. None gave a history or id stools suggesting sprue. Blood slides for malarial arasites were negative. Though the anæmia was vere in many cases, angina of effort and œdema were bsent. In addition to liver and iron they received 6 ultivitamin tablets daily and were encouraged to take full diet, including liver, meat, fish, poultry, eggs, ilk, and cheese; but only 2 began to eat meat. During ie same period 34 cases of ankylostomiasis without ppreciable anæmia, and many vegetarians without næmia, were seen. The average increase of red cells as 1,000,000 per c.mm. in 20 days; 8 had a mean orpuscular volume greater than 100 c.μ or showed nacrocytes on the stained film when the red-cell count ad risen to 4,000,000 or more per c.mm. Serial reticulocyte counts and bone-marrow studies were not done n these cases.

ABLE II—EFFECT OF FOLIC ACID ON PERIPHERAL BLOOD IN NUTRITIONAL MACROCYTIC ANÆMIA

ase No.	Red cells (mill. per c.mm.)			Hæmoglobin (g. per 100 c.cm.)			Reticulocytes (%)			
	On admission	When folic acid started	22 days later	On admission	When folic acid started	22 days later	On admission	When folic acid started	At peak	Day of peak
13	1·8	1·8	3·8	6·3	6·5	11·9	0·5	0·5	30	5
14	1·7	1·2	3·5	5·6	4·2	10·5	1·0	1·5	32	5
15	1·3	1·4	3·9	4·2	4·2	10·5	2·0	2·0	20	5

FOLIC ACID

Three cases of severe nutritional macrocytic anæmia were treated with synthetic folic acid by mouth, at irst 25 mg., later 15 mg., and finally 5 mg. daily; the ablets were suspended in water as directed by Spies (1946). None of the patients had ever eaten eggs or meat of any sort; their diet consisted largely of rice, vegetable curries, dhal, and chupatties; milk was taken in tea. The red cells were less than 2,000,000 per c.mm. and macrocytic; the colour-index was greater than 1. The bone-marrow contained non-hæmoglobinised megaloblasts and showed typical erythroblastic arrest. No treatment had been given before admission to hospital. During the period of observation the diet was strictly controlled to their usual habits, and folic acid was the sole therapy given.

All 3 patients had smooth tongues, which were not sore, and 2 had crazy-paving roughness of the skin; the nails were normal. Jaundice was absent, and the Van den Bergh reactions were negative. The HCl content of the stomach was normal. Neurological complications and clinical evidence of other vitamin deficiencies were absent. Kahn tests were negative, and malarial parasites were not seen. In 2 cases there was also present ankylostomiasis, with occult blood in the stools. None had chronic diarrhœa or fatty stools. All had lost weight, strength, and appetite, and 2 had fever up to 101°F. Venous congestion, œdema, and angina of effort were absent, though all gave a history of breathlessness on exertion. The results are summarised in table II and illustrated in figs. 2, 3, and 4. In every case a reticulocyte crisis, maximal on the 5th day, was followed by a rapid, steady, and maintained rise in the amount of red cells and Hb, and the marrow resumed a normoblastic pattern. At the same time there was a well-marked increase of weight, strength, and appetite, new papillæ appeared on the tongue, and the skin lost its roughness. In the 2 cases with fever the fall of temperature coincided with the reticulocyte crisis.

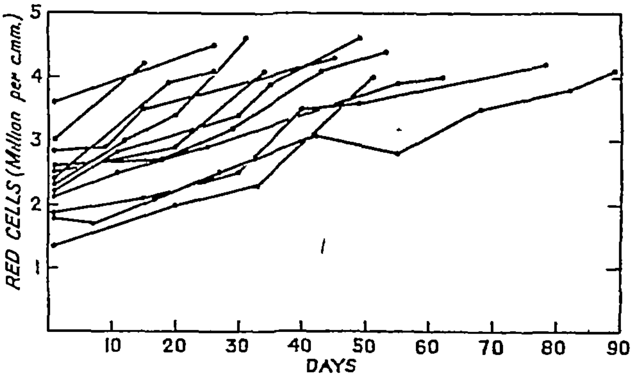

Fig. 1—Increase of red cells in 12 cases of nutritional macrocytic anæmia treated with liver and iron.

Case 13.—A sepoy, aged 22, a life-long vegetarian, had had malignant tertian malaria and smallpox 6 years previously, but no other illness. For 2 months he had noted tiredness, breathlessness on exertion, loss of weight and appetite, occasional vomiting, and feverishness.

On admission he had irregular fever up to 101°F and was pale, with clean tongue, smooth at the margins but not sore. Skin inelastic, with crazy-paving roughness most marked over the back, buttocks, and legs. Systematic examination was negative. Urine normal. Stools contained ova of hookworm and occult blood.

Blood-count: Hb 6·3 g. per 100 c.cm., red cells 1,800,000 per c.mm., mean corpuscular volume (M.C.V.) 116 c.μ, mean corpuscular Hb concentration (M.C.H.C.) 30%, reticulocytes 0·5%. Macrocytes with considerable variation in size were seen on the stained film. White cells 4500 per c.mm. (polymorphs 36%, lymphocytes 56%, eosinophils 8%). Myelograms showing the percentage of nucleated cells on a count of 800 before and after folic-acid treatment are shown in table III.

After a control period of 5 days, during which time there was no improvement, folic acid was given by mouth; the dose and response in the peripheral blood are illustrated in fig. 2.

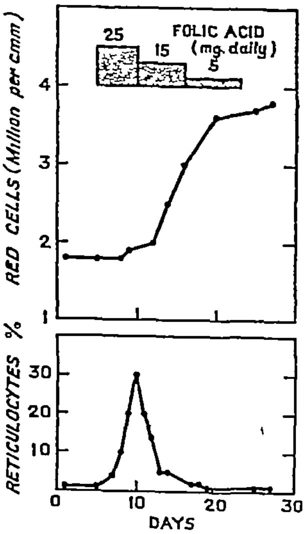

Fig. 2—Effect of folic acid on peripheral blood in nutritional macrocytic anæmia (case 13).

On the 9th day of treatment the marrow had resumed a normoblastic pattern; on the 11th day papillæ could be seen along the margins of the tongue, and the skin had lost its roughness. Weight, strength, and appetite increased.

On the 22nd day the peripheral blood showed Hb 11·9 g. per 100 c.cm., red cells 3,800,000 per c.mm., M.C.V. 113 c.μ, M.C.H.C. 26%. Macrocytes were still present on the stained means to test renal function and to exclude associated urinary lesions and bone metastases from carcinoma. If carcinoma is suspected, the acid serum phosphatase is estimated and stilbœstrol given as a diagnostic measure. Cystoscopy is done about the third day (usually under 'Pentothal') when the final decision to remove or resect is made. The operation is done ten to fourteen days after the acute retention, but the patient must have been absolutely afebrile for a week. Patients are allowed up in twenty-four to forty-eight hours, and the catheter is removed next day, when the penicillin is discontinued, unless the temperature is raised.

Cases without acute retention are similarly investigated and appropriate operation decided, the cystoscopy being deferred to the time of the operation, when it is necessary to be prepared to revise the decision to resect or remove. From the morning of the operation penicillin 20,000 units is given four-hourly for two days and afterwards six-hourly until the removal of the catheter.† No drainage of any residual urine of chronic retention is attempted before operation unless infection is present, but the usual careful attention is given to the heart, lungs, &c.

If biopsy shows carcinoma, subcapsular orchidectomy, as recommended by Hey (1945), is carried out in the hope of lowering the stilbœstrol dosage and delaying the onset of resistance to stilbœstrol; this does not delay the convalescence.

The prostatectomy usually performed is the retropubic, with a transverse incision in the prostatic capsule, which is later sewn up longitudinally; this allows a small tube (equal to no. 20 French catheter) to be placed through the upper end into the bladder for twelve to twenty-four hours (*in addition to the usual catheter*). It affords a valuable alternative route for the drainage if the catheter slips, blocks, kinks, or for any other reason does not work. This is retained for so short a time and is so small that no leak follows its removal. Great attention is paid to excising the V from the prostatovesical ledge to prevent postoperative obstruction, but this allows some oozing from the cavity to escape into the bladder and is another reason for the small bladder tube.

Preliminary suprapubic cystostomy is avoided now and is only rarely used when attempts to pass a catheter have failed in acute retention.

SUMMARY

The value of penicillin as a prophylactic against infection in prostatic surgery has been investigated.

Since penicillin has been given as a routine before and after operation there has been a reduction in the total mortality from 11·3% to 3·1% in all cases of simple enlargement, and after prostatectomy (removal or resection) from 5% to 2·6%. Before the introduction of penicillin 36·9% of all cases were submitted to cystostomy with a case-mortality of 15%; since penicillin has been used the proportion has been reduced to 10·9% with no mortality.

Penicillin is recommended for any period of indwelling catheter in prostatic surgery, and dosage is suggested.

A broad outline for the management of prostatic patients is given.

My thanks are due to Dr. E. ff. Creed, of the pathological department, King's College Hospital, and to Dr. David Nabarro, lately in charge of the pathological department, Emergency Hospital, Leatherhead, for their help in the penicillin investigations; and to Mr. W. Waugh for preparing the statistics and for his skilful care of the patients as house-surgeon and surgical registrar at King's College Hospital.

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LIVER AND FOLIC ACID IN THE TREATMENT OF NUTRITIONAL MACROCYTIC ANÆMIA

A COMPARISON OF RESULTS

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NUTRITIONAL macrocytic anæmia is a deficiency anæmia, often severe, most commonly seen in vegetarians, and aggravated by pregnancy. The anæmia is macrocytic, and the bone-marrow shows megaloblastic hyperplasia. Crude liver extracts, autolysed yeast, and synthetic folic acid are curative. Ankylostomiasis, sprue, malaria, and syphilis are often also present. Though the peripheral blood picture is very similar to that of Addisonian pernicious anæmia, hæmolytic jaundice, achlorhydria, and subacute combined degeneration of the cord do not develop, and sore tongue is rare. The age-incidence is younger, 20–35, and refined liver extracts given parenterally are without effect. These clinical observations have led to the idea that the response of nutritional macrocytic anæmia to crude liver extracts or to autolysed yeast is due to some other substance than pure liver principle or extrinsic factor.

Before the synthesis of folic acid (*Lactobacillus casei* factor present in liver) by the team of investigators at the Lederle laboratories (Angier et al. 1945), and the clear demonstration by Spies et al. (1945) that it was effective in many types of macrocytic anæmia associated with megaloblastic hyperplasia of the bone-marrow, including Addisonian anæmia, nutritional anæmia, pregnancy, sprue, and pellagra, it was customary to treat nutritional macrocytic anæmia with crude liver extracts and iron. Trowell (1943) showed that in Africa the deficiency was often dual, and he coined the term dimorphic anæmia. However, the hæmopoietic response was often strikingly slow compared with that of Addisonian anæmia, and the amount of liver required was very much greater. The discovery of folic acid has opened a new era in the treatment of macrocytic anæmia, and it is of the utmost importance that a full clinical assessment of its value and limitations be made so that it is not squandered on unsuitable cases without adequate control, as so often happens with new and potent remedies. In this

TABLE I—NUTRITIONAL MACROCYTIC ANÆMIA TREATED WITH LIVER AND IRON

Case no.	Before treatment		After treatment	
	Red cells (mill. per c.mm.)	Hb (g. per 100 c.cm.)	Red cells (mill. per c.mm.)	Hb (g. per 100 c.cm.)
1*	1·8	5·6	4·2	12·8
2†	1·8	5·6	4·2	12·6
3†	1·3	4·4	4·2	12·6
4	2·2	7·0	4·6	14·0
5†	2·4	7·7	4·5	13·3
6	2·4	8·4	4·1	13·3
7	2·5	8·4	4·0	13·3
8	2·2	7·0	4·0	12·8
9*	2·7	7·7	4·4	12·6
10	3·6	11·2	4·5	13·3
11	3·0	11·2	4·2	11·9
12†	2·8	9·8	4·3	12·6

* Iron-deficient. † Ankylostomiasis.

time there was an increase of weight, strength, and appetite; new papillæ appeared on the tongue, and the crazy-paving roughness of the skin present in 2 cases disappeared. Since the diet was controlled and folic acid was the sole therapy given, it seems likely that the dramatic hæmopoietic response and clinical improvement were due to folic acid.

The peripheral blood returned to normal at a much more rapid rate than had previously been observed with large doses of liver parenterally and iron by mouth; the red cells increasing at the rate of 1,000,000 per c.mm. in 5 days, as compared with 1,000,000 per c.mm. in 20 days.

From a study of these cases it appears that folic acid alone by mouth is a more powerful remedy in the treatment of nutritional macrocytic anæmia than are crude liver extracts given parenterally and supplemented by iron by mouth; and it is hoped that this report will stimulate further trials in Asiatic countries.

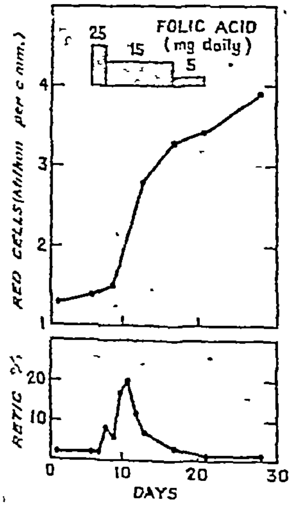

Fig. 4—Effect of folic acid in case 15.

SUMMARY

In 3 cases of nutritional macrocytic anæmia with megaloblastic hyperplasia of the bone-marrow folic acid produced a more rapid improvement in the peripheral blood than would have been expected with large doses of liver extract parenterally and iron by mouth. The bone-marrow resumed a normoblastic pattern.

I am indebted to Lieut.-Colonel W. R. M. Drew, O.B.E., R.A.M.C., professor of medicine in the University of Bagdad, for much helpful advice and criticism; Major A. S. Brown, I.M.S., and Captain S. M. H. Bokhari, I.A.M.C., for their clinical assistance; and Major R. Fleming, I.M.S., for the laboratory investigations.

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". . . In the first flush of enthusiasm for the industrial revolution that resulted from the practical applications of science, it was felt that the consequences of such application could only be for the good of man. As we have seen more of these consequences, however, and thought more deeply on such matters, we now realise that the practical results of science will be good or evil, in the ethical sense, depending on the nature of the application. . . . The evils that can result from wicked application do not mean that science itself is evil. Each pure science merely gives an objective account of the facts which it finds in its own field of study. These facts are ethically neutral; it is only their application that can lead to evil rather than good results. Moreover, from a broader and deeper point of view, the pursuit of these ethically neutral facts must itself be regarded as a good. It is a spiritual good, since knowledge of the true nature of the world in which he lives should increase the intellectual dignity of man. It is a practical good, since it is only through knowledge of the actual facts that men of good will can plan for their application to good rather than evil ends. Keeping certain facts secret, as in the field of atomic energy, can be temporarily important and serve a useful purpose, but can make no fundamental contribution to the prevention of evil."—RICHARD C. TOLMAN. *Science*, Aug. 15, 1947, p. 140.

ACUTE ANTERIOR POLIOMYELITIS COMPLICATING PREGNANCY

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POLIOMYELITIS is relatively uncommon in adults, and the chances of its coinciding with pregnancy are therefore very small. No cases of such coincidence have so far been published in this country. In the United States, on the other hand, where the number of cases of the disease is much greater, the subject of poliomyelitis in pregnancy has often been discussed in the medical press. In view of the present outbreak here the following record may be of interest to obstetricians and others who may find themselves called on to deal with the condition.

THE CASE

On Nov. 27, 1946, one of us (P. H. W.) was called into consultation to see a woman, aged 32, in her home, with a history of malaise and rise of temperature to 99·6°F on Nov. 22, accompanied by aching pains between the shoulders. On Nov. 24 there had been severe pain in the lumbar region and nausea; temperature 100·6°F. Patient had noted that on trying to get out of bed her arms and legs were weak. On Nov. 26 she had vomited and had had difficulty in leaning to the side of her bed; and she also had dysphagia with palatal paralysis.

Examination (Nov. 27).—Complete paralysis of left lower limb, no spontaneous movements being possible. Right lower limb less severely affected, but quadriceps femoris and dorsiflexors of foot powerless. Contraction of flexors of foot and knee very weak. Paresis of both arms, the triceps on either side being most affected, and the flexors of wrists and elbows less so. Complete deltoid paralysis on right side. Rectus abdominalis and other trunk muscles also affected, but no alteration in depth or rate of respiration.

Biceps and supinator reflexes brisk on both sides; triceps-jerks elicited. Ankle-jerks brisk on both sides, but knee-jerks absent. Plantar responses doubtful. Some hyperæsthesia of dorsum of feet and of legs, but no sensory loss.

Cranial nerves showed no abnormal physical signs; fundi normal. Temperature 99·4°F, respirations 20 per min. Urine: no albumin, sugar, or acetone. Heart, lungs, and ear, nose, and throat normal. Uterus enlarged as for a 26-week pregnancy.

Acute poliomyelitis was diagnosed and patient admitted to hospital, where the cerebrospinal-fluid findings were: pressure 160 mm. water; clear fluid; 10 lymphocytes per c.mm.; protein 50 mg., chlorides 692, sugar 57 mg./100 ml.; globulin, weakly positive Pandy reaction.

A white-cell count showed 7600 per c.mm. (polymorphonuclears 71%, lymphocytes 24%, hyalines 1%).

Course of Illness.—There was subsequently no further rise of temperature above normal while patient was in hospital. Fœtal heart sounds were heard, and movements were felt.

In the light of American experience, it was decided that there was no indication to interfere with the pregnancy, and the paralysis was treated by the usual methods for poliomyelitis. From Nov. 29 to Dec. 1 there was retention of urine, necessitating catheterisation. Bowels inactive; enemas had to be given regularly for several weeks.

By Dec. 7 considerable improvement had taken place: urine was passed naturally, and movement of all leg muscles on both sides was possible though weak; deltoid paralysis had diminished, and power in arms, particularly the left, showed a surprising degree of recovery.

By the end of January all arm movements were possible and legs showed considerable recovery of power; but patient still could not sit up in bed, the abdominal muscles were feeble, and it was clear that during pregnancy she would never recover sufficiently to stand or walk.

Obstetric History.—Married 7 years. First child aged 6, born June 31, 1940; normal labour at 42 weeks; birth-weight 9 1/2 lb. Second child, aged 4 1/2 born Feb. 25, 1942;

TABLE III—MYELOGRAMS BEFORE AND AFTER FOLIC-ACID THERAPY IN CASE 13

—	Percentage of nucleated cells	
	Before folic acid started	*9th day of treatment*
Total nucleated cells	47,000/c.mm.	142,000/c.mm.
Myeloid series/nucleated reds	2 16/1	1·56/1
Megaloblasts	9*	1·5
Early erythroblasts	6	5
Late erythroblasts	3†	3
Normoblasts	10	28·5
Myeloblasts	3·5	0·5
Premyelocytes	5	1·5
Myelocytes	8	7
Metamyelocytes	8	5
Polymorphs	38	45·5
Lymphocytes	9	2
Monocytes	0·5	0·5
Plasma cells	—	—
Unclassified cells	—	—
Parasites	—	—

* A few mitotic figures were seen.

† Hæmoglobinisation did not start earlier than the late erythroblasts.

film. White cells 9200 per c.mm. (polymorphs 52%, lymphocytes 33%, monocytes 6%, eosinophils 9%). Patient had gained 9 lb. in weight.

No anthelmintics were given during the period of observation. The reticulocyte crisis and subsequent increase of red cells, 1,000,000 per c.mm. in 5 days, fully satisfy the *U.S.P.* standard.

Case 14.—A sepoy, aged 34, a life-long vegetarian, had had an untreated penile sore 6 years earlier, and bacillary dysentery 2 years earlier, but no other past illness. For 2 months he had noted increasing lassitude, breathlessness on exertion, and anorexia. Stools had been occasionally loose but never fatty or offensive. He had lost weight.

On admission he had no fever but was pale, with clean smooth tongue and crazy-paving roughness of legs. Penile scar. *Heart, lungs, and abdomen normal. Ankle-jerks* absent; other tendon-jerks very sluggish. Central nervous system otherwise normal. Kahn test negative. Cerebrospinal fluid normal in all respects. Urine normal. Stools negative.

Blood-count: Hb 5·6 g. per 100 c.cm. Red cells 1,700,000 per c.mm., M.C.V. 123 c.μ, M.C.H.C. 27%, reticulocytes 1%. Macrocytes and a few *normoblasts were seen on the stained* film. White cells 5500 per c.mm. (polymorphs 49%, lymphocytes 45%, monocytes 5%, eosinophils 1%). The bone-marrow showed non-hæmoglobinised megaloblasts with erythroblastic arrest.

TABLE IV—MYELOGRAMS BEFORE AND AFTER FOLIC-ACID THERAPY IN CASE 15

—	Percentage of nucleated cells	
	Before folic acid started	17th day of treatment
Total nucleated cells	70,000 /c.mm.	90,000 /c.mm.
Myeloid series/nucleated reds	0·72/1	1·3/1
Megaloblasts	15*	1·5
Early erythroblasts	16	4·5
Late erythroblasts	11†	10
Normoblasts	12	21
Myeloblasts	2	0·5
Promyelocytes	2	0 5
Myelocytes	3	3
Metamyelocytes	4	4·5
Polymorphs	28	45
Lymphocytes	4	5 5
Monocytes	2	1
Plasma cells	—	—
Unclassified cells	1	—
Parasites	—	—

* Many mitotic figures were seen.

† Hæmoglobinisation did not start earlier than the late erythroblasts.

During the control period of 9 days the amount of red cells fell to 1,200,000 per c.mm. and of Hb to 4·2 g. per 100 c.cm. The dose of folic acid and the response in the peripheral blood are illustrated in fig. 3.

On the 22nd day of treatment the *peripheral blood* showed Hb 10·5 g. per 100 c.cm., red cells 3,500,000 per c.mm., M.C.V. 98 c.μ, M.C.H.C. 30%. A few macrocytes were seen on the stained film. White cells 5300 per c.mm. (polymorphs 66%, lymphocytes 28%, monocytes 2%, eosinophils 4%), and the bone-marrow was of normoblastic type. New papillæ were growing on the tongue, and the skin was normal. Weight, strength, and appetite had increased. Ankle-jerks remained absent.

The reticulocyte crisis and subsequent increase of red cells, 1,000,000 per c.mm. in 5 days, fully satisfy the *U.S.P.* standard.

Case 15.—A havildar clerk, aged 25, a life-long vegetarian. An undiagnosed fever 5 years previously was the only past illness. For 1 month he had noted increasing weakness, breathlessness on exertion, loss of weight and appetite, vomiting, and feverishness.

On admission he had irregular fever up to 101°F and was very pale with clean tongue, without papillæ at the margins but not sore. *Skin and nails normal. Systematic* examination negative. Urine normal. Stools contained ova of hookworm and occult blood.

Blood-count: Hb 4·2 g. per 100 c.cm., red cells 1,300,000 per c.mm., M.C.V. 123 c.μ, M.C.H.C. 26%, reticulocytes 2%. Normoblasts, macrocytes, and considerable variation in size, shape, and staining were present on the stained film. White cells 5600 per c.mm. (polymorphs 55%, lymphocytes 36%, monocytes 3%; eosinophils 6%). Myelograms showing the percentage of nucleated cells on a count of 800 before and after folic acid treatment are shown in table IV.

During the control period of 6 days there was a slight increase of red cells to 1,400,000 per c.mm., but the amount of Hb remained unchanged. The dose of folic acid and the response in the peripheral blood are illustrated in fig. 4.

On the 17th day of treatment the bone-marrow had resumed normoblastic pattern, and papillæ were growing along the *margins* of the tongue.

On the 22nd day the peripheral blood showed Hb 10·5 g. per 100 c.cm., red cells 3,900,000 per c.mm., M.C.V. 91 c.μ, M.C.H.C. 28%. A few macrocytes were still present on the stained film. White cells 4600 per c.mm. (polymorphs 49%, lymphocytes 35%, monocytes 6%, eosinophils 10%). The appetite was normal. Patient had gained 10 lb. in weight.

No anthelmintics were given during the period of observation. The reticulocyte crisis and subsequent increase of red cells, 1,000,000 per c.mm. in 5 days, fully satisfy the *U.S.P.* standard.

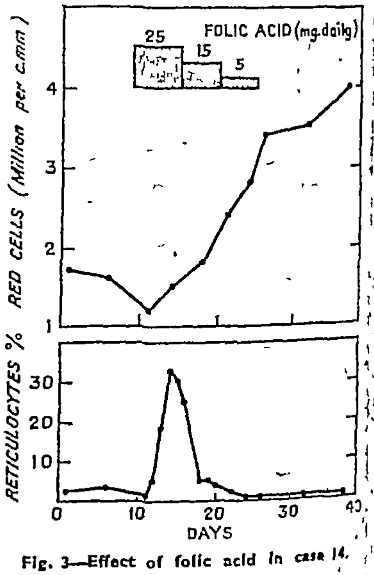

Fig. 3—Effect of folic acid in case 14.

DISCUSSION

After a control period synthetic folic acid was given by mouth in 3 cases of *nutritional macrocytic anæmia*. In every case a maximal reticulocyte response, average 27%, took place on the 5th day and was followed by a steady increase of red cells and Hb towards normal, 1,000,000 per c.mm. *and* 2 g. per 100 c.cm. respectively in 5 days during the most rapid period of recovery. The bone-marrow showed a great reduction of megaloblasts and an increase of normoblasts. At the same wer; nor did the disease affect the expulsive power the uterine muscle.

These findings are in accordance with American perience in similar cases. There is no evidence that e fœtus can be infected before delivery. The only ses on record in which fœtal death took place before livery have been due to asphyxiation secondary to spiratory paralysis in the mother.

There is evidence that the newborn child has antidies which protect it from infection in the first few eks of life. A few cases of poliomyelitis in the first onth are, however, on record.

On these grounds there is no evidence that interence with pregnancy or cæsarean section is ever dicated in cases of poliomyelitis in pregnant women, cept for circumstances which would equally apply all pregnant women.

It is hoped that other cases may be reported to substantiate or refute any observations made in this case d those recorded in the American literature.

We wish to thank Dr. H. M. Jaques, of Burnham, Bucks, kindly permitting us to treat the case and to publish this record; Mr. G. P. Arden, for his valued advice and re of the patient; and the nurses and physiotherapy partment at King Edward VII Hospital, Windsor.

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ACUTE AMŒBIASIS COMPLICATING CHOLECYSTECTOMY

REPORT OF A CASE

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THE following case is reported as there must be many tients with latent amœbiasis brought back from the opics who will be subjected to abdominal and other rgical operations.

In September, 1946, a man of 37, who had spent a large rt of the last twenty years in Northern Rhodesia, was dmitted for cholecystectomy for calculi. Operation had been dvised, in spite of the absence of symptoms, in view of his tended early return to Rhodesia.

The patient's previous history included a severe attack of ackwater fever in Birmingham, two months after his urn from Africa in 1933. Though his life was threatened, had made an excellent recovery, apart from an acute pendicitis which had complicated his convalescence. This d been dealt with surgically, and after a few years in this untry he had been allowed to return to Rhodesia in 1937.

Since the operation for appendicitis his health had been xcellent. He was not aware of having had any dysenteric fection, but for years he had from time to time had short tacks of diarrhœa. These had rarely lasted more than a y but had been associated with tenesmus and had often rminated in "an attack of piles." He had never received tidysenteric treatment.

Operation (Mr. William Everett).—The patient was anæsthetised with 'Pentothal,' curare, and gas and oxygen. Kocher's incision was used. The gall-bladder was full of all pigment stones and bili ry sand, thought to be a legacy fundus of the gall-bladder was buried for about an inch in liver substance, and its removal demanded a small incision into hepatic tissue. The small cavity thus produced was carbolised before being closed. The liver and all the colon which could be seen appeared to be healthy and normal.

Postoperative Course.—The immediate postoperative period was uneventful, and by the third day the patient felt very well and had been out of bed several times. On the evening of that day he received a routine aperient. Next morning it appeared that this dose had been excessive, for he had several loose stools and was uncomfortable. By the evening, with symptoms persisting in spite of symptomatic treatment, his temperature rose to 100°F. From this point his condition deteriorated, bowel action became more frequent and urgent, the temperature rose higher, and there was considerable abdominal pain. Early in this illness several motions were examined for evidence of infection, and, though amœbiasis had not been suspected, the examination included a fruitless search for amœbæ and cysts. The white-cell count was moderately increased to 14,000 per c.mm., with a relative increase in polymorphs. Repeated search for evidence of malaria proved negative.

By the twelfth postoperative day his conjunctivæ were icteric and the Van den Bergh test gave a direct positive result. The patient was now very ill, with a tender distended abdomen and signs of ascites. The diarrhœa continued intermittently in spite of succinyl sulphathiazole in full doses. Evidence of subphrenic or pelvic suppuration was looked for but none was discovered, though rectal examination was painful and to the examining finger the rectal wall seemed to be much indurated.

Re-exploration of Abdomen.—This was carried out through the original wound. When the peritoneal cavity was entered, much thin bloodstained fluid escaped. The operation site was satisfactory, and a hand passed above the liver and into the pelvis confirmed the absence of suppuration in either of these situations. The whole of the colon which was accessible was intensely inflamed, with gross thickening of the gut wall and induration of the pericolic tissues, especially in the ascending colon and hepatic flexure, where the inflammation was severe enough to suggest the possibility of abscess formation in the right renal gutter. During the exploration of this region the gut was torn by the finger and the bowel contents, pale and granular from the ingested succinyl sulphathiazole, escaped freely. By this time the possibility of amœbic colitis had suggested itself, and a sample of the escaping fæces was rapidly examined microscopically. Typical vegetative forms of *Entamœba histolytica* were present in very large numbers, motile, and showing ingested red cells. A wide-bore tube was stitched into the gut, free drainage of the abdominal cavity was instituted, and the wound was closed with steel wire. The patient, who had been on the table for nearly three hours, was immediately given a transfusion of three pints of blood, followed by glucose and glucose-saline maintained for four days, during which nothing was given by mouth.

Emetine gr. 1 was given twelve-hourly for three doses, and subsequently daily, until a total of gr. 12 had been given, and penicillin 100,000 units was injected three-hourly for a week. During most of this week the patient's condition was desperate. His temperature remained high, his pulse-rate rose to 140 per min., and the jaundice deepened until an icteric index of 60 was reached. As soon as fluid was allowed by mouth, succinyl sulphathiazole 8 g. eight-hourly was given. Towards the end of the week clinical improvement was manifest, and from this point there was, on the whole, steady and maintained advance towards a recovery, which now appears to be complete.

After the course of emetine injections, emetine bismuth iodide was administered, and later still a course of carbarsone was instituted. No local treatment to the bowel was undertaken. The patient left the nursing-home at the end of eight weeks, well but with a small fæcal fistula which has since healed, and a recent full examination has not revealed any evidence of residual dysenteric infection.

COMMENTS

In this case a "cold" cholecystectomy seems to have caused an unsuspected amœbiasis to flare up. Possible factors influencing this complication include trauma to big bowel from retractor pressure, and the incision into the liver and subsequent carbolisation of the small hepatic cavity. A general lowering of resistance as a result of normal labour at 41½ weeks; birth-weight 10½ lb. One miscarriage at 3 months on Dec. 6, 1945. Menses regular 4–5/28. Last menstrual period May 23, 1946. Expected date March 2, 1947.

The patient was seen first at 28th week of pregnancy, when paralysis was very well marked. The uterus was slightly small for the dates. The urine contained no albumin or sugar. Blood-pressure 118/68. She was examined throughout rest of pregnancy at intervals of two or three weeks. There was no evidence of toxæmia, nor any abnormality detected except the paralysis, which gradually improved. Blood-count (Feb. 17, 1947): red cells 3,400,000 per c.mm.; Hb 75%.

On March 8, as she was a few days overdue according to her dates, castor oil and an enema were administered. Pains started between 4 and 5 P.M. on same day, and the progress of labour was watched continuously from 9 P.M. until 1.30 A.M. on the 9th. Dilatation of os was very slow, though position of baby was anterior and presentation a vertex. At 1.30 A.M. on the 9th, pethidine 100 mg. was given; this was repeated two hours later. At 6.30 A.M. patient appeared to be fully dilated, and head had descended to pelvic floor, but at that stage patient could not help herself any further and she indicated that she could not bear down or express the child's head as she had done with the previous two children. General anæsthesia was then given, small-outlet forceps were applied, and a living female child weighing 9 lb. 4 oz. was delivered at 9.15 A.M. The placenta separated about 20 minutes later and was expressed from the vagina.

The patient's conditions was eminently satisfactory afterwards, with no fever, and she nursed the baby entirely on the breast.

Subsequent Progress.—The child did well and was healthy in every way; no sign of paralysis or weakness; weight 15½ lb. at 4 months of age. Pregnancy and childbirth had no adverse effect on progress of the mother towards recovery of power. On July 10 she could walk with the aid of a stick and a plaster support to the right knee. She said she was getting stronger day by day, though the right quadriceps muscle and the muscles of the back were weak.

DISCUSSION

If it is true, as suggested by Aycock (1941), that pregnant women are more susceptible than non-pregnant women to the virus, poliomyelitis will always be likely to arise in pregnancy, and knowledge of the subject is essential for practising obstetricians and physicians from whom advice may at any time be sought.

Incidence of Poliomyelitis in Pregnancy

Weaver and Steiner (1944) collected records of 75 cases between 1906 and 1943 of which 61 had been reported since 1930, representing an average of almost 5 yearly in the United States. Probably only a small fraction are recorded. Kleinberg and Horwitz (1941) were able to describe 13 unpublished cases which had been under the care of colleagues, and Brahdy and Lenarsky (1933) personally observed 3 cases within a year.

Aycock (1941), estimated the probability of poliomyelitis and pregnancy coinciding at less than 1 in 1000 cases of poliomyelitis and less than 1 in 50,000 pregnancies.

Susceptibility in Pregnancy.—The idea that the hormonal changes of pregnancy, make women particularly susceptible to the virus is supported by animal experiment (Jungeblut and Engle 1934, Aycock 1937, 1940). Aycock (1937) showed that injection of œstrogenic substances into castrated immature female monkeys enhanced their resistance to intranasal instillation of virus. Comparative urinary œstrogen assays showed higher excretion of these substances in poliomyelitis patients than in controls (Aycock 1940).

Weaver and Steiner (1944), among others, have noted that the incidence of poliomyelitis in pregnancy varies according to the stage of pregnancy, and recorded in 70 cases the following incidence:

1st	third	of	pregnancy	17·1 %
2nd	,,	,,	,,	34·3 %
3rd	,,	,,	,,	48·6 %

In experiments in pregnant cotton-rats they demonstrated that of 13 animals in the first third of pregnancy 3 were resistant to the virus, whereas 51 animals in later pregnancy all developed the disease after three-way inoculation of virus (intracerebral, intranasal, and subcutaneous).

Most writers consider that poliomyelitis has no adverse effect on pregnancy or labour (Brahdy and Lenarsky 1933, Kleinberg and Horwitz 1941). The exceptions to this rule when applied to pregnancy are to be found in cases of widespread paralysis in the mother, in which case death of the fœtus in utero from asphyxia is the obvious risk (Harmon and Hoyne 1943). Aycock and Ingalls (1946) have collected records of the fate of the fœtus in 131 cases: in 25 cases the baby was stillborn or died shortly after birth; and in 6 cases abortion occurred in the first three months.

That the uterus has an independent nerve-supply is shown by the fact that normal contraction occurs after transection of the spinal cord or after experimental division of the sympathetic nerve-supply (Wright 1940). Moreover the ability of the uterus to expel its contents has been observed also in cases of cord tumour and fracture with cord involvement. In 243 cases pregnancy has taken place within a year of the onset of poliomyelitis; normal and uneventful pregnancies and labours were experienced in all cases (Kleinberg and Horwitz 1941).

There is therefore strong evidence that pregnancy and labour should not be interfered with except for complications operative for all pregnant women. While both termination of pregnancy and cæsarean section have been done in these cases, from clinical experience there is no evidence that they were indicated on reasonable grounds.

Infection of the Child

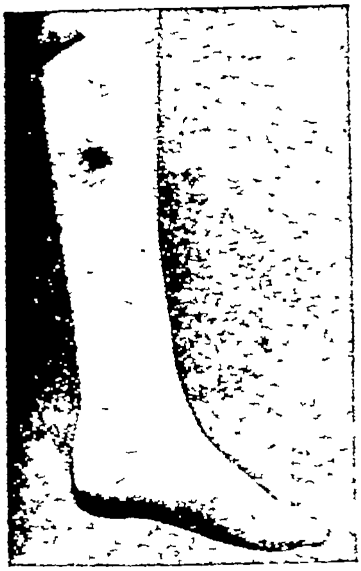
No authentic instances of transmission of the virus of poliomyelitis from the mother to the offspring in utero are on record. Unlike the virus of vaccinia encephalitis, measles, chickenpox, and variola, which may be found in the bloodstream, the virus of poliomyelitis is rarely recoverable from the circulating blood of patients, or at any rate is never present in sufficient amount to pass through the placental circulation (*Journal of the American Medical Association* 1943).

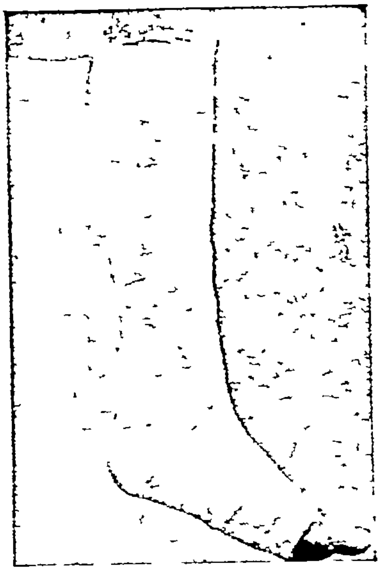
Poliomyelitis may occur in infants in their first month but is rare under the age of 6 months. Biermann and Piszczek (1944) described a case in a newborn infant which developed symptoms on the 11th day after delivery and paralysis of the lower extremities on the 13th day; the mother developed symptoms on the 1st day after delivery and died on the 4th day. In this case infection may have taken place either during exposure at birth or during the short period of ten minutes when the infant was placed for the only time in close proximity to the mother after birth.

That infection may occur at delivery from fæcal contamination is highly likely in view of the fact that the virus of poliomyelitis is known to exist in the stools in the early stages of the disease (Paul and Trask 1941, Howe and Bodian 1940). The infrequency of the disease in the first month of the infant's life is probably due to the relative unlikelihood of the mother's acquiring the disease at or near full term; but, as suggested by Aycock and Kramer (1930) and by Shaughnessy et al. (1930), it is also due to the fact that the infant has antibodies which persist several months after birth. Weaver and Steiner (1944) consider that there is no evidence that passage of the virus from mother to infant through the milk can take place. Experimentally they showed that 2 mother cotton-rats infected 24 hours after delivery did not convey the infection to their 8 offspring, who fed from their mothers from birth until the mothers died on the 8th and 11th days.

SUMMARY

A case is described in which acute anterior poliomyelitis occurred in the 6th month of pregnancy. The patient was treated conservatively and allowed to proceed to full term; a normal healthy female child weighing 9 lb. 4 oz. was successfully delivered. No complications occurred, except that there was delay at the pelvic floor and the child was delivered with forceps. Pregnancy and labour had no adverse effect on the gradual progress of the patient towards recovery of


(Fig 1)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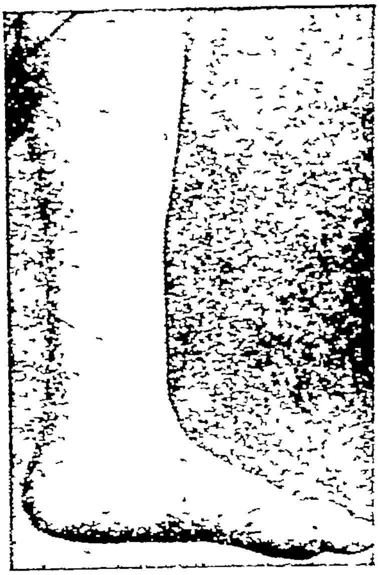
(Fig. 3)

SUPERFICIAL PHLEBITIS

Ambulatory Treatment With Elastoplast Bandaging

CASE HISTORY—L. L. Aged 42. A female Sugar Packer. Whilst at work on *June 16th*, 1946, she cut the outer side of her left ankle; shortly afterwards a septic eczema of the ankle area supervened. On *July 26th*, a large clot appeared in the internal saphenous vein on the inner side of the calf (Fig. 1).

TREATMENT. *August 9th*, 1946. A well-bevelled adhesive sponge rubber pad was placed over the clot, the eczema was covered by layers of 'Viscopaste' and the leg firmly bandaged with 'Elastoplast' from toes to knee (Fig. 2). *August 23rd*, 1946. There was no pain or soreness in contrast to the presence of both before treatment. Eczema was cleaned with calamine in oil, and dressed with 'Jelonet' and 'Ichthopaste.' The pressure pad was re-applied and the leg again firmly bandaged with 'Elastoplast.'

August 30th, 1946. Treatment repeated. *Sept. 27th*, 1946. Clot completely disappeared, leg comfortable, eczema largely cleared up and internal saphenous vein sclerosed and obliterated (Fig. 3).

COMMENT. An example of ambulatory treatment of Phlebitis by local pressure over clot and firm bandaging, resulting in its speedy obliteration and in the restoration of the leg to normal condition. Details and illustrations above are of an actual case. T. J. Smith and Nephew Ltd., Manufacturers of 'Elastoplast,' 'Viscopaste,' 'Jelonet' and 'Ichthopaste,' are privileged to publish this instance, typical of many, in which their products have been used with success, in the belief that such authentic records will be of general interest.

ELASTOPLAST elastic adhesive bandages are available in widths of 2", 2½", 3" and 4" × 5/6 yds. long when stretched. Also in 2" wide × 1¾ yds. long (stretched).

ICHTHOPASTE bandages are of the Unna's Paste type but contain 5% Ichthyol. The bandages are 3½" wide × 6 and 10 yds. long.

JELONET (TULLE GRAS) is an open mesh gauze dressing impregnated with petroleum jelly and 1% Balsam of Peru. It is indicated as a dressing for skin grafts and in the treatment of wounds, burns, etc. Jelonet is sterilised ready for use and is supplied in 8 yd. continuous strips or in cut pieces 3¾" × 3¾".

ELASTOPLAST, JELONET AND ICHTHOPASTE *are products of* T. J. SMITH & NEPHEW LTD., HULL surgery probably played a considerable part, and it must be recalled that acute malaria sometimes follows surgery in cases harbouring this infection. Whatever the causal factors which were at work in this case it is clear that any or all of them might well operate in any abdominal surgical operation.

I wish to thank Prof. Hamilton Fairley for advice on the treatment of the amœbiasis and Mr. Lawrence Abel for invaluable surgical help. To the late Mr. William Everett, upon whose shoulders rested the heavy anxiety of this desperate case, my especial gratitude is due.

Reviews of Books

The Louse

(2nd ed.) P. A. BUXTON, C.M.G., F.R.S., director, department of medical entomology, London School of Hygiene and Tropical Medicine. London: E. Arnold. 1947. Pp. 164. 10*s.* 6*d.*

MOST large textbooks have defects and nearly all have rivals; but it is still possible to find monographs on restricted subjects that stand alone and are completely satisfactory. Professor Buxton's book on the human louse provided the medical parasitologist, the hygiene official, and the entomologist, with all information available up to the outbreak of the recent war. Since then there has been an inevitable spate of research, much of it his own; so this new edition of the book has expanded from 115 to 164 pages, and many sections have been revised. There are interesting new data on field observations of natural populations of head and body lice, on the sensory physiology and behaviour of lice, and on their resistance to heat, cold, and insecticides. The section dealing with man's reaction to louse bites has been amended in the light of further knowledge. Many sources have been tapped, including recent Russian work. The chapter on control of lice has been rewritten. Modern insecticides have profoundly modified the practice of disinfestation, but some of the older remedies are mentioned, because they might be of value in the absence of better materials. Among 47 informative graphs and diagrams is the picture of a modified garter for ladies who volunteer to feed lice. It is worn above the knee, so that they can suffer in secret.

Die Bluteiweisskörper des Menschen

F. WUHRMANN, DR. MED., chief physician to the University Medical Clinic, Zürich; C. WUNDERLY, DR. ING. CHEM., chief scientific assistant at the clinic. Basle: Schwabe. 1947. Pp. 354. Sw. fr. 36.

THIS is a comprehensive well-documented monograph on the chemical and physicochemical properties of the proteins, normal and abnormal, that are found in the blood plasma, and the clinical applications. Specialists have been called in to write some sections: F. Leuthardt deals with the solubilities of plasma proteins, E. Wiedemann contributes a lengthy section on electrophoresis, and R. Signer briefly describes the ultracentrifuge.

The book begins with a concise discussion of present views on the chemistry of proteins. "Albuminuria," it is noted, is not a correct term; the kidney filtrate depends on the size of the particle, and since β-globulin and fibrinogen also pass through, "proteinuria" is more correct. A chapter on methods contains, besides the technical sections on solubility, electrophoresis, and the ultracentrifuge, an account of the qualitative and quantitative methods used in clinical biochemistry for detecting and estimating plasma proteins, including fibrinogen and prothrombin, as well as tests depending on plasma-protein variations—such as blood-sedimentation rate, the thymol turbidity test, the cephalin-cholesterol flocculation test, and the cadmium turbidity test. All these methods are applied to the study of plasma-protein variation in disease.

Eight tests are selected: the E.S.R., a heat-coagulation test (Weltmann's band), the nephelogram, a flocculation test such as the Takata-Ara, the cadmium turbidity, the total serum proteins, the salt (phosphate) solubility curve, and the electrophoretic pattern. By putting the results of all these tests together in a graphic manner on a diagram, six types of "reaction constellation" are obtained with diagnostic differences.

These types are: (1) acute inflammation, including early cardiac infarction; (2) subacute and chronic infections (and this includes early malignancy); (3) the diffuse liver-damage type—fibrotic pulmonary tuberculosis, some cases of polyarthritis, and some cases of lymphatic leukæmia and lymphosarcoma show this reaction type; (4) the nephrotic type found in all cases of lipoid nephrosis, whether "pure" or "nephritic"; (5) the γ-globulin plasmacytoma type, which includes lymphogranuloma inguinale, kala-azar, the so-called reticuloses, and others; (6) the β-globulin plasmacytoma type, into which also come some cases of myeloid and lymphatic leukæmia, subacute and chronic polyarthritis, and metastatic carcinoma.

The authors emphasise that it is only by studying all the tests together that diagnostic information can be obtained, and they give a striking list of conditions in which only uninformative results can be obtained from tests taken singly, or from the E.S.R., Weltmann's band, the Takata-Ara test, and the cadmium turbidity taken together.

They discuss types of disease in which hyperproteinæmia or hypoproteinæmia occur; and they also distinguish "dysproteinæmia," where one or more proteins are affected, but not all—for example, fibrinogenopenia, and "paraproteinæmia" in which abnormal proteins appear (e.g., myelomatosis). The syndromes of "essential" hyperproteinæmia and hypoproteinæmia are described; the latter is interesting because it includes cases described elsewhere as "essential œdema," or "nephrosis without nephrosis." They deal briefly with the formation of plasma proteins, and in the last chapter describe the therapeutic use of protein preparations, including plasma fractions and protein hydrolysates.

Here then is an up-to-date exposition of the subject. Much emphasis is placed on electrophoresis and solubility curves, and the authors are clearly of opinion that unless these methods are used, all the others are not likely to help. These two investigations, however, at present find little place in clinical pathology, and we are not yet convinced that these none-too-simple procedures have earned their place as diagnostic tests. For clinical researches involving protein studies they are, we agree, essential, and all interested in protein disturbances can be recommended to tackle this book.

A Handbook of Psychiatry

LOUIS J. KARNOSH, M.D., SC.D., with the collaboration of EDWARD M. ZUCKER, M.D. London: H. Kimpton 1945. Pp. 302. 25*s.*

WELL illustrated and easy to follow, this textbook gives an unadventurous well-informed account of psychiatric practice. Its authors have written it with an eye to the peculiar needs of the general practitioner and have supposed, perhaps rightly, that he does not want to be warned where psychiatrists are uncertain about their assumptions or told what intricacies cause them to differ about such matters as psycho-analysis. Some of the defects of this approach can be seen in the section on psychoneuroses, which would probably be more often consulted by a general practitioner than any other part of the book, yet fails to tell him as much as he would like to know about the management of hypochondriacal and other common but obstinate problems.

X-Rays and Radium in Diseases of the Skin (4th ed. London: H. Kimpton. 1946. Pp. 668. 50*s.*).—The new edition of this popular textbook by Dr. G. M. MacKee, Dr. A. C. Cipollaro, and Dr. Hamilton Montgomery shows several changes. Much of the material contributed to previous editions has been retained, but the section on physics has been reduced by about a third. This is wise, since all necessary information can be found in any standard textbook on radiation-physics. The authors note that careful assessment of the long-term results of radiotherapy is showing its limitations Some cutaneous diseases of chronic inflammatory type should only be treated by radiation if other methods fail; even then, treatment will be successful only in a proportion of cases. The trend in treatment is towards lower dosage. Where suberythema doses used to be prescribed it is now usual to specify 75r or even less. The chapter on tinea capitis has been improved by the inclusion of a number of diagrams illustrating the Kienböck-Adamson technique for depilating the whole scalp, and some good new photographs have been added.

THE LANCET

LONDON: SATURDAY, SEPTEMBER 6, 1947

Brain and Mind

This year there have been three publications of importance to those interested in the perennial problem of the relationship of the brain and the mind. Prof. E D. ADRIAN *has delivered the Hughlings* Jackson lecture[1] and the Waynflete lectures[2]: and, to coincide with the 17th International Congress of Physiology, the Physiological Society has republished Sir CHARLES SHERRINGTON's classical work *The Integrative Action of the Nervous System*, with a new foreword by the author.

The Waynflete lectures on the physical background of perception give an up-to-date account of the physiological processes underlying the conduction of sensory nerve-impulses from sense-organs to cerebral cortex and their reception there, as these functions have been illuminated by modern methods of recording minute changes of electrical potential. All nerve-impulses in sensory nerves are found to be of a fairly simple kind, and there is no substantial difference between those excited by touch, for example, and those concerned with hearing and vision. "The mental result must differ because a different part of the brain receives the message and not because the message has a *different form." The function of the* cerebral cortex seems to be to recognise patterns, both temporal and spatial, presented to the various senses. "We can recognise a tune," ADRIAN says, "whether its pitch is high or low, and we can recognise a triangle or a letter whatever its size and whatever the position of the image on the retina. Now this must mean that there is no need for particular sensory endings or particular pathways to the cortex to be excited; for the recognition of the pattern all that seems to matter is that the excited regions should have certain general relations to one another." The power to recognise such relations, which correspond in consciousness to quite abstract ideas, is not a prerogative of the human mind: a rat can be trained to recognise and respond to triangularity. "The rat seems able to differentiate the figure, so that the three angles are the only feature of it that matters and the absolute size and the position in the retina do not." This seems to imply that all the physiological disturbances excited in the cerebral cortex by triangles, whatever their size and position, possess something in common which is somehow selected for attention and reaction. At present it is difficult to conceive of the nature of a neural process which underlies the recognition of relationships abstracted from the things that are related and independently of any stable position of the excited neurones in the cerebral cortex.

It is equally difficult to imagine the neural basis of memory. LASHLEY's experiments with rats, quoted by ADRIAN, have made this seem more mysterious than ever. "Lashley has investigated the learning and retention of various habits in the rat and finds that, as far as simple associations are concerned, at least half the cerebral cortex can be destroyed without effect, and that half may be in any part of the cortex . . . we are forced to conclude that no one part is essential. And yet some part is essential, for the rat cannot solve anything if the whole cortex is destroyed." The solution, as LASHLEY has suggested, might be that the memory traces are everywhere, the whole cortex being a series of resonating mechanisms. ADRIAN, as a physiologist, is reluctant to accept the alternative—"that memories are not stored anywhere"—but this hypothesis may need to be considered seriously. When we look for the site of storage of "memory traces" we are making the assumption that these are states of neurones and therefore to be found somewhere in the brain They might, however, be psychical, and therefore not in the brain at all. Many years ago BERGSON in *Matter and Memory* put forward the view that the function of the cerebral cortex is to evoke and direct towards reality a memory "absolutely independent of matter"

It is not only on the afferent side that the nervous system is concerned with patterns: these appear in motor activity also. Thus, ADRIAN notes, "we may learn a skilled movement by employing certain muscles and therefore certain groups of nerve-cells in the motor area of the brain, but when we have learnt it we can carry out the movement with an entirely different set of muscles and nerve-cells—we can write our name with a pencil held between the toes when we have learnt to do it with the fingers." These motor patterns assume a purposive character. If the frontal area is stimulated electrically the nervous system behaves as though its object were to turn the gaze to the opposite side, for "if the head is free the eyes remain central in their orbits and the head turns. If the head is fixed the eyes turn instead."[1]

Thus we are introduced to a nervous system which is much more plastic than used to be supposed. It is capable of representing sensory patterns and putting into action motor patterns which are largely independent of particular groups of neurones, and indeed "it is possible," ADRIAN says, "that besides these relatively insulated, well-organised pathways, the more diffuse connections of the higher levels may depend to some extent on the electrical fields which are generated by active areas."

But to return to the psyche—surely that pale ghost was laid once and for all by the 19th-century materialists! How many psychiatrists, even, would claim more for it than that it is a convenient term to describe those neural functions that give rise to consciousness? Nevertheless the bland dismissal of mind as a mere epiphenomenon of neural function was made at a time when almost nothing was known of the finer details of the activity of the nervous system. How significant it is, therefore, that the pioneer of such knowledge should now regard the psyche as necessary on scientific grounds for a complete explanation of experience. "Integration," writes SHERRINGTON, in his new foreword,[3] "has been traced at work in two great, and in some respects counterpart, systems of the organism. The physicochemical (or for short physical) produced a unified machine from what without it would be merely a collocation of

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[1] Adrian, E. D. *Brain*, 1947, 70, 1.

[2] The Physical Background of Perception. London: Oxford University Press. 1947. Pp. 95. 10s.

[3] Integrative Action of the Nervous System. London: Cambridge University Press. 1947. Pp. 433. 25s.

St. Mary's Hospital

VACCINES

For Respiratory Affections

ANTI-CATARRH VACCINE

The ideal time for commencing prophylaxis against the common "cold" is during September. Three graduated doses, or six if preferred, with an interval of from 7 to 10 days between each, are recommended. The vaccine especially designed for the purpose is "Anti-Catarrh Vaccine," containing *M. Catarrhalis*, with *Pneumococcus, B. Pneumoniæ, B. Septus, B. Influenzæ*, and *Streptococcus.*

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A purified and concentrated vaccine for protection against both types A and B influenza virus. It is recommended that a first dose of 1 c.c. be administered in September, or early in October, followed by the same dose after two or three months. To afford protection against the secondary as well as against the primary infection, Influenza Virus Vaccine may be combined with Anti-Influenza Vaccine (mixed).

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has been named chronic hypoplastic anæmia by CKFAN and DIAMOND.[11] True aplastic anæmia olving all the elements of the bone-marrow is more mon in older children. Leukæmias in childhood usually acute, and since they are often aleukæmic, y will be missed if bone-marrow biopsy is not done. y gives a confident list, but anyone with practical erience will admit that there are still many children h apparently primary anæmias that do not fit into known scheme, and much more work with ern techniques needs to be done before these malous cases can be adequately classified and ted. A good idea of the size of the anæmia problem iven by the fact that BATY's cases made up 34% ll admissions. In the U.S A. infection is thought e the main cause ; in present-day Britain, on the er hand, opinion might well favour malnutri- n since the child's rations are sometimes only just quate and many mothers are anæmic

n discussing diagnosis, SMITH [6] describes techniques estimating red-cell volume and erythrocyte ility by using finger blood ; he gives useful tables normal ranges including one for sternal bone- rrow, but here he does not make clear the important phocytosis that occurs between one and three rs of age. SMITH would like to see more use made radiography of the bones with observation of the nges in the marrow spaces, and he emphasises the ue of watching the response to a properly planned rse of treatment with iron and then liver or folic d—in that order, never *together*. PONCHER [6] cribes the treatment in detail, stressing the impor- ce of preliminary diagnosis. He reviews the dence for the addition of copper to iron in the atment of iron-deficiency, and he concludes that a r patients who do not respond to iron alone will efit from the addition of 1 ml. of 0·5% copper phate solution per kg. body-weight daily. The stion of accessory metals in iron treatment has ently been revived by WINTROBE and co-workers,[12] o report that the addition of cobalt assisted the lisation of iron in artificial infections PONCHER ees with ZUELZER that it is useless to expect a ponse to iron in the presence of infection. He nks that ferrous sulphate is the best compound give in iron-deficiency, the dosage being gr. 4–6 26–0 39 g) daily during the first two years of life, 6–8 (0·39–0·52 g.) daily from two to six years, and on. Iron given to children produces a reticulocyte sponse on the 7th to 10th day, and by this and rise in hæmoglobin the efficacy of the iron prepara- on can be checked ; the case should be reviewed there is no proper response. The rare patient with rnicious-type anæmia responds to parenteral liver to folic acid (5–20 mg. daily) Ascorbic-acid ficiency is known to depress erythropoiesis.[13] æmia due to this cause has its greatest incidence the first two years of life and should be watched ; it will not respond to iron or liver but requires corbic acid in adequate doses of 100 mg. or so daily. or other anæmias treatment follows the usual lines. ONCHER advises splenectomy for congenital hæmo- tic icterus even in early childhood, and CONRAD and SCHMIDT [14] have reported a successful splenectomy in a child aged ten weeks, the diagnosis having been made at the age of seventeen days.

All the speakers in this symposium join in execrating the "blunderbuss" remedy for anæmia—the "compound" pill, elixir, or capsule containing iron, liver, vitamins, folic acid nowadays, and much else besides, usually in ineffective doses. As PONCHER puts it: "preparations of this type increase the cost of medical care and minimise the careful evaluation of the cause of the anæmia which is so important to well-conceived and intelligent treatment." But if doctors did not use these proprietary blunderbusses, pharmaceutical firms would cease to make them. In their management of anæmic patients doctors are too readily influenced by advertising literature and uncontrolled "favourable clinical reports"; it should be borne in mind that liver or folic acid is rarely needed in the treatment of anæmia in childhood, and that, though iron and ascorbic acid are a valuable combination, other mixtures should be used only when there are specific indications.

Annotations

CONVALESCENT HOMES

THE Institute of Almoners have done a useful piece of work in surveying and reporting on convalescent homes in England and Wales.[15] Our convalescent accommodation has long been an unknown quantity, and though the almoners do not provide the detailed list of homes which would be welcome they give tables of the numbers of homes to be found in various areas of the country and show the general distribution on a map. In all, there are some 318 homes, with 14,190 beds.

A convalescent home is defined as one which admits patients who have passed the acute stage of their illness but still require some medical and nursing supervision during the later stages of their recovery. Nowadays there are good grounds for regarding convalescence as a period of active reablement, but few of the existing homes are equipped or staffed for this purpose. Only 5 of the homes visited had the services of an occupational therapist, and though education was usually provided in the long-stay homes for children, it was not universal. Only 52% of the homes had libraries, and the quality of the books was not always good. Breakfast in bed was the rule in only 6 homes, though the staff of almost half of those visited were willing to give breakfast in bed when required. The time of rising was usually between 7.30 and 8 A.M., but in one Roman Catholic home the children rose at 6.30 A.M., and in another children's home in the Midlands at 6 A.M. Less than half the homes had a compulsory-rest rule in the afternoons, though the rule was observed in most of those for children. In 10 homes patients were not allowed to rest on their beds or go to their rooms during the day. Diet was often a cause of complaint; in several homes the last meal of the day was early, and not followed by a hot drink at bed-time. Most homes admit patients for a fortnight, but will extend the period if necessary; in 20 the period was firmly limited to two weeks.

The shortage of homes is such that waiting-lists are very long, and patients wait for places for periods varying from three weeks to over three months in summer; in winter or bad weather the delay is less. Homes for mothers with babies and for adolescent boys are particularly scarce, and so are homes taking more serious

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1. Blackfan, K. D., Diamond, L. K. Atlas of the Blood in Children. New York. 1946.
2. Wintrobe, M. M., Grinstein, M., Dubash, J. J., Humphreys, S. R., Ashenbrucker, H., Worth, W. *Blood*, 1947, 2, 323.
3. Israels, M. C. G. *Lancet*, 1943, 1, 170.
14. Conrad, E., Schmidt, R. E. *Amer. J. Dis. Child.* 1946, 72, 731.
15. Report issued by the Institute, whose office is at Tavistock House (North), Tavistock Square, London, W.C.1.

commensal organs. The psychical creates from psychical data a percipient, thinking and endeavouring mental individual . . . not that the physical is ever anything but physical, or the psychical anything but psychical. . . . In the sequence of events (in the nervous system) a step is reached where a physical situation in the brain leads to a psychical, which however contains no hint of the brain or any other bodily part." Brain and mind are integrated together—"the last and final integration." As SHERRINGTON points out, "the discussion of this liaison between two incommensurable factors" can be avoided either by an idealism that makes everything psychical or by a materialistic monism that reduces body and mind alike to energy. He, however, remains a dualist, and concludes: "That our being should consist of two fundamental elements offers I suppose no greater inherent improbability than that it should rest on one only."

Thus neurophysiology, pressed far enough, ends in a philosophy not unlike that to which modern physics seems to be tending As MARTIN JOHNSON shows in a recent book,[4] the old matter of the materialist philosophers disappeared long ago. It has been replaced by "structures" represented by equations. It may be possible and indeed necessary to study a physical structure without any knowledge of what composes it Two mutually incompatible structures—a wave and a particle—may characterise the same "thing" because there exists no "thing" beyond the structures. Causation in its old familiar sense seems also to be disappearing, and JOHNSON at least makes no claim that the conceptions of physics are applicable to the phenomena peculiar to life and mind. Biology and psychology will need their own concepts and are free to make them. We have crossed an ocean and see before us the dim coasts of a new world of thought.

Anæmia in Childhood

THE advances in technique and classification that have clarified our ideas on the causes and treatment of anæmia in adult life have only slowly been applied to anæmia in childhood. The sections on anæmia in pædiatric textbooks are often patchy, and mixed syndromes, like Von Jaksch's anæmia, are still described. The lability of the blood-picture in young children, the wide range of variation, and the paucity of information about normal ranges have all played their part in this delay; bone-marrow puncture—a keystone of modern hæmatological diagnosis—has only recently been applied in children's diseases, and here again much has yet to be learnt about normal variation [5] There are, however, signs that the anæmias of childhood are at last being more rationally classified.

The progress made is well summarised in a symposium held at San Francisco last year and lately published.[6] ZUELZER, dealing with pathogenesis, points out that the features of childhood anæmias are conditioned by the peculiarities of rapid growth, lack of nutritional reserves, and susceptibility to infection that characterises this period of life, and that there are no special anæmia-producing mechanisms. Thus an iron-deficiency anæmia is common in children because hæmoglobin must be found not only to replace physiological losses but also to keep up the level in a rapidly expanding blood-volume, whereas in the adult production balances destruction and the blood-volume is practically stationary. The physiological anæmia of infancy has two causal factors. First, erythropoiesis is stimulated by anoxæmia, so, when the change takes place from placental to pulmonary oxygenation of the blood and the oxygen tension in the tissues increases, erythropoiesis is reduced; secondly, the blood-volume at the same time begins to expand rapidly and more red cells than ever are needed. It is in the latent period, while erythropoiesis is readjusting itself, that the anæmia occurs, and it is naturally more severe in the premature infant. Such an anæmia will not respond to iron since it is the number, rather than the hæmoglobin content, of the erythroblasts that is inadequate Adjustment is effected by the anæmia itself lowering the oxygenation of the marrow and so stimulating erythropoiesis.

The child, like the adult, needs iron and the liver factor (erythrocyte-maturing factor) for proper erythropoiesis. The full-term child has acquired from its mother a store of iron sufficient to last until it can obtain iron from the diet, and this store is particularly important since milk is poor in iron. The premature infant soon exhausts its store and becomes anæmic; the same thing happens—as MACKAY [7] pointed out—in the full-term child of a woman who has had iron-deficiency anæmia during pregnancy. Infection, however, is the major cause of such anæmia. Infection interferes with the absorption of iron by causing anorexia, vomiting, and diarrhœa; recent work with radio-iron shows that infection also causes ingested iron, including iron given therapeutically, to be held in the liver and elsewhere and only partially released for utilisation in the marrow,[8] and this latter is probably the more important effect Insufficiency of the liver factor is much less common, true pernicious anæmia does not occur in infancy,[9] but temporary deficiencies leading to a megaloblastic marrow occur in some patients with cœliac disease and in a syndrome recently described by ZUELZER and OGDEN.[10] Infection, deficient diet, prematurity, and combinations of these were held responsible for 90% of 514 cases of anæmia in children—i e., with less than 4,000,000 red cells per c mm. and 70% (10 g. per 100 ml.) hæmoglobin—seen by BATY[6] at the Boston Floating Hospital. The causes of the remaining 10% are those familiar in adult anæmia—hæmolysis, hæmorrhage, primary and secondary hypoplasia of the marrow, leukæmias, congenital abnormalities like hæmolytic icterus, sickle-cell anæmia, and Mediterranean anæmia There are some diseases peculiar to this age-group; such are the anæmia of erythroblastic disease due to Rh incompatibility, and a curious hypoplasia of the erythroblastic marrow without involvement of leucocytes or platelets which seems to be congenital, affects infants, ponsibility of the Hospitals Authority, while the berculosis service remains "to be administered parately but in coördination with the general services" the Northern Ireland Tuberculosis Authority ablished last year. This leaves less to be done by local health authorities, and in practice their scope ms to be limited to providing maternity, child-welfare, d home-help services, and to the local administration sanitary inspection and epidemiological control. e official explanation of the Bill states the conditions the use of private rooms in hospitals more clearly n these have yet been defined in England. It says cifically:

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[4] Science and the Meanings of Truth. London: Faber & Faber. Pp. 179. 12s. 6d. 1946.

[5] *Lancet*, 1947, i, 146.

[6] Zuelzer, W. W. *J. Amer. med. Ass.* 1947, 134, 998; Baty, J. M. *Ibid*, p 1002; Smith, C. H. *Ibid*, p. 992; Poncher, H. G. *Ibid*, p. 1003.

[7] Mackay, H. M. M. *Spec. Rep Ser. med Res. Coun, Lond.* no 157, 1931.

[8] Cartwright, G. E, Lauritsen, M. A, Humphreys, S R, Jones, P. J., Merrill, I. M., Wintrobe, M. M. *J clin Invest.* 1946, 25, 65; Greenberg, G R. Ashenbrucker, H., Lauritsen, M. A., Worth W., Humphreys, S. R, Wintrobe, M. M. *Ibid*, 1947, 26, 121.

[9] *Lancet*, 1946, ii, 461.

[10] Zuelzer, W. W., Ogden, F. N. *Amer. J. Dis. Child.* 1946, 72, 211.

> 'Hospital schemes may provide that apart from his dical condition any patient in hospital may, by making pecial payment, be accommodated in a single ward or other all room, and that by making a payment calculated to er the whole cost of his maintenance and treatment and agreeing to pay the fees of his doctor, a person may be mitted to a private ward as a private patient of the doctor cerned."

On the whole the Bill as presented appears to offer a cticable adaptation of the earlier schemes to Northern land's needs, and seems also to have made most of the cessions asked by the doctors here—with the single portant exception that it retains the prohibition of e of practice goodwill.

THORACO ABDOMINAL APPROACH FOR GASTRECTOMY

THE limitations of the abdominal approach to tumours the cardiac end of the stomach, particularly those ich have involved the lower œsophagus, have long en evident. Many early tumours have been left resected because of the difficulties of operating by is route, and many patients in whom tumours of this ion have been resected have died because of the ficulties of making a good œsophageal anastomosis m the abdomen. Posterolateral thoracotomy with nsphrenic exposure of the upper part of the stomach s overcome the difficulties of œsophageal exposure and astomosis, but this route has two defects—the difficulty adequate dissection near the pylorus and closure of the odenum in cases requiring total gastrectomy; and the convenient angle at which the stomach is encountered hen working from above downwards.

The thoraco-abdominal approach reduces these difficulties to some extent. In this modification the incision rough the bed of the eighth or ninth rib, or through intercostal space, is continued across the costal argin into the abdominal wall for a varying distance. his procedure is made somewhat awkward by the stomary position of the patient during a postero-teral approach—that is, lying on the side with a rward or ventral tilt. The abdominothoracic approach as first successfully used for total gastrectomy and for cision of the cardiac end of the stomach by Ohsawa[1] ho recorded his cases in 1933. He made a formal pper paramedian incision, and from near its upper d extended the incision into the seventh intercostal ace. Subsequent workers who tried this incision with e patient supine found that the œsophagus was still t great depth and its adequate visualisation was somehat hampered by the interposition of heart and perirdium. Garlock[2] urges that if one is to obtain the aximum help from the abdominothoracic approach he patient must be made to lie on the right side with a ackward or dorsal tilt of 15°, and be fixed in this osition by a strap round the hips. He recommends short left lateral rectus incision, just large enough to dmit a hand for preliminary exploration of the abdomen, nd, if no contra-indication is found, the upper limit of he incision is continued into the eighth intercostal space as far back as the posterior axillary line. The wound is widely spread open and the diaphragm divided down to the œsophageal hiatus.

At the Oxford meeting of the Association of Surgeons early in July, the treatment of carcinoma of the lower œsophagus and cardiac end of the stomach was discussed, and P. R. Allison favoured the thoraco-abdominal approach while N. C. Tanner preferred the abdomino-thoracic route. Tanner advised a preliminary transverse epigastric incision from mid-line to the tip of the ninth costal cartilage rather than the lateral rectus incision recommended by Garlock; he had found that the exposure was sufficient to dissect the subpyloric glands and close the duodenum with ease. This approach gives an excellent "en face" view of the stomach and allows the surgeon to get near enough to the œsophagus to make œsophageal suturing comfortable and safe. Tanner thought it the best of all approaches to the spleen, pancreatic body and tail, and left gastric pedicle. and he said it gives excellent access for the jejunal mobilisation required in the construction of a Roux loop. Since the abdominothoracic route does not bring the operator quite so close to the œsophagus as the posterolateral thoracotomy, the latter incision is still to be preferred for the extirpation of primary carcinomata of the lower œsophagus which are above the level of the cardia. In such resections the final anatomosis can rarely be much below the level of the aortic arch, and furthermore dissection of the pyloric end of the stomach is unnecessary because only minor gastric resections are usually required. For the far more numerous cases of primary gastric carcinoma which are less than 4 cm. from the cardia, or which invade the œsophagus, the abdominothoracic approach is the best.

THE ADMINISTRATIVE INTERNSHIP IN THE HOSPITAL

A "manual and guide" on this subject has been issued by the Joint Commission on Education, Chicago. It represents an attempt to survey the present position of training in hospital administration in the United States. For the English reader too much is taken for granted, and the text is difficult to elucidate. For example, it is stated in the introduction that "the educational programmes that have been established are not identical in character, yet they have many common characteristics. Each requires a year of residence study followed by a year of supervised internship in a hospital. All but one require graduate standing for entrance." It is no doubt clear to American readers what is meant by residence study, for the manual deals exhaustively with training during the year of internship, but gives no indication of the curriculum during the previous year, or even of the place of residence. From comments on p. 2 it might be deduced that the preliminary year was spent in hospital, but the phrase "not infrequently he has been enrolled with advanced students of business methods" makes this deduction suspect.

When he arrives at the hospital for his intern year the student is expected to participate in the work of all departments. However, as regards the obstetrical department and the work of the visiting and resident staff, "only observational assignments are recommended."

At the end of his intern year the student is not required to pass any examination, and presumably he has already received his diploma or other qualification. His worth is assessed by the chief executive of the hospital on the basis of the progress he has made during the year, and if this is satisfactory he is no doubt qualified and independent. It is interesting to note the present trend of thought in the United States on training in hospital administration. A similar development is likely in this country, and it is important that we should know where we are going.

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[1] Ohsawa, T. Arch. jap. Chir. 1933, 10, 605.
[2] Garlock, J. H. Surg. Gynec. Obstet. 1946, 85, 737.

cases such as cardiac and gastric conditions and patients with tuberculosis. Most homes refuse cases needing bed-treatment or nursing attention at night. The almoners note that this leads to wastage of nurses, for some homes with several nurses on the staff make this condition. Some homes have a bare institutional look; others provide long minatory lists of rules which take no account of the real welfare of the patient.

The almoners note that there is a need for more convalescent homes, particularly in north-east England. The classes most poorly catered for are mothers with babies, children, adolescent boys, patients with severe heart trouble, asthma, pulmonary tuberculosis and other chest complaints, fits, or skin diseases, and those needing more complicated treatment, dressings, or special diet. Holiday and rest-break homes are also needed. Many homes could be brought up to modern standards if altered and adapted, and furnished more cheerfully. A friendly reception, the almoners say, is highly important; and patients should be encouraged to breakfast and rest in bed, especially during the first week. Hours of rising should be later, and there should be plenty of resting-places, in and out of doors. The length of stay should be determined only by the patient's needs; expert advice should be sought on diet; and occupation and recreation, as well as other methods of reablement, should be extended. Finally they suggest that there should be a central advice service to coördinate the work of all convalescent homes, to set up standards, and to give information about organisation and staffing.

Since the moment is not too propitious for extending services, it might be useful to consider how our existing convalescent homes could be used to the best advantage; and since " convalescence " three months after the illness is rather unsatisfactory, it might be well to decide what types of patient should have first claim on available beds. Children who would otherwise return directly to slum areas should surely be among the first considered, and so should mothers of families who would otherwise go straight back to domestic chores. Young people in the growing years, old people living alone, and patients with pulmonary tuberculosis all seem to deserve some preference. If these needy cases were served first it is possible that they could also be served at once.

MINISTRY OF HEALTH STATEMENT ON STREPTOMYCIN

THE Ministry of Health announce that the preliminary results of the streptomycin trials organised by the Medical Research Council have proved sufficiently encouraging to justify the view that, as supplies of the drug permit, patients suffering from tuberculous meningitis or miliary tuberculosis should be given the opportunity of receiving treatment with the drug.

Streptomycin is the best drug at present available for the treatment of these conditions, but it prolongs life and relieves symptoms in only a proportion of cases, and it is too early to say whether it ever produces a permanent cure.

The production of streptomycin in this country is still very limited; but additional supplies obtained from the United States have made it possible to allocate some each month to certain medical schools for use in teaching or associated hospitals. Supplies are available at the moment in the United Kingdom for about 150 beds. The cost of the streptomycin is still very high, and for the time being the drug will be distributed by the Government to the medical schools free of charge.

In view of the limited experience of treatment with streptomycin in other conditions, the medical schools have been asked for the present to restrict treatment with the drug to cases of tuberculous meningitis and miliary tuberculosis. It is not recommended for chronic pulmonary tuberculosis.

Tuberculous meningitis and miliary tuberculosis be treated with streptomycin at the following hospitals:

ENGLAND

Liverpool.—Alder Hey Children's Hospital (6 children's beds) and Royal Southern Hospital, Fazakerley (3 adult beds).

Sheffield.—Children's Hospital, Western Bank, Sheffield, 10.

Newcastle.—Royal Victoria Infirmary.

Bristol.—Bristol General Hospital, Bristol, 1.

Manchester.—Royal Infirmary.

Birmingham.—Children's Hospital, Ladywood Road, Birmingham, 16.

Leeds.—General Infirmary and St. James's Hospital.

London.—The Middlesex Hospital, W.1, St. Bartholomew's Hospital, E.C.1, The London Hospital, E.1, St. Mary's Hospital, W.2, St. Thomas's Hospital, S.E.1, and Guy's Hospital, S.E.1.

WALES

Cardiff.—Isolation Hospital.

NORTHERN IRELAND

Belfast.—Whiteabbey Sanatorium, Whiteabbey, and Purdysburn Fever Hospital, Purdysburn.

Similar arrangements are being made in Scotland and details will be announced shortly.

Practitioners who have a case of suspected tuberculous meningitis or miliary tuberculosis should get in touch direct with the nearest convenient hospital on this list, or (in the case of hospitals in the London area) with the Emergency Bed Service (telephone Monarch 8515).

This scheme does not in any way affect the arrangements already made by the Medical Research Council for the treatment in certain hospitals of cases of meningitis due to *Hæmophilus influenzæ.*

NATIONAL HEALTH SERVICE FOR NORTHERN IRELAND

Northern Ireland, in its turn, is now to create a national health service, and the Bill has just been published. In the main, the provisions follow the pattern already familiar in the English and Scottish Acts. But the size and population of the six counties is no greater than that of some of the separate regions into which England has been divided for hospital planning and administration, and this has permitted simplification of the administrative structure. Thus instead of a number of regional hospital boards there will be a single Hospitals Authority, placed in charge of all existing hospitals, and entrusted with providing (by fresh building or by reorganisation) a full service. Much like the regional boards in England, this authority will be constituted by the minister after consultation with the university, the medical profession, the local authorities, and the hospitals both voluntary and rate-aided. Again, instead of separate local executive councils in most health-authority areas, Northern Ireland is to have a single General Health Services Board, *half professional* (medical, dental, and pharmaceutical) and half lay. As in England and Scotland, there will also be local medical, dental, and pharmaceutical committees in each health-authority area.

So far the scheme follows the earlier models closely. But the official document circulated in explanation of the Bill contains indications that some of the amendments vainly sought in London have been conceded in Belfast. For instance, there is no mention of a basic salary for the general practitioner; " every doctor will be paid according to the number of persons—men, women, and children—who have chosen him as their family doctor." Also in so far as inquiries are concerned into " allegations that any person providing professional services is inefficient or unsuitable "—a final appeal lies to the High Court. The General Health Services Board will be the employing authority for general practitioners and will also be responsible for planning and building health centres (a responsibility which in England is placed upon the local health authority). The pathological, bacteriological, and blood-transfusion services are made the

Reconstruction

TREATMENT IN PRIVATE WARDS
UNDER THE NATIONAL HEALTH SERVICE

FROM A CORRESPONDENT

The Minister of Health has not yet given any clear indication of his intentions about pay-beds. The Act empowers him:

(i) To reserve single rooms and small wards for patients who undertake to pay part of the cost—so long as he is satisfied that such rooms and wards are not for the time being needed on medical grounds by other patients

(ii) To set aside special accommodation for patients who undertake to pay the whole cost, including overheads. But nothing is to prevent accommodation thus set aside being used by any patient who urgently needs it on medical grounds, and whose need cannot be met otherwise.

In connexion with (ii) the Minister may allow any doctor on the hospital staff to arrange for the treatment of his private patients, and regulations may prescribe the maximum fees to be asked.

In the debates on the Bill Mr. Bevan justified these provisions on the ground that exclusion of paying patients from hospitals would encourage something of a black market outside the service. A patient should be free to seek professional advice from whom he will; and, since inpatient treatment will often be necessary, it should be made easy for doctors to bring their patients to the hospitals, and receive remuneration for their care.

So far so good. But here agreement ends, and one can discern widely different ideas as to terms and conditions. Many medical men are assuming that these will remain much the same as those prevailing in recent years. But in the committee debates on both the English and Scottish Bills a good many voices were raised in protest against a continuance of a system whereby those who can afford to do so are permitted to secure the special privileges of privacy and the advantages commonly associated with the private wards. Too often, it is urged, the poor person whose need of privacy is great is relegated to the ordinary wards while the private patient gets privileges to which he has no medical claim. A higher standard of catering, a higher ratio of nurses to patients even when the hospital is otherwise short of staff—can such discrimination have any place under a national service whose object it is to serve equally all in need, irrespective of means? In the debate on the Scottish Bill it was suggested that the charge for privacy should be minimal—a figure of 5*s*. or 10*s*. a week was mentioned—with the clear implication that all special privileges should be eliminated.

No doubt it would be difficult for the Minister to modify drastically the present system. But he will certainly be pressed to do so.

DEVELOPMENT OF PAY-BEDS

Much of the difficulty arises out of the circumstances attending the growth of the pay-bed system over the last fifty years.

The first paying patients' home was established by St. Thomas's Hospital as long ago as 1881. The intention was then to cater for people of small means who could not afford to go to a nursing home. As the years have passed this primary intention, while always prominent, has been modified by the need to offer the advantages of hospital to those with the higher ranges of income as well as to those whose income does not much exceed the limits set for the ordinary wards.

In the early 'twenties fears were expressed lest the rapid increase of pay-beds might conflict with the charitable basis of the voluntary hospitals, and a comprehensive inquiry was set on foot by the King's Fund. Reporting in 1928, its Pay Beds Committee approved of the provision of hospital facilities for the middle classes but emphasised two conditions—namely, that capital should be found without drawing on hospital funds, and that the paying patient should meet the full cost of maintenance, any surplus to be devoted to the needs of the hospital. (The latter recommendation was modified in regard to borderline patients, who might be allowed to pay less than the full cost, provided that the unit as a whole did so.)

In the circumstances of the time these were excellent recommendations, and pay-bed development in the voluntary hospitals has largely followed them. But twenty years have now passed since the report of the Pay Beds Committee, and three main tendencies have become noticeable. First, the wholly admirable anxiety to safeguard the charitable funds of the voluntary hospitals from abuse has had an unexpected result in that it has favoured collection of single-bed rooms into separate pay-blocks, thus making it unnecessarily hard to assign them according to medical need. Consequently pay-bed blocks today consist predominantly of single rooms, while the ordinary wards remain multiple units only slightly modified by the provision of a few single rooms. Clearly this tendency ought now to be reversed. Secondly, the voluntary hospitals continued to be hard pressed for funds, and in many cases began to look to their pay units for additional revenue. This helped to open the way to a third tendency—namely, competition with the more expensive nursing-homes in many details affecting the patient's comfort. Medical men have more and more desired to bring their better-class patients into the hospitals for the sake of facilities lacking in the nursing-homes; but this has had the indirect result of encouraging the hospitals to emulate the standards of the nursing-homes in many minor matters, and has accentuated the divorce between pay and ordinary wards. The combined effect of the second and third tendencies noted above has forced up the weekly charge for many pay-beds to a figure which means that the ordinary middle-class patient has become increasingly unable to meet the cost, and he is therefore thrown back upon the ordinary wards.

The rise in cost still continues, and the charges for pay-beds in the London teaching hospitals are reaching figures so high as to call in question the practicability of asking the full cost, or anything like it, under the National Health Service. The Minister may therefore be compelled to take power (by amending the Act) to charge part rather than the whole of the cost for private accommodation. To do so would be to abandon outright the conception which is now firmly rooted in the hospital world, and which has found its way into the Act, that the charge to the paying patient must cover the cost. But since this conception is based on the idea of safeguarding charitable funds, it no longer has force.

PROVIDENT SCHEMES

Some time ago efforts were made to find a means of enabling middle-class people to insure against hospital charges. The Hospital Saving Association had been founded in 1922 for the ordinary patients, and soon afterwards the British Provident Association was launched to cater for the middle classes. A similar scheme was established at Oxford. In the middle 'thirties further discussions in London led to the establishment by the King's Fund of the London Association for Hospital Services on similar if rather simpler lines. The membership of these schemes and of others in various parts of the provinces remains, however, relatively small, and is by no means to be compared with that of the contributory schemes. The explanation is of course that to be of value to the subscriber such a scheme must, unlike the contributory schemes, provide for a schedule of payments

SCIENCE AND THE CRISIS

FUNDAMENTAL research or operational research—on which should our emphasis now be laid? This was the big question that came out of the British Association's meeting just concluded at Dundee.

Sir Henry Dale, O.M., in his presidential address, began by speaking of the astonishing achievements of science under the stimuli of war—the rapid development of radiolocation, the headlong progress of aeronautics, the utilisation of penicillin, the discovery of 'Paludrine,' and the solution of problems arising from exposure of human beings to unnatural stress. These achievements came of intensive coöperative effort, and science must profit by its new experience of planning and organising to attain a particular objective. But there are other lessons of the war which Sir Henry thinks it at least equally important to discard: he sees a danger to science in a tendency to transfer, too easily and completely, to the activies of peace, the attitude to research and the traditions of its conduct that were acquired during those six years when most scientists in this country had to devote nearly the whole of their thoughts and efforts to practical problems presented to them for quick solution. "Does anyone doubt," he asked, "that to enable science now to render its best service to mankind, we need to take a long-range view and to give our first care to the extension of fundamental knowledge, unconstrained by aim at any practical objective?" Admittedly there are plenty of examples of practical research—conducted under conditions which left full freedom to follow side issues—opening the way to great fundamental advances. But to concentrate almost the whole of a rapidly growing scientific effort on practical applications and developments, as happened during the war, would correspond to reckless cropping of land without care to nourish the soil. He is not afraid that fundamental research will fail to win material support: "my fear is rather that we scientists ourselves may find it difficult to shake off quickly the spendthrift habit in research, the policy of trading for quick returns."

The other school of thought represented at Dundee argued that the need for operational research is today as great as in the war: it sees immediate mobilisation of scientific talent as the best—and probably the only—means of getting Britain out of her difficulties.

> "The present situation," said Prof. J. D. Bernal, F.R.S., "requires just that combined effort that was so effective in war. We can be certain that during the next few months and years we shall find ourselves confronted with a series of very uneven changes. We shall not follow the course of normal development. We must have a new technique, and operational research is just the instrument for the purpose. If we do not use it we shall not only cease to be an important Power—we shall starve."

In an interview with the *Manchester Guardian* (Sept. 1). Professor Bernal spoke of large numbers of scientists as at present largely idle or working at cross-purposes or against one another; he estimated that the key industries could get as many as 20,000 who are redundant or reduplicating each other's efforts, and another 20,000 who are at present superfluous, besides many from the military research departments. "We have the men and the technique. All we want is their use at all levels." The most hopeful line for quick results lies, he thinks, not so much in increasing production as in preventing waste: our whole system is shot through with unconscious waste. In a statement on Science and the Economic Crisis,[1] the Association of Scientific Workers, of which Professor Bernal is president, points out that if the average efficiency of the utilisation of coal were raised from 20% to 25% we should save the equivalent of 50 million tons annually. By far the best way to produce more food and goods from less imports is to introduce more economical methods of production. The war provided many examples of great difficulties overcome in weeks or months, which without science would have taken years. Today

> "short-period intensive research can make practical the use of substitute processes and materials to replace costly and scarce imports. A study of waste products in various industries, including waste heat, could lead to great economies in the use of materials. The development of systematic plans to attain a technical level in industry based on the best existing practice would bring quick and cumulative results. Scientific study of industrial organisation could improve efficiency output."

A scientific and technical effort on a scale many times that of the present is in the association's opinion by no means impracticable.

> "Without calling on the universities for more than advisory services and limited pieces of background research we have an immense fund of men and equipment in military research and in industry whose work, at least for the time being, could be turned over to immediate production problems. We are spending £60 million a year on war research, more than four times what is spent on Government civil research. Whether this assessment of priorities could be justified in any circumstances may be argued, but it is impossible to justify it when the safety of the country depends on the rehabilitation of our industrial economy."

After describing the organisation it thinks necessary to attain these ends, the Association of Scientific Workers pleads for early decisions and action. "The production of goods two or three years hence depends on research done this year."

POLIOMYELITIS STATISTICS

THE present outbreak of poliomyelitis has produced a total of 3127 cases in thirteen weeks, and, though the figures we quote on another page suggest that the corner has been turned, before it has spent itself the case-rate may well approach the 19 per 100,000 population recorded in the United States in 1946, when over 25,000 cases were notified.[1] However, there were times when notifications in New York reached 1000 per week; whereas in London the figure has only slightly passed the 100 mark. The fatality-rate here is not yet known, but in July it probably was of the order of 70 per 1000 notified cases. In the U.S.A. the fatality-rate fell steadily in the years 1943–46, all of which were years of relatively high prevalence, and it seems likely that much of the apparent rise in prevalence there resulted from more complete reporting and the inclusion of a greater proportion of non-paralytic cases. Certainly the focusing of attention on the disease has stimulated notification in this country, and analysis may show that there has been a steadily rising ratio of non-paralytic to paralytic cases among those notified. Differentiation between paralytic and non-paralytic cases would be possible if the notification form was made more explicit—a measure which may deserve consideration. In the few States of the U.S.A. which could supply this information, the percentage of non-paralytic cases notified in 1946 varied from 1·8 to 77; the highest percentages were reported in towns in epidemic areas, as would be expected, and it may well be that two-thirds or more of our present notified cases are non-paralytic.

THE INDEX and title-page to Vol. I, 1947, which was completed with THE LANCET of June 28, will be published with the issue of Sept. 20. A copy will be sent gratis to subscribers on receipt of a postcard addressed to the Manager of THE LANCET, 7, Adam Street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive indexes regularly as published should do so now.

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[1] Copies obtainable from the association at 15, Half Moon Street, London, W.1.

[1] Dauer, C. C. *Publ. Hlth. Rep., Wash.* 1947, 62, 901.

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to doctors and surgeons. It cannot, therefore, adopt the simple pool principle of paying out whatever is paid in.

These schemes are, however, potentially very valuable, and it may be that if circumstances favour them, and if in particular they are able to offer a schedule of fees agreed with the profession under a "full cover" arrangement, they will grow rapidly as have similar schemes in America. Obviously their future is bound up with the terms and conditions upon which pay-beds are allotted in the new service. If, for example, the Minister abandons the principle of charging full cost for a pay-bed, and charges only the cost which is additional to that of ordinary ward treatment, the terms offered by the provident schemes will at once become much more attractive to prospective subscribers.

THE DILEMMA

No-one will envy the Minister and his advisers the task of laying down the lines for the future. He has to reconcile two conflicting groups of considerations. On the one hand, as he emphasised in defending the sections in the Act, he has to retain enough of the present structure to ensure that he does not drive out of the service—into revivified nursing-homes run for profit—much of the upper-class clientele in need of inpatient care. On the other hand, he has to guard against the division of the main hospital service into two grades, the one good, the other less good; and to eliminate as far as possible the tie-up between privacy and the means to pay for it. These things are much easier said than done, and the Minister's decisions may in the long run determine the whole quality of the ordinary hospital service.

In America it is generally believed that the path to progress is by the creation of grades, and that a constantly rising standard of humanity is best achieved by a filtering-down process: what is provided today for the well-to-do will be provided tomorrow for the rank and file. But in this country such an idea will find little support. It has been the pride of our greater hospitals that the treatment provided for the sick poor in the ordinary wards was second to none, and no effort has been spared to make it so. This single standard has been to some extent undermined by a desire to establish distinctions, and offer in the contributory and pay-wards privileges not to be had in the ordinary wards. But the Minister now has a chance to get rid of the monetary factors which have operated in this direction.

In balancing the two sets of considerations he may well be guided first and foremost by the latter group. He may decide, for instance, that single rooms shall in future be provided only in physical proximity to the ordinary wards, and that the whole set-up of the existing pay-blocks must wherever practicable be modified to bring them into line with this conception. This principle, as it became operative, would largely control the present tendency to favour the paying patient in the matter of nursing staff and quality of catering. When it comes to finance, he may decide that the hospital shall as such cease to have any financial interest in the scale of charges to the paying patient, and that the whole of any charges shall be forfeited to the Exchequer. Once the idea of meeting the full cost has gone, the Minister will have a free hand to determine the charge for privacy in the light of the need to bring the option within the range of all—for it cannot be denied that charges on anything like the present scales are prohibitive to many people whom privacy would benefit.

If he follows the line of thought suggested above, the Minister will no doubt feel that he must prescribe schedules of fees payable to doctors. For this there are precedents in the scales adopted by some of the hospitals, and there are the schedules of fees for patients of a modest income range agreed between the provident schemes and the British Medical Association. If the Minister were to take these latter schedules as a basis, and allow the profession a little latitude in respect of patients with incomes higher than those for which the schedules are designed, he would probably come fairly near to effecting the compromise to which he stands committed by the Act.

Special Articles

LOCAL EXECUTIVE COUNCILS

THE MEDICAL MEMBERS

WE publish this week a first list of the chairmen and medical members of the executive councils now being established under the National Health Service Act. Broadly speaking, there is to be an executive council for each area covered by a local health authority (a county or county borough), and its function is to provide the general-practitioner service and the dental, supplementary ophthalmic, and pharmaceutical services to which every citizen will be entitled under the Act. The chairman is appointed by the Minister of Health, and of the 24 members half are professional, 7 being appointed by the local medical committee, 3 by the local dental committee, 2 by the local pharmaceutical committee, 8 by the local health authority, and 4 by the Minister. The committees, which are the successors, in modified form, of the present insurance committees, will enter into contract with those general practitioners who are prepared to take part in the new service.

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In England Now

A Running Commentary by Peripatetic Correspondents

IF miners hew coal with a zeal half as fiery as that hown by farmhands getting in the harvest we ought to vercome our present economic difficulties with ease. he fierce energy of the West-country farm labourer aving corn has to be seen to be believed. He simply ill not stop till the job is done. It is not a question of vertime or to whom the crop belongs or whether the oss is watching; it is just primitive man wresting the means of subsistence out of a not too friendly planet. Heavily clad—usually in a thick vest and shirt, waistoat, long pants, and trousers to absorb sweat (notoriously a dangerous fluid, the cause of colds and rheumatism)—the team works stolidly but cheerfully on hour fter hour in the hot sunshine almost without a word unless it be one of polite encouragement to the clumsy mateur trying to help but mostly getting in the way.

Perhaps one day this will cease to be an industrialised ountry; the large towns dwindle and die. In the end we may revert almost exclusively to agriculture with a ane and healthy population of, say, 15 million self-upporting countrymen and a properly balanced economy. There are worse fates.

* * *

A holiday in Switzerland is a revealing experience. It shows not only difference between countries devastated by two wars and those enjoying peaceful development, but also some other factors contributing to the creation of this haven in Europe. Two examples may suffice.

We were invited to dinner at the house of a well-to-do colleague. After dinner the six children of my host, ranging from 4 to 11 years, looking well fed and displaying a hearty appetite, filed out of the room quietly. We found them a little later in the kitchen, all wearing clean household aprons and helping their mother wash up and put away plates, glass, and crockery. The youngest, a sweet little boy of four, normally full of affection and mischief, handled a very large plate, almost as big as himself, with surprising skill. All children understood German and French. They were full of beans yet very well behaved and obeying easily the quiet but firm lead of their parents.

A few days later I wanted a shirt laundered. I went to a laundry, which looked and smelled beautifully clean. The proprietress asked me "Is it urgent?" I said "Not really," and she replied "All right, it will be ready tomorrow morning about 9 o'clock." (It was between 9 and 10 A.M. when she said this.) I was so startled that I simply had to ask when it would be ready in case of urgency. The answer was "Between 8 and 10 o'clock tonight."—I forgot to mention that they opened at 8 A.M., had lunch-time from 12 NOON until 2 P.M., were open again until 6.30 P.M., another meal-time until 8 P.M., and—at least in the summer—reopened between 8 and 10 P.M. for the urgent orders. I had several lots washed there, all hand-laundered and beautifully done, with the greatest care. The price for a shirt thus treated was between Sw. fr. 1.00–1.20, but I believe regular customers paid less.

You are frowning, dear Editor? You are right, and I apologise. I am in the wrong column. This really could not happen in England now. . . .

* * *

Many of the younger men these days are much exercised over the apparently increased difficulty of winning the diploma of M.R.C.P. by examination. Actually the stenosis of the gateway is relative rather than absolute, for more people are getting through than ever before; it is only the crowd outside which has increased beyond all measure. In the stringency of war many people found themselves unable to do academic work, and they are now sitting for an examination which in the normal way they would have passed five years ago; another post-war phenomenon is of course that some of those who came to look on themselves as specialists are now trying in vain to convert the censors to the same happy view. Also, economic conditions which prevented all but the more determined from considering repeated trials for the M.R.C.P. in the pre-war years have now been palliated by the adequate Government grants for medical posts of registrar status.

If the number of applicants has increased in these ways, so too has the number of advertised appointments which require the diploma "or its equivalent." Membership has always been the recognised necessary first step in the specialised practice of clinical medicine; but it is now being looked on as an asset in such varied careers as pathology, psychiatry, and clinical or even laboratory research. For men engaged in academic or laboratory rather than clinical medicine it is difficult to see why the M.D., awarded by thesis, should not be considered an equivalent higher qualification. If this were generally agreed the strain on the M.R.C.P. examination might be partly relieved. It is obvious, too, that a proportion of the present clientele are unlikely ever to make satisfactory physicians, and in everybody's interest they should be told so.

Part of the present rush is certainly due to a wish to possess the golden letters before the new service comes in. Some candidates may share my nightmare of entering the regional office and seeing there one's old A.D.M.S., resplendent in a black coat and striped trousers. If he be of the younger set of "experienced military administrators" he will know that M.R.C.P. has four letters and L.M.S.S.A. five; but if he is someone of real seniority these finer points will be lost on him and the good jobs will go to the man with a straight tie and a stiff upper lip. So perhaps, rather than the toil of membership, it were better to sport with *Amaryllis*—she would at least see that a fellow was properly dressed.

* * *

Your recent article on the collection and disposal of London refuse leads me to think that a note on our local methods near Geneva might be helpful.

No fewer than three Authorities are concerned: my wife, responsible for combustible waste; myself, for non-combustibles; and a shadowy Commune of V— which is said to collect all refuse from the end of our lane on an unspecified day once a fortnight. (There is no evidence that this occurs, and the dumps of the optimistic at the end of the lane have attracted much unfavourable comment.) The following figures show the extent to which the various methods of disposal have varied during our tenancy:

Period	*Hopeful dumping in lane*	*Incineration*	*Lake tipping by "outboard" system*
May, 1947	25 %	75 %	Nil
June, 1947	Nil	80 %	20 %

The increase in the proportion incinerated was due to better knowledge of local markets and less eating out of tins.

Incineration is easy, requiring only a box of matches and no thunderstorms. Lake tipping is more complicated, the requisites being a boat, outboard motor, oars, colour chart, large-scale map, cold chisel, boat-hook, and fishing-rod. When a sackful of non-combustible refuse has accumulated, it is placed in the boat and rowed out to where the depth changes suddenly from about 10 feet to 300 feet, the old bed of the Rhone. The contour line on the map is indicated in the lake by a change from bluish-green to greenish-blue—hence the colour chart. (The outboard motor of course seldom or never starts and is there for historical reasons only, possibly connected with the prehistoric lake villages.) The rod and line are then brought into play to deceive the Gardiens du Port, since all dumping in the lake is illegal. (N.B.—It is important to use a rod and line, since fishing with a rodless line requires a licence and would attract rather than dispel any roving G.'s du P.) The tins are then pierced with the cold chisel, dropped overboard, and thrust under the surface with the boat-hook; and we return to port. Assuming unpaid labour and that the boat is let with the house, costs are negligible and more than offset by increased output of lake fishes.

It is proposed to set up two expert advisory committees, one to report on the best methods of muffling oars, for night work, and one to consider and recommend methods of disposal of Chianti flagons, having regard to the fact that, as they come from Italy, the rebate of 30 centimes given on Swiss wine-bottles is not payable, and they are too attractive to dump in the lake.

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d by Tietz et al. My technique in producing and naging the electronarcosis is much the same as that cribed by the above workers, and I can only suppose t the difference in the result must be due to the fact t my electrodes are larger. I use the standard electrodes from the Caplan Electroconvulsant Apparatus, ich are made of aluminium and measure 3 in. × 2½ in.; se are placed in the middle of the temples.

Apart from the differences in current density, variation electrode area would appear to lead to stimulation different parts of the brain. Tietz et al., who use trodes measuring 1·5 in. × 2 in., describe the effect of nges in their placement on the type of electronarcosis duced by a similar current. Their usual placement is in. in front of the mastoid, but if stridor develops at ow current level they move the electrodes forwards 3-3½ in., and if the secondary rise of current to mA does not result in a satisfactory narcosis they ve them backwards. Large electrodes such as I use er most of these areas simultaneously, and as regards nesia and the depth of the postnarcotic unconsciouss this would appear to be an advantage. I have not perienced any real difficulty in producing an adequate ctronarcosis in most cases, and I have been impressed the fact that sometimes it has not been necessary to se the secondary current above 80–90 mA.

An obvious difficulty which confronts any investigation the effects of variation in the electrode size and acement is that patients' heads differ in both size and ape, so that satisfactory contact with equal areas of in in corresponding positions is hard to obtain, and if tainable it bears little relation to the anatomy of the derlying cerebral cortex in the different patients. evertheless I feel that the above observations point to field for further investigation which may prove fruitful.

London, W.1. GERALD CAPLAN.

CRAMP AND SALT BALANCE

SIR,—I read with great interest Sir Arthur Hall's aper of Aug. 16 on cramp and salt depletion. My perience is similar to Dr. Gavin Thurston's which he escribes in his letter of Aug. 23. I agree that salt, though worth trying, is usually disappointing. It is so certain that intermittent claudication does not predispose to cramp at rest or during sleep.

Tobacco was clearly the cause of nocturnal cramps n a man I treated some years ago. I have good reason o remember him, for he was my first patient, though e never knew it, and I have not since given more uccessful advice.

He was a vigorous man of 58 who played tennis and hunted ithout any trace of cramp. He came to me because of octurnal cramps from which he had suffered for a few weeks nd which were increasing rapidly in frequency and severity. It seemed that the act of falling asleep was a trigger for his ramp, and he dreaded going to bed. Finding no defect in is nervous and vascular systems, I temporised, and to egain my composure offered him a cigarette. This made him sk, by the way, if there was any harm in smoking 70 cigarettes a day. I seized upon his suggestion and advised him to restrict his smoking. He was that rare bird, the patient who believes that the doctor's advice should be tried. He gave up smoking and never had another cramp.

London, W.1. L. P. E. LAURENT.

SIR,—In the first place I should like to thank Dr. Thurston for his interesting case-report in your issue of Aug. 23. Since then I have also received a private letter from an officer of the R.A.M.C. which illustrates so strikingly the occasional occurrence of a fulminant attack of cramp in ordinary life, comparable to that seen in the miner in hot seams, that, with his permission, and in his own graphic words, I wish to record it. He has been an athlete all his life, and never suffered from cramp even after the most violent exercise in all sorts of climates, except as hereunder:

‘During the retreat from France in 1940, at the age of 48, in a physically very fit state, I was on the beach at Dunkirk for 5 days in May. It was hot, fine weather; we had reached the Dunkirk area after a very strenuous three weeks, water was very short and food difficult to obtain, so that I had been on short rations of both for nearly a week. On the third evening we were badly strafed from the air. I had retired to a ‘grave’ which I had made myself in the sand about 2 feet deep; lying in this ‘grave’ whilst the strafing was on, I heard a cry for help near by. I made a sudden movement to struggle to my feet and was at once smitten with the most acute cramps in my arms, legs, belly, and shoulders. The pain was very severe and it took me several moments before I could raise myself from the sand ‘grave’ and even then was almost incapable of movement. After about 3 minutes the acute pain worked off, but all my muscles were very stiff and sore. I reached the dressing-station after collecting the casualty, and found some cooking salt and a very small quantity of water; making a strong mixture I drank it and almost made myself sick in the effort. However, the effect was remarkable and rapid, for in about ten minutes all symptoms of the cramp had gone and the stiffness of the muscles had almost completely disappeared.”

It is reasonable to assume that the factor which determined this fulminant attack of cramp in a man previously “cramp-free,” even in active athletics in hot climates, was the insufficient intake of salt during the previous week or so of diminished food and water rations.

Sheffield. ARTHUR J. HALL.

POLIOMYELITIS

SIR,—The following clinical observations of the eye in early acute poliomyelitis may be of interest in the diagnosis of the disease in the present epidemic.

What might be called a “prefixation tremor” of the eyes has been noted in three of our cases. When an attempt is made to focus the vision on some object directly in front or slightly to the side, the eyes oscillate two or three times very rapidly before the gaze is finally fixed in the required line of vision.

CASE 1.—A girl of 4 years was admitted complaining of headache and being generally off colour. Apart from a temperature of 102°F I noted only one abnormal physical sign. This was the “prefixation tremor” described above. The following day, as the temperature fell, a flaccid paralysis appeared in both legs and the eye tremor meanwhile disappeared.

CASE 2.—A boy of 7 years was admitted with complaints of headache and vomiting. Apart from a temperature of 101°F, again the only abnormal physical sign was this “prefixation tremor” of the eyes. A diagnostic lumbar puncture showed 14 lymphocytes per c.mm. in the cerebrospinal fluid, and two days later paralysis developed in the right leg. With the onset of the paralysis and fall of temperature the eye tremor disappeared.

CASE 3.—A boy of 5 years was admitted having suddenly developed left arm paralysis. The temperature rose to 101°F and the “prefixation tremor” appeared in the eyes. The pyrexia and eye tremor lasted until the paralysis spread to the other limbs, gradually decreasing as the paralysis became more pronounced.

I wish to emphasise that in none of these cases was there any nystagmus and I wonder whether this sign, so striking when once seen, can be regarded as pathognomonic of early acute poliomyelitis.

BASIL STRICKLAND.

Victoria Hospital for Children, Tite Street, London, S.W.3.

SIR,—I have recently used a form of treatment in the very early stages which appears to be promising. It is to apply heat to the involved muscles twice a day by short-wave diathermy.

The muscles most often attacked in poliomyelitis are those which become fatigued—for example, the deltoid muscles in the upper extremity, the tibialis anticus in the legs, the short extensors of the wrist, and sometimes the pronator teres in tennis-players. This fatigue factor led me to think there might be some local condition in the muscle, such as excess of lactic acid or other metabolites, which rendered it susceptible to the action of the virus. Supporting evidence is the frequent history of exercise followed by a bathe: the cold water would tend to decrease elimination of metabolites, and the muscles would thus be made more susceptible. I have often been struck by the extensive involvement in cases with this history of bathing.

Letters to the Editor

BEDS

SIR,—Your leading article of Aug. 9 draws attention once again to two methods by which, to some extent, the ever-growing pressure on the general hospital wards might be reduced. There is no doubt that this is the time when those interested in the future of our hospital service should be carefully considering all suggestions of this sort. If in fact the nation takes over all hospitals in the country during the course of 1948 there will be many opportunities of putting these suggestions into practice. In Plymouth, for instance, the two large hospitals, municipal and voluntary, which stand literally side by side, will form a group of buildings which must be reorganised as a single institution. This will give an opportunity of revising completely the present allotment of wards; and, at the same time, it is a virtual certainty that the conditions of work of the hospital staff will be put on an entirely new footing.

A regular travelling consultant service for all major departments will be a comparatively obvious and simple thing to organise. The cottage hospitals in the surrounding district could be visited regularly by consultants, who will take with them a clerk, possibly a clinical assistant, and a technician for any special apparatus they may require. Such a scheme would provide a vastly better service for patients in a scattered rural district like Devon and Cornwall, and would enable the consultant to do far more work with greater efficiency. At present a great deal of their time is occupied in long-distance motoring, usually to see one, or at most two, patients on each journey.

You also draw attention to suggestions which have been made in the past that hostels should be arranged in which patients could stay for short-term investigations. The idea has the double object of providing more convenient service for patients themselves and relieving pressure on the general wards and their overworked nursing staff. The hostel could of course be served by a much less elaborate staff than a general ward. Prof. L. J. Witts advocated a modification of this idea in his article, Length of Stay in Hospital, published a year ago.[1] He favoured the view advocated by Sir Ernest Rock Carling and put into practice at the Westminster Hospital. Here, instead of the hospital being organised on the old plan with a large separate outpatient department, it is constructed of a number of floors or wings each allotted to a medical or surgical unit and comprising a diagnostic and treatment block corresponding with our present general ward, a short-stay ward or hostel, and a long-stay ward. The outpatient department of the unit would be on the same floor, and all sections would come under a single team of doctors, nurses, technicians, and assistants. Such a scheme obviously holds out many advantages. It would be particularly convenient and valuable if, under a new régime, the senior staff concentrated all their work at the hospital, and the present system of having private consulting-rooms in other parts of the town were abandoned. I can foresee that the greatest difficulty in its execution is likely to be the dearth of building facilities, for it would entail a drastic modification of the general layout of most of our large hospitals. However, if the scheme is accepted as the ideal and as the ultimate objective to which we should work, then as from time to time opportunities for building and for reorganisation arise, as we must surely hope they will, they can be used in that direction.

Hospital management committees will shortly be constituted all over the country. Now is the time when such ideas should be carefully thought out and discussed, so that we may have clear and progressive suggestions to lay before these committees when they come to their duties with fresh and unprejudiced minds, and when our hospitals are in the plastic state of reorganisation and capable of being more easily moulded on broad and wise lines.

Plymouth. W. A. LISTER.

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[1] Gardner, F., Witts, L. J. *Lancet*, 1946, ii, 392.

H. INFLUENZÆ MENINGITIS

SIR,—The encouraging results in the treatment of *Hæmophilus influenzæ* meningitis with massive doses of penicillin and sulphadiazine, recorded in your issue of Aug. 2, prompt the following brief report of 2 cases in infants. These demonstrate the importance of early diagnosis and treatment, for in both the infection was soon brought under control yet death occurred from hydrocephalus.

1.—A.B., aged 15 months. Admitted in coma to the Royal Hospital, Wolverhampton, on April 18 after nearly 3 weeks' illness. The cerebrospinal fluid (C.S.F.) contained 2000 polymorphs per c.mm., no sugar, and numerous organisms shown to be *H. influenzæ*. Treatment with daily intrathecal penicillin, 100,000 units of penicillin 3-hourly by intramuscular injection, and intravenous sulphadiazine was started. The organism was found to be inhibited by 10 units of penicillin per c.cm. and the C.S.F. was sterile by April 21. On the 22nd a block became manifest; ventricular puncture was done and an excess of slightly turbid but sterile fluid was removed. This was repeated thrice more, the fluid remaining sterile, and on the 25th lumbar taps again became productive. The temperature settled on the 28th. A total of 10 million units of penicillin and 47 grammes of sulphadiazine was given. The child never became fully conscious, his limbs remaining rigid, and the most he was able to do was to swallow fluids. He died on Aug. 6 after contracting measles.

Necropsy showed a communicating hydrocephalus with gross dilatation of the lateral ventricles.

2.—C.D., aged 4 months. Admitted to the Royal Hospital on July 11 after 15 days' illness. She had had convulsions for 11 days. Lumbar puncture produced no fluid but cisternal puncture yielded a few cubic centimetres of turbid fluid containing scanty *H. influenzæ*. 50 c.cm. of purulent fluid were removed by ventricular puncture; 50,000 units of crystalline penicillin were introduced, and parenteral penicillin was started. Intravenous sulphadiazine was also given. Ventricular tap was repeated and by July 15 the C.S.F. was sterile and was obtained from the lumbar route. A concentration of 4 units of penicillin per c.cm. was obtained in the fluid and the temperature settled on this date. Block developed again on the 21st, but the ventricular fluid was still sterile. Thereafter the course of the disease was similar to that run by the first case and the child died on Aug. 3 after a fortnight's generalised spasticity. She received a total of $2^1/_2$ million units of penicillin parenterally, intrathecal and intraventricular penicillin for 10 days, and 25 g. of sulphadiazine.

Necropsy findings were almost identical with those of the other case.

Wolverhampton. H. EVERLEY JONES.

ELECTRONARCOSIS

SIR,—In your issue of Aug. 9 (p. 198) Paterson and Milligan describe in a very clear manner the technique of electronarcosis. I have had some experience with this new method of treatment recently, and the following point is of interest.

Tietz et al.[1] mention that some of their patients had an inadequate amnesia for the period of treatment, and I understand that workers in this country who have used the Shotter-Rich apparatus have also been troubled by this complication. For the patient this is a terrifying possibility since it means that he remains at least partially conscious during a period of paralysis and respiratory embarrassment. I have myself not encountered this complication, and on the contrary I have been impressed by the deeply unconscious state of my patients under treatment. The recovery phase has been longer and quieter than with electrical convulsion therapy, and this period is usually included in the amnesia. Because of this most patients who have had both treatments prefer electronarcosis, since it is the memory of the postconvulsive stage of restlessness and confusion which is largely responsible for the fear of electrical convulsion therapy which sometimes develops.

My apparatus, which was designed in coöperation with Mr. Oswald Sneath, B.SC., is a lightweight instrument with a non-thermionic current control circuit. It resembles that described by Paterson and Milligan, and its output is similar to the Plesset apparatus, which is ults. While these findings are naturally subject confirmation or the reverse, our limited experience ds us to suggest that the undoubted analgesic pro- rties of miadone will find it a place in fields other than se of obstetrical analgesia.

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[1] Tietz, E. B., Thompson, G. N., Van Harreveld, A., Wiersma, C. A. G. *J. nerv. ment. Dis.* 1946, 103, 144.

G. C. STEEL
Hon. Anæsthetist.
EILEEN GUNDERSON
Anæsthetic Registrar.
ueen Charlotte's Maternity Hospital.

⁂ Messrs. Burroughs Wellcome & Co. are to issue s product under the trade-name 'Physeptone.'—ED. L.

ASHRIDGE

SIR,—While fully endorsing the remarks in your notation last week, I should like to commend the hridge "weekend habit" to medical men. In the nfortable atmosphere of a house-party one can spend o days in the consideration of various topics of national portance under the guidance of experts. It provides cellent opportunities both for informal discussions and learning to speak in public. All opinions are welcome d the Ashridge College is not now linked with any litical party.

JOAH BATES.

POSTGRADUATE TEACHING IN OBSTETRICS

SIR,—I read with great interest your Students' Guide the issue of Aug. 30, and feel sure that this will be a ry great help both to students and to postgraduates. t the same time I was rather surprised and most sappointed that the Combined Postgraduate Teaching hool in Obstetrics and Gynæcology of Queen Charlotte's d Chelsea Hospital for Women was not mentioned. his school is running refresher courses and courses for e M.R.C.O.G. and D.R.C.O.G., the deans being Mr. G. E. Arthure, F.R.C.S., of Queen Charlotte's and r. C. D. Read, F.R.C.O.G., of Chelsea Hospital, with teaching staff outstanding either in obstetrics or in næcology. The school is recognised by the University London and the Postgraduate Medical Federation. urther particulars can be obtained from Miss M. E. aylor, secretary, The Combined School, Chelsea Hospital r Women, Dovehouse Street, S.W.3.

A. J. ESPLEY
Vice chairman.
Hellingly, E. Sussex.

ÆTIOLOGY OF INFANTILE ENTERITIS

SIR,—Your leader of Aug. 23 on the epidemiology f infantile enteritis was welcome, in particular your lea for renewed and more extensive epidemiological tudy. It is my opinion that valuable ætiological informa- ion could be obtained by a combined field survey and aboratory investigation of the nutritional aspects of his disease. In support of this I offer the following aragraphs.

It has been repeatedly found that the main incidence nd fatality of infantile diarrhœa falls on the babes of he poorer sections of our urban populations, while the isease seldom attacks the better-off classes. Largely rom this, it had been concluded that overcrowding and nsanitary conditions of the homes of poor people were esponsible for outbreaks of the disease; the assumption eing that infantile diarrhœa was a bacterial infection of the gastro-intestinal tract and that adverse housing conditions favoured the spread of bacteria.

In an epidemiological survey of infantile diarrhœa in Dublin during 1942 and 1943, my colleague Dr. J. St. L. O'Dea[1] showed that the incidence and fatality of the disease was much the same in the overcrowded slum districts as it was in many newly built well-planned working-class suburbs. The inhabitants of both types of area were of the same income-group (more truthfully, lack of income group), and indeed most of the occupants of the new houses had come from the slum areas. Undoubtedly the slum houses, the "tenements" of Dublin, are overcrowded and often insanitary, but this cannot be said of the houses in the new suburbs. Overcrowding and insanitary conditions are therefore not necessarily associated with the disease, and some other accompaniment of poverty must be concerned. It is probable that malnutrition plays an important rôle. In a survey of the disease in Holland in 1945, Van Creveld[2] agreed with this view.

Again, field-surveys have shown that breast-fed infants, even of the poorer classes, tended to escape the disease while the artificially fed had a high incidence. It has been tacitly accepted by some that the protective mechanism of breast-feeding is due to the transfer of bacteria-free milk directly to the infant, and that the high incidence among the artificially fed is related to the contamination of cow's milk by pathogenic or facultatively pathogenic bacteria. It is now known that maternal milk is commonly contaminated with bacteria, particularly staphylococci. Moreover O'Dea[1] could find no difference in incidence or fatality by dividing the artificially fed diarrhœal infants into two groups—those fed on loose "raw" milk, and those consuming high-grade bottled milk. This does not support the theory that contaminated milk is the source of the disease, nor could I incriminate any bacteria isolated from a number of milk samples.[3] Does human milk contain an anti-diarrhœal factor absent from cow's milk? Or is the general level of the infants' nutrition mainly concerned?

Further support that nutritional factors play a part in the causation of infantile diarrhœa comes from autopsy and liver biopsy material. I found[4] that the livers of infants dying of gastroenteritis showed various degrees of degeneration including fatty change and accumulation or deposition of the brown non-iron-containing pigment in and between the liver cells. Similar changes were reported by Debré[5] in France, in the livers of infantile pellagrins in South Africa by Gillman and Gillman,[6] and in the tropical nutritional deficiency called kwashiorkor by various writers.[7]

Bacteriological studies have shown that no common pathogen exists; although in most epidemics various non-lactose-fermenting gram-negative bacilli were isolated, including *B. proteus*, *B. morgani*, various types of paracolon bacilli, and in a minority of cases organisms of the dysentery and salmonella groups. In other outbreaks no incriminatory organisms were found and a virus infection was postulated.

In 1943 I carried out experiments with young kittens in an attempt to reproduce the disease by the oral administration of paracolon bacilli freshly isolated from the fæces of infants suffering from gastroenteritis. Partial success was achieved, particularly with type-A paracolon strains.[3] At necropsy the successfully infected animals showed pathological findings similar to those found in human cases. But this feline diarrhœa could not always be produced even with a "kitten-passaged" paracolon strain. Too many kittens were resistant and the results suggested that another factor was involved. As the epidemiological and some of the pathological findings pointed to nutrition, an experiment (unpublished) was later performed to test the combined effect of malnutrition with infection.

Twenty-four kittens, 3–5 weeks old and weighing 8–16 oz., were divided into four groups of six animals (A, B, C, and D). A and B were fed adequately with cow's milk and increased satisfactorily in weight over a test period of two weeks. C and D were fed with diluted skimmed milk in such quantities that they put on very little weight over the same test period. Then the kittens of B and D groups were given 1 c.cm. of an overnight broth culture of a paracolon type A strain.[3] Diarrhœa occurred in three groups of animals B, C, and D whilst all the A animals (controls) remained well. Two B kittens (well fed, infected) developed diarrhœa and one died; one C kitten (semi-starved, not infected) developed diarrhœa but survived: while five of the D animals (semi-starved *and* infected) went down with severe diarrhœa and three of these died.

This experiment, although carried out with few animals, supports the hypothesis that the previous nutritional state is important in determining how many

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[1] O'Dea, J. St. L. *Irish J. med. Sci.* 1944, p. 111.

[2] Van Creveld, S. (personal communication).
[3] Sevitt, S. *J. Hyg., Camb.* 1945, 44, 37.
[4] Sevitt, S. *Irish J. med. Sci.*, 1944, p. 25.
[5] Debré, R. *Proc. R. Soc. Med.* 1945, 38, 447.
[6] Gillman, J. *Brit. med. J.* 1944, i, 149; Gillman, T., Gillman, J. *J. Amer. med. Ass.* 1945, 129, 12.
[7] Williams, C. D. *Arch. Dis. Childh.* 1933, 8, 423; Trowell, H. C. *Ibid*, 1937, 12, 193.

The only way I could discover of getting rid of these products was by increasing the blood-supply to the muscle, and heat seems to be the only means of doing this. Hot packs might do it, and this may explain some of the successes claimed by Sister Kenny in the early stages; but hot packs also heat up the skin and dilate superficial vessels. Diathermy, which heats up the muscles themselves, should be more effective.

I had the opportunity of treating a case at the Norfolk and Norwich Hospital 11 weeks ago. The acute stage was severe, with a temperature of 103°F, head-retraction, and early paralysis of the abdominals and the whole of the right leg. This continued until the fifth day when I saw the patient for the first time. The right leg and abdominal muscles were then completely paralysed and since the previous day there had been well-marked weakness of the left leg. The right sternomastoid was completely paralysed.

Short-wave diathermy was given twice a day and there was some immediate improvement, which was not dramatic except in the case of the right sternomastoid muscle. This muscle recovered completely next day, and the muscles of the left leg recovered much of their power, though the psoas is still so weak that it will not yet act against gravity. The right leg was also treated, and a flicker of movement returned in the extensors of the toes, the peroneals, and quadriceps.

I recognise how difficult it is to assess any form of treatment in this disease; but my experience of this one case, and of previous cases untreated, leads me to think the method worth trying on a larger scale in the present epidemic. In this particular case the progress of paralysis was rapid before the short-wave diathermy was started, and ceased immediately when it was given. The muscles which had been affected for only a few hours recovered to a surprising extent; but short-wave diathermy is probably not of any use later than a few hours after the onset of the paralysis.

Norwich. G. K. McKEE.

*** In testing this treatment it is well to be sure of the diagnosis. It would be inadvisable, in particular, to use diathermy in a case of acute peripheral neuritis or other condition with sensory changes.—ED.L.

SIR,—In your informative leading article of Aug. 23 no mention was made of the use of penicillin in cases of poliomyelitis complicated by respiratory paralysis. Of those requiring treatment in the iron lung many die from aspiration bronchopneumonia, despite adequate suction drainage of pharyngeal secretions. In hospitals in the Middle East parenteral penicillin became the routine procedure for prophylaxis and treatment of such infections, and this therapy often proved effective in tiding men through the acute paralytic stage of their illness.

London, W.1. GEOFFREY KONSTAM.

SIR,—According to your report of a recent meeting of medical officers of health (Aug. 23, p. 298) there is no evidence that flies are spreading infection in the present outbreak of poliomyelitis. This is so opposed to American experience that I was not surprised to learn from the Ministry of Health that it is essentially an assumption, not based on specific investigations. American research[1] has shown that the virus can be recovered from houseflies and blowflies trapped in urban and rural areas during poliomyelitis outbreaks. Food contaminated by such flies was found to produce the disease when fed to chimpanzees.[2] The flies almost certainly acquire the virus from the stools of poliomyelitis patients or carriers. The virus has been recovered from the stools of a child 123 days after an abortive attack,[3] though three weeks appears to be the average time of persistence.[4] Such an experienced researcher as Sabin inclines to the view that flies are a more important vector than droplets during poliomyelitis epidemics.

One objection to applying the fly-carrier theory to the present epidemic is the apparent lack of opportunity for flies to settle on infected stools. Though the virus has been detected in sewage the dilutions involved seem to be too great for sewage-farms and rivers to be important centres of virus pick-up. Earth-closets are mainly restricted to rural areas, and most of the cases are reported from towns. There is, however, one source of fresh human stools open to visitation by flies embracing every town—our vast network of railway lines. Because of the primitive sanitation on our trains, and the large number of apparently healthy people who may be poliomyelitis carriers, railway tracks may be an important source of the virus. From them flies may contaminate food in nearby warehouses, restaurants, and homes. This might account for the widely scattered outbreaks of the disease and the speed with which it travels both here and in America.

CHAPMAN PINCHER

London, E.C.4. Science Correspondent, *Daily Express*.

SIR,—General agreement on the important part played by excreta in the transmission of the virus in poliomyelitis focuses attention on possible means of dissemination. A factor which so far appears to have escaped notice is the handle of the lavatory chain. Contamination of this familiar and seemingly innocent object is inevitable. Washing the hands after visiting the toilet would eliminate the danger; but brief observation in any public convenience will show how completely this elementary precaution is neglected, and human nature being what it is, no amount of propaganda is likely to improve the situation. The provision of a foot-operated flushing mechanism would provide a complete answer.

St. Bartholomew's Hospital,
London, E.C.1. RICHARD TERRY.

MIADONE (PHYSEPTONE) IN OBSTETRICS

SIR,—We read with great interest the preliminary communication on 'Miadone' by Drs. Hewer and Keele (Aug. 23). A few weeks ago, following its possible use as an analgesic in midwifery, we decided to give it a clinical trial at Queen Charlotte's Maternity Hospital and for this purpose were given generous supplies by Messrs. Burroughs Wellcome & Co. Our findings were as follows.

The drug was given to 43 patients; the time at which it was started was approximately that at which pethidine would have been given.

An initial dose of 10 mg. was given to 36 of the cases. Of these, 20 (55%) needed further amounts. A second dose of 10 mg. was enough for 15 of them; 4 needed a third dose; and one was given a fourth dose, totalling 40 mg. (the administration in this case was spread out over twenty-one hours). The remaining 16 (45%) did not need any further amount.

An initial injection of 20 mg. was given to 7 patients and in no case was it necessary to give any more, though gas and air was used in the second stage.

A fair degree of analgesia was usually obtained; it seems that 10 mg. of miadone produces about the same effect as 200 mg. of pethidine and for a somewhat longer time. In some cases a cumulative effect was noted. Euphoria was not noticeable—rather did it appear that the mothers were inclined to be tearful and depressed. Labour was not prolonged by the drug.

Of the 43 infants, 31 (72%) were in good condition and cried spontaneously.

A further 6 infants (14%) were rather limp and sleepy at birth; 2 were given oxygen and CO_2. Of this group, 2 of the mothers had a total dosage of 30 mg. of miadone, 2 had 20 mg., and 2 had 10 mg.

The last group of 6 infants (14%) were classed as being in poor condition and gave rise to some anxiety; 2 showed white asphyxia, and in the other 4, though their colour was reasonably good and their heart-beat strong, respiratory depression lasting for up to an hour was a well-marked feature. All these 6 babies were given oxygen and CO_2; one was also given lobeline and in another case it was necessary to give both lobeline and nikethamide. The total dosages in this group were: 1 mother was given 40 mg., another had 30 mg., 3 had 20 mg., and 1 had only 10 mg.

The factor that appears to be responsible for the ill effect on the child is the total dosage; rather that than the nearness of the last injection to the time of delivery.

It is because of the high incidence of near disasters to the babies that we hasten to communicate these

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1. Sabin, A. B., Ward, R. *Science*, 1941, **94**, 590.
2. Ward, R., Melnick, J. L., Horstmann, D. M. *Ibid*, 1945, **101**, 491.
3. Lépine, P., Sedallian, P., Sautter, V. *Bull. Acad. Méd. Paris*, 1939, **122**, 141.
4. Horstmann, D. M., Ward, R., Melnick, J. L. *J. clin. Invest.* 1946, **25**, 278.

n his hospital he was just ' the chief '—a beloved figure hom everybody knew was a skilful surgeon, a superb acher, an excellent administrator. But beyond all iat he was just the life and even more the soul of ie place. He continued in harness right up to the very id, and no more gallant fight against quite impossible lds was ever fought. It was no easy task to follow arvey Cushing; but when time in due course evaluates e two men, one feels that, though perhaps in quite a fferent way, Elliott Cutler has done no less for American rgery than his distinguished predecessor.

"Elliott the man has gone; his example, his dreams, s friendship live on in a thousand and one places on oth sides of the Atlantic. He was a man amongst en; his zest for life lives on after him. His passing aves the world a poorer place, but for those who knew m it must always be a richer."

Mrs. Cutler survives him with four sons.

THOMAS JOHN CAREY EVANS

KT., M.C., M.D. BRUX., F.R.C.S.

Sir Thomas Carey Evans, who died on August 25 at ie age of 63, had retired from his post as medical iperintendent at Hammersmith Hospital in 1944. His iends had hoped that he would enjoy some years of uiet retirement on his farm at Criccieth.

Press Portrait Bureau

The son of Dr. R. D. Evans, of Blaenau Festiniog, he udied medicine at Cardiff, in London at St. Bartholomew's Hospital, and in Glasgow. Qualifying in 1905, he held house-appointments and studied abroad before he entered the I.M.S. In 1910 he took his F.R.C.S. and was appointed surgical specialist to the Lucknow division. Soon afterwards he joined a punitive expedition against the Abors, a tribe of head-hunters on the Assam frontier whose young men had recently added the heads of some British officials to their collection. Later he became senior medical officer of the Mishmi party which explored a tract of unknown country between Tibet and the N.E. Frontier of India and mapped art of the unknown course of the Brahmaputra.

During the 1914–18 war Carey Evans accompanied he Indian Expeditionary Force to Egypt. He served hrough the whole of the Gallipoli campaign and was warded the M.C. for gallantry in action. After the vacuation of Gallipoli he was transferred to the lesopotamia Field Force, and in 1917, as civil medical fficer of Bagdad, he had to organise medical relief or the civilian population and do most of the surgery f the town. To add to his difficulties it was a year f exceptionally hot weather and there was a severe utbreak of cholera. Young and energetic, he worked nceasingly under conditions which made a severe call n his courage and physique, and his services were ewarded by a brevet majority, the Legion of Honour, nd three mentions in despatches.

On his return to India he was appointed residency nedical officer to the State of Mysore; in 1921 he was elected to be surgeon to the Viceroy, and in 1924 he was knighted. A few years later he retired from the I.M.S. for the sake of his children's education.

Carey Evans was appointed surgeon to St. Paul's Hospital and to the Hospital for Tropical Diseases and practised for some years in London, till in 1933 he took up the appointment of medical superintendent of Hammersmith Hospital. The British Postgraduate Medical School was to be established in association with this hospital, and it was a fortunate chance for the school that placed Sir Thomas in control of the hospital. Colonel Proctor, to whom we are indebted for much of this memoir, writes: "I had known of Carey Evans in the service mainly by reputation, as a brilliant and promising officer. I had seen him toasted and heard him cheered at I.M.S. dinners, but it was not till we became associated at the British Postgraduate Medical School that I really got to know him. The school opened in 1935 and problems arose in adapting municipal hospital practice to teaching school requirements, but Carey Evans invariably found an amicable solution. Impulsive by nature he would at times react violently to actions of the staff, but these explosions were so genuine and so part of the character of the man that they never left any ill feeling and often cleared the air. First and foremost in his mind was the comfort and welfare of his patients, and next the smooth working with the school.

"The outbreak of war brought the hospital into the Emergency Medical Scheme. As it was situated in a heavily blitzed area, the maintenance of the hospital's efficiency caused him much anxiety. Fearless himself, whenever bombs were falling near he would at once go round the outside of the hospital to make sure his blackout was still complete. Carrying a risk, it was not a duty he would delegate to others. When the Home Guard was formed he was one of the first to join. He would not accept any promotion but attended all parades and exercises, until his youngest son, also a member, took alarm and persuaded him to leave out the more strenuous, as being too severe for a man of his age. Carey Evans always liked people around him and dispensed a generous hospitality to old and young. He was happiest when he had his family at home, and at Hammersmith he kept open house during the war for their friends as well as his own.

"In 1944 he retired from the hospital on the age-limit, and took up farming at Criccieth. He set to work with all his old enthusiasm, and, ably backed by his wife, Lady Olwen Carey Evans, the eldest daughter of the late Lord Lloyd George, in three years had transformed a somewhat neglected place into a modern and efficient farm. I asked him how he had survived the severe winter this year. His answer was characteristic. 'Not too badly! Lost a few lambs but did well with the cattle.' Carey Evans could always see the brighter side of life.

"He loved Wales and was well versed in its early history and literature, and spoke Welsh fluently. On a fishing expedition he would stop for a chat with every one he met, and in a few minutes you saw tinkers, tramps, poachers, labourers, or landed gentry apparently reviving a friendship of years. He was full of good will to all men, and one could not fail to recognise it."

"It is over thirteen years since I first met Carey Evans," writes Prof. Lambert Rogers, "in the early days of the British Postgraduate Medical School when I had the privilege of assisting Professor Grey Turner in organising the surgical work. Sir Thomas, then superintendent of the Hammersmith Hospital, Colonel Proctor the dean, and Captain Scotland the secretary, formed a triumvirate which gave the administrative side of the school a grand beginning. Carey Evans was always most helpful and coöperative, and ever cheerful—I never once saw him put out or in any way depressed—and being a surgeon himself he was highly sympathetic to our problems. He was a friend to us all at a time when the new school was an innovation and something of an experiment, and when those of us who were the first members of its staff were to a certain extent strangers in a strange land."

JOHN WILLIAM HUNTER

M.D. EDIN., B.HY. DURH.

Dr. J. W. Hunter, medical officer of health for Ipswich, died on Aug. 26 at the age of 47. From Dunfermline High School he went to the University of Edinburgh, where he graduated in medicine in 1924, and four years later he took his diploma and degree in hygiene at Durham. From 1926 onwards he held posts in the public-health service at Newcastle-on-Tyne, Norwich, Blackburn, Walsall, Portsmouth, and Kensington. In the last three, as deputy medical officer of health, he built up a reputation as a sound administrator, and in 1937 he became M.O.H. for Ipswich. Under his guidance the municipal hospital was modernised and staffed by consultants from the town, and this work will stand as a among the infected will contract enteritis and how many will escape. In other words a dual conception of the ætiology of infantile diarrhœa arises—malnutrition and infection. The former is the underlying and in general the predisposing *cause: the latter the usual exciting* cause. It may be that the relative rôles played by these factors varies from case to case, but in general both play a part. Malnutrition prepares the soil: infection is the seed. Without one the other is usually inoperative.

I do not know what is the biochemical nature of the malnutrition predisposing to diarrhœa. While I believe that most cases arising in the home can be explained on this dual hypothesis, I am aware that neonatal outbreaks in maternity homes and nursery epidemics are apparent exceptions to this conception of the disease. However, the hypothesis is put forward in the belief that it makes sense of most of the known facts and in the hope that the personnel of some future investigation will include experts in the field of nutrition.

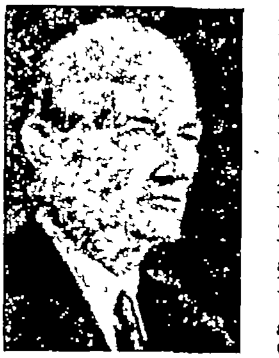
Birmingham Accident Hospital. S. SEVITT.

Obituary

ELLIOTT CARR CUTLER

HON. C.B., M.D. HARVARD, HON. F.R.C.S.

WE have already recorded the death on Aug. 16 of Dr. Elliott C. Cutler, Moseley professor of surgery at Harvard, and surgeon-in-chief of the Peter Bent Brigham Hospital, Boston. He was 59, and the greatest contributions of his later years were made in Europe as chief consultant in surgery, and chief of professional services, in the medical branch of the United States forces. He will be remembered as a fine surgeon, a great teacher, a gay crusader, and a good friend.



The Cutlers are of New England Puritan stock, originally from Norfolk, and latterly they have been noted athletes. Elliott Cutler was captain of the Harvard crew in 1909 and president of the Harvard Alumni Association in 1940. After graduating in 1913 he spent some time in Germany, where (as he related in his Linacre lecture[1]) he acquired a distaste for German manners. After war broke out in 1914 he went to Paris in charge of the first Harvard medical unit, and in 1916 he was commissioned in the British Army. In the following year he rejoined his compatriots, and for his work in forward surgical units, and his able organisation, won the Distinguished Service Medal.

Returning to Harvard as assistant to Harvey Cushing, Cutler became a pioneer of cardiac surgery, and in 1923 was the first to tenotomise the stenosed valves in mitral stenosis, with survival of the patient. His surgical *courage* was *outstanding*, but always based on thought and on experiment. With S. A. Levine and other colleagues at Harvard he introduced total thyroidectomy to relieve heart-failure, and his name is associated with advances in the surgery of the central nervous system, the autonomic nervous system, and the gall-bladder. With R. Zollinger he produced in 1930 an atlas of surgical operations which became a standard guide for the younger surgeons and interns of America. But though he wrote much, his influence was greatest through example and demonstration, and his theme was ever gentleness and respect for the tissues, avoiding hurry and operation by the clock. He taught a rising generation of surgeons the need for thoroughness, and his work at Harvard was, as he put it, to carry on a "school for safety in surgery."

After an interlude of eight years as professor at the Western Reserve Medical School at Cleveland, Ohio, Cutler in 1932 succeeded his old chief, Harvey Cushing, in the Harvard chair. A lieut.-colonel on the reserve, he was called back to active duty in 1942 and came to England with the first wave of U.S. medical units, as chief consulting surgeon. He had many friends *here, some dating from the* previous war, and others who had visited him at his home. But his genius for friendship was such that no introductions would have been necessary. His reputation had preceded him and his place was ready for him in the medical circles of the war, in the consultants' meetings at the War Office, and among his surgical colleagues. His personal attraction, his clear vision, and his enthusiasm always gave him a willing and attentive hearing. He took the initiative in the organisation of the inter-allied conferences on war medicine held at the Royal Society of Medicine, and spared no pains to make them a success. When the war was over he returned to his beloved Boston. The sentence of death which came upon him in the full flood of activity was never allowed to interfere with his plans and he worked to the end.

Mr. A. E. Porritt writes: "The passing of Elliott Cutler, though not unexpected, leaves an acute—almost poignant—sense of loss which for many in this country must be nearly as deep as it is in his native America. As one who was privileged to work in close contact with him during the last three years of the war, to deputise for him for a short period in his chair of surgery at Harvard, and to share in his home life in Boston, I find it difficult to write of him in commonplace phrases.

"For Elliott Cutler was unique in many unique ways. The bare facts of his life and career—his being born of an old New England family which has always lived and still does live in Boston; his brilliance at school and as an undergraduate at Harvard; his part in the first world war as a young medical officer; his rapidly and ever-expanding sphere of surgical influence between the two wars; his invaluable services in the second world war as senior consultant in surgery to the U.S. Army in the European theatre of war, and finally his well deserved acceptance as one of America's leading surgeons in this difficult post-war era, with all the responsibilities and activities such recognition demanded—these, great as each individual phase is if analysed, seem but the background to a personality as dynamic, efficient, and courageous as it was perpetually boyish, friendly, and lovable.

"Elliott must have been a success in any walk of life, not so much because he possessed mental and physical attributes far beyond the ordinary, but because he actively and joyously loved life—all of it. In a front-line operating-tent, at a clinical meeting, sailing his dinghy, 'making rounds' at hospital, in his office, at a dinner-party, he exuded illimitable vitality.

"A man of deep largely unspoken beliefs, he knew he had the gift of making friends—real friends—and to him friendship was almost a religion. His wife was his greatest friend, his children and his family were close seconds, and his home life was a thing of real beauty because of it. His surgical colleagues were his friends; his resident staff were his friends; his patients were his friends; his comrades-in-arms were his friends—and to all and every one of them he gave to the full.

"*In this country during the war, apart* from all he achieved (and only a few in high places know how much that was) for his own service, he did more to foster and advance Anglo-American surgical relationships than any man of his generation. And he did it with that tact, that ease, that dry sense of humour, that clear incisive thought, and always that irresistible energy that endeared him to all with whom he came in contact. He really loved this country and genuinely admired its surgery. One of the wishes closest to his heart was that interchanges in staff between his country and ours should be facilitated and developed to the full. He believed in the youth of both countries and spared no pains to encourage them, and they both trusted him and loved him. No more worthy honorary fellowship of the College of Surgeons was ever awarded than that given to him in 1943.

"In his own country honours—national, surgical, and personal—poured in on him; but innately modest he looked on these as tributes to his work, not to himself.

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1. *Lancet*, 1944, ii, 427.

pneumonia (primary or influenzal), 233; cerebrospinal fever, 49; poliomyelitis, 626; polioencephalitis, 50; encephalitis lethargica, 1; dysentery, 75; puerperal pyrexia, 150; ophthalmia neonatorum, 79. No case of cholera, plague, or typhus was notified during the week.

Deaths.—In 126 great towns there were no deaths from enteric fever, 1 (0) from scarlet fever, 4 (2) from diphtheria, 5 (0) from measles, 8 (1) from whooping-cough, 61 (10) from diarrhœa and enteritis under two years, and 5 (0) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 214 (corresponding to a rate of 25 per thousand total births), including 25 in London.

Diary of the Week

SEPT. 7 TO 13

Monday, 8th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
3.45 P.M. Dr. L. E. Glynn: Atrophy and Hypertrophy.
5 P.M. Dr. M. Kremer: Concussion.

Tuesday, 9th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Prof. A. C. Frazer: *Fat Digestion and Absorption.*
5 P.M. Prof. D. F. Cappell: Rhabdomyoma.

Wednesday, 10th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Prof. John Kirk: Gross Anatomy of the Spinal Cord.
5 P.M. Prof. J. H. Dible: Inflammation, Tissue Reaction, and Repair. (First lecture.)

Thursday, 11th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Prof. John Beattie: Autonomic Mechanisms of the Brain Stems.
5 P.M. Professor Dible: Inflammation, Tissue Reaction, and Repair. (Second lecture.)

Friday, 12th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Professor Beattie: Micturition and its Disturbances.
5 P.M. Prof. J. H. Biggart: Pathology of Head Injury.

Births, Marriages, and Deaths

BIRTHS

CURRAN.—On Aug. 26, in London, the wife of Dr. Desmond Curran—a son.

DAVIDSON.—On Aug. 27, at St. Leonards-on-Sea, the wife of Dr. I. E. Davidson—a son.

FULLER.—On Aug. 22, at Colombo, the wife of Surgeon Lieut.-Commander Peter Fuller, R.N.—a daughter.

GILLOTT.—On Aug. 22, in London, to Dr. Ursula M. Gillott (née Bailey), wife of Mr. J. A. Gillott—a son.

HUTCHISON.—On Aug. 28, the wife of Mr. J. B. Hutchison, F.R.C.S.—a son.

POLLARD.—On Aug. 1, at Elburton, the wife of Captain B. R. Pollard, R.A.M.C.—a son.

SARGENT.—On Aug. 22, at Winchester, the wife of Dr. Frank Sargent—a son.

WARBURTON.—On Aug. 20, the wife of Major-General J. R. N. Warburton, late R.A.M.C.—a daughter.

WRIGHT.—On Aug. 22, at Kenilworth, the wife of Dr. E. G. Wright—a daughter.

MARRIAGES

GOUGH—LEE.—On Aug. 26, at Torquay, C. W. C. Gough, major, R.A.M.C., to Clara Lee, major, R.A.M.C.

WATKINS—EVANS.—On Aug. 23, at Glais, Swansea, David Ainsley Watkins, M.R.C.S., to Joy Margaret Evans.

DEATHS

ALLAN.—On Aug. 27, at Wells, Herbert William Allan, O.B.E., M.R.C.S.

BARKAS.—On July 30, at York, Thomas Cook Barkas, O.B.E., M.B. Durh., aged 83.

EVANS.—On Aug. 25, at Criccieth, Sir Thomas John Carey Evans, M.C., M.D. Brux., F.R.C.S.

FULTON.—On Aug. 18, at New Delhi, George Keith Fulton, C.B.E., M.B. Glasg., D.P.H., acting brigadier, R.A.M.C., aged 52

HUNTER.—On Aug. 26, John William Hunter, M.D. Edin., B.HY., D.P.H.

LEMPRIERE.—On Aug. 28, at Ware, Herts, Lancelot Raoul Lempriere, O.B.E., M.B. Manc.

PEAKE.—On Aug. 22, at Bath, Arthur Edward Peake, M.R.C.S.

POCOCK.—On Aug. 21, at Newquay, Herbert Innes Pocock, C.M.G., M.R.C.S., colonel, late R.A.M.C., retired, aged 86.

FILM ON EXANTHEMS.—*Dr. Ronald MacKeith wants to* trace a colour film on the exanthemata which is said to have been shown in England.

Notes and News

RADIOACTIVE ELEMENTS

THE U.S. Atomic Energy Commission has lately released information about the first year's commercial production of radioactive elements by the uranium chain-reacting pile of the Clinton Laboratories at Oak Ridge, Tennessee. 1092 shipments of more than 100 elements were made to scientific and industrial research institutions. Specially labelled, lead-shielded containers allow shipments to be made by road, rail, and air so that there is no hazard to transport staff. Undeveloped photographic film is the only merchandise likely to be affected by long proximity to such a cargo. With isotopes of short half-life, such as radio-potassium (12·4 hours), and radio-gold (2·7 days), specially fast transport is arranged from the laboratories to the customer.

Before the chain-reacting pile was available, radioactive tracer materials were produced in the cyclotron. Here production was limited in quantity and costs were high—for example $1,000,000 per mc. of C^{14} compared with $50 for the same amount now produced in the pile. Even with the vastly increased output of the pile the demand exceeds supply, and distribution is made on the recommendations of an advisory committee which decides priorities. Demands for *medical application get special consideration.*

Therapeutic uses of radioactive phosphorus in polycythæmia vera and leukæmia, and radioactive iodine in hyperthyroidism and some thyroid carcinomas, have already been reported; but it is thought (P. F. Hahn) that only about 9 of the 450-odd known radioactive isotopes will be therapeutically valuable. The main usage therefore of these materials will be as tracers and research tools, enabling investigators to study many physical, chemical, and biological phenomena not fully understood.

MEDICAL DIRECTORY

THE Editor writes: "To maintain the accuracy of our annual volume we rely upon the return of our schedule, which has been posted to each member of the medical profession. Should the schedule have been lost or mislaid we will gladly forward a duplicate upon request. The full names of the doctor should be sent for identification." Applications should be sent to him, c/o J. & A. Churchill, 104, Gloucester Place, London, W.1.

NEW ZEALAND SCHOOL DENTAL SERVICE

EVIDENCE that the condition of New Zealand school-children's teeth has improved tremendously since the introduction of the State school dental service in 1921 was given by Mr. W. B. Tennent, the president, at the New Zealand Dental Association's recent annual meeting at Auckland. When the scheme started, he said, the ratio of extractions to fillings was 114·5 to 100. Now it was 6·3 to 100. At first parents were asked to pay an annual nominal sum for each child, but some years later the service was made free. The government had now extended the free service to include children up to 16 years, the intention being to extend it to 19 years as time and personnel allowed. However, though the number of dental students had risen and today there were 245 at dental school, it would be 20 or 30 years before free dental service could be given to all.

University of Cambridge

Dr. A. M. McFarlan has been appointed to the readership in the new department of human ecology (*Lancet*, 1947, i, 718).

Dr. McFarlan graduated M.B. in the University of Edinburgh in 1935, and in the following year took his M.B. Camb. A senior president of the Royal Medical Society of Edinburgh, he was awarded a Vans Dunlop scholarship in bacteriology in 1935, and later a Walter Dixon scholarship of the British Medical Association. He is a demonstrator in bacteriology at the London School of Hygiene, and during the war was a member of the research teams studying infective hepatitis at the American Red Cross Harvard Field Hospital Unit at Salisbury and later at the Medical Research Council's laboratory at Cambridge.

University of Leeds

Dr. T. A. Divine has been appointed senior administrative officer of the medical school.

Dr. Divine, who is the son of the late Dr. Thomas Divine of Fartown, graduated M.B. at the *University of Leeds in 1033*, afterwards joining the Malayan Medical Service. During the war he was a prisoner-of-war in Singapore and lately he has been an assistant in a general practice in Worcester.

memorial to him for many years to come. During the war his organisation of the medical side of civil defence won the admiration of his council; it is said in Ipswich that John Hunter attended every "incident" and directed the medical services on the spot. He was also chairman of the local medical war committee. In the Society of Medical Officers of Health he was an energetic and successful secretary of the Eastern branch, and he was on the council both of the society and of the Royal Sanitary Institute.

"It was only necessary to know Hunter to like him," writes J. F. "All those under whom he worked were impressed by his loyalty. He had a kindly nature and did much to help those subordinate to himself. Indeed, to them he regarded himself as a friend, with all the obligations which that word connotes. He endeavoured to find good in everybody and was one of those few men who have no enemies." Dr. Hunter leaves a widow and two sons.

HENRY LAING GORDON

M.A. EDIN.

Dr. H. L. Gordon, who died at Ngong in Kenya on Aug. 10, will be remembered for his laborious work on the mental capacity of East African tribes and for his appeal for coöperative research into the causes of native backwardness.

He was born at Penrith in Cumberland in 1865, of Scottish descent, and he qualified at Edinburgh University in 1889. A serious illness made it necessary for him to live abroad and for many years he practised in Italy, South Africa, and Portugal. For some time after the 1914–18 war he was physician to the London Neurological Clinic, mental specialist to the Ministry of Pensions, and assistant at the West End Hospital for Nervous Diseases.

In 1925, at the age of 60, he was attracted by reports of Kenya to take up a medical farm at Koru, which he described as "a very interesting and very unsuccessful experiment." Some three years later he moved to Nairobi, where he set up in consultant practice as a neurologist. During most of this period he was visiting physician to Mathari Hospital; where he was responsible for far-reaching improvements in the buildings and in the methods of treatment, transforming an almost medieval lunatic asylum into a modern mental hospital.

In his retirement at Ngong he maintained the closest association with his profession, and at the age of 80 he read to the Kenya branch of the British Medical Association a constructive paper on Social Reform in Kenya. He was founder-member and member of council of the British Balneological and Climatological Society, a fellow of the Society for Study of Inebriety, and a member of the consultative council of the Eugenics Society.

With Dr. F. W. Vint, he conducted research into mental deficiency in the East African native and on nervous and mental diseases due to syphilis or yaws, which was the background of the memorandum, A Research Required in Kenya, which he presented to Lord Hailey in 1937.

Appointments

BROWN, J. D., M.B. Aberd., D.M.R.: radiologist, Dudley Road Hospital, Birmingham.

GRACE, R. F. T., M.D. Edin., M.R.C.P.: physician i.c. department of psychological medicine, Miller General Hospital, Greenwich.

Manchester Royal Infirmary:
- CHARNLEY, JOHN, M.B. Manc., F.R.C.S.: asst. orthopædic surgeon.
- GRIFFITHS, D. L., M.B.E., B.SC., M.B. Manc., F.R.C.S.: asst. orthopædic surgeon.
- SIMMONS, H. T., B.SC., M.D. Manc., F.R.C.S.: asst. surgeon.
- WILKINSON, J. F., M.SC., M.D. Manc., F.R.C.P.: physician i.c. department of hæmatology.

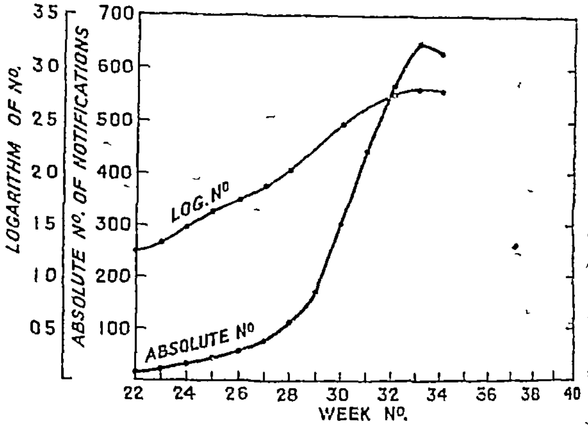
Hull Royal Infirmary:
- BLACKBURNE, J. R., M.B. Lond., F.R.C.S.: surgeon.
- WALTON, PETER, M.B. Edin., F.R.C.S.E.: asst. surgeon.

Colonial Service:
- KIRKALDY-WILLIS, W. H., M.B. Camb., F.R.C.S.E.: M.O., Kenya.
- PITCHFORD, R. J., M.R.C.S.: M.O., Tanganyika Territory.
- SLOMINSKI, J. Z., M.B. Polish School of Medicine: M.O., Windward Islands.
- SMITH, J. F., M.B. Glasg.: M.O., Uganda.

Public Health

Poliomyelitis and Polioencephalitis

THE notifications of poliomyelitis in England and Wales during the week ended Aug. 23 numbered 626. This is a slight reduction on the previous week (640). The Ministry of Health takes the view that the weekly figures may continue to be of a similar order for many weeks, or possibly for several months, and that the decline in prevalence which is to be anticipated with the approach of winter will not be as rapid as the rise which occurred in June and July.



Figures for the various areas compared with those for the previous week (given in parentheses) show that only London 115 (89) recorded a considerable increase. In Durham 33 (39), Lancashire 65 (71), Middlesex 36 (32), Surrey 26 (39), Warwick 26 (37), Yorks, West Riding 49 (44), and East Riding 11 (18) the changes appear to indicate a general tendency either to a temporary stability or the beginning of a decline.

There were 50 notifications of polioencephalitis, a figure of the same order as for the two preceding weeks (45 and 56).

In the last few weeks, though the upward trend in the absolute numbers of weekly notifications of poliomyelitis continued, a hopeful sign was the persistent decline in the rate at which these absolute figures were mounting. In the weeks ended Aug. 2, 9, and 16 the totals were 48%, 27%, and 14% of the total in the preceding weeks. Epidemic curves of the present type tend very roughly to follow the hump-shaped form of the "normal" frequency distribution whose peak occurs when this proportionate increase becomes zero. In practice, the trend of this rate of change can best be watched by plotting (as in the figure) the *logarithms* of the numbers of notified cases in consecutive weeks. The vertical distance between two points on this logarithmic scale—i.e., the difference between their logarithms—represents the ratio of one number to another and indicates the size of the proportionate increase. A consistent rate of increase (as in the 22nd to the 29th week) is indicated by a series of equal upward steps which can be joined to form a straight line. At the 31st week, however, this steady upward trend changed and a flattening logarithmic curve indicated a slowing down of the rate of increase. There is as yet no mathematical certainty in epidemiological prediction, but the rapid fall in the rate of increase to a value near zero in the 31st to 33rd weeks suggested that, at least in the present phase, the tide was about to turn.

The total for the week ended Aug. 23 for the first time shows an actual decline, and the fact that this follows the trend of the preceding weeks suggests that the fall will continue, but the Ministry's cautious view is no doubt based on the recollection that September has in the past been a month of high prevalence.

Infectious Disease in England and Wales

WEEK ENDED AUG. 23

Notifications.—Smallpox, 0; scarlet fever, 489; whooping-cough, 1818; diphtheria, 147; paratyphoid, 23; typhoid, 12; measles (excluding rubella), 3278;

RESULTS

Fig. 1 shows the typical changes of the serum-protein picture and of colloid pressure in the sera of our patients during the experiments. Our present data confirm Podhradszky's (1940a) statement that in diabetes insipidus the water-binding activity of serum-proteins often decreases, and so the reduced colloid pressure is lower than normal, if the patient is allowed to drink freely. During the period of thirst the level of serum-proteins and their water-binding activity—i.e., the reduced colloid pressure of the serum-proteins—increase. At the same time a fall in the A/G ratio indicates an increase in the amount of globulins. Thus, parallel to simple concentration, the qualitative and quantitative protein picture changes, and this, according to Podhradszky (1940a and b, 1942a and b), is probably the result of regulation by endocrines.

The increased amount and activity of the proteins lead to a rise of about 100 mm. H_2O in the absolute colloid pressure. Fig. 2 shows the reduced colloid pressures observed in cases of diabetes insipidus during drinking (unrestricted water intake) and thirsting conditions. All values obtained when drinking was unrestricted lie below the line representing the physiological correlation between albumin concentration and reduced colloid pressure, which means that the water-binding activity of the proteins was less than normal. When water intake was severely restricted, the reduced colloid pressure of the same patients reached or approached the line of physiological values, indicating an increased water-binding activity of the proteins. The A/G ratio—shown in numerals at both ends of the arrows indicating change in reduced pressure—fell in each case.

Fig. 3 illustrates the glomerular and tubular functions of the kidney in our patients under the changes of colloid pressure described above.

Thirsting Phase.—When the rise in pressure reaches its maximum, both the creatinine and chloride clearances decrease, the chloride more than the creatinine. These changes indicate decreased glomerular function (inhibited filtration) and increased tubular function (augmented resorption). Thus, reduction of urinary flow is due to changes occurring simultaneously in both the glomerular and the tubular functions, the latter, owing to their larger extent, being the more important. Fig. 3*a* shows the greatest rise in pressure and greatest reduction of urine flow. This fact speaks for a proportional correlation between colloid pressure and kidney function.

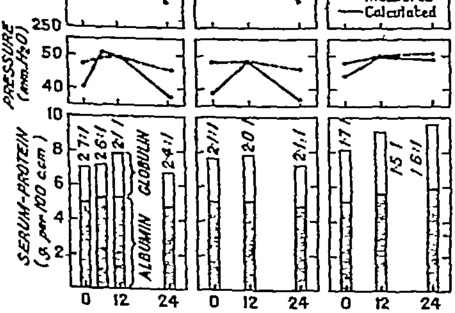


Fig. 1—Changes in serum-colloid pressure in diabetes insipidus during thirsting and drinking phases (3 experiments). Upper charts show total colloid pressure by measurement and by calculation. Lower charts show "reduced pressures"—i.e., colloid pressure which would be exerted if serum-protein were reduced to a standard level of 1%. Lower charts also show actual serum-protein values and albumin/globulin ratio.

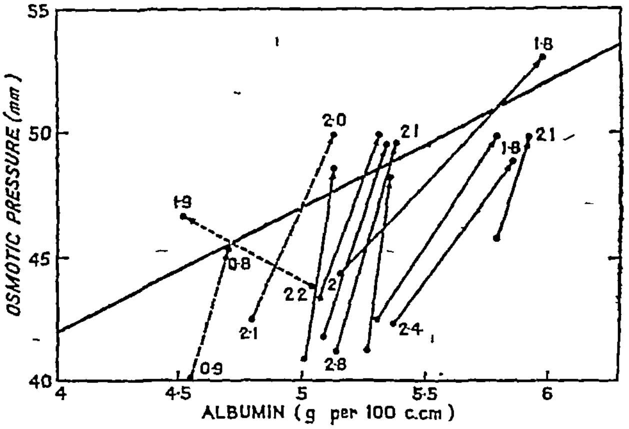


Fig. 2—Variations in "reduced" colloid pressure in diabetes insipidus on changing from drinking to thirsting phase (unbroken arrows). Continuous line represents calculated correlation between pressure and albumin level in serum. In the drinking phase all values are low, showing that water-binding power of the proteins is less than normal. Numerals at ends of lines indicate albumin/globulin ratio. Broken arrows show effect of posterior pituitary extract instead of water restriction.

Drinking Phase.—Decreased colloid pressure is accompanied by increased clearance of creatinine and chloride, the creatinine indicating increased glomerular function (augmented filtration) and the chloride decreased tubular function (inhibited resorption). Thus augmentation of urinary flow is due again to changes occurring simultaneously in both the glomerular and the tubular functions. Fig. 3*b* shows a relatively greater drop in pressure and increase of urinary flow than fig. 3*a*, and this again denotes correlation between colloid pressure and kidney function.

In the experiment shown in fig. 3*c* the protein picture of the serum during the drinking phase did not return to its original state, and consequently the absolute colloid pressure also remained high (see fig. 1*c*). Neither glomerular nor tubular function in this state returns to the original level (figs. 3*a* and 3*b*), but filtration remains inhibited and resorption increased. Accordingly, urine flow does not reach the original high value, in spite of the fact that the patient has been allowed to drink without restriction.

DISCUSSION

Our present work confirms Podhradszky's (1939) results. He then showed that in diabetes insipidus, if the patient is allowed to drink as much as he wants, the water-binding activity of the serum-proteins is much less than in a healthy person. Consequently the reduced colloid pressure of the serum is lower than normal, as in other "hypofunctional" endocrine diseases. The activity of these proteins increases, and the colloid pressure rises, if the water intake is strictly restricted. Identical results are obtained if, instead of water restriction, extracts of posterior pituitary are administered (fig. 2).

Our investigations also show that both glomerular and tubular kidney functions follow the changes in the colloid pressure of the serum closely and regularly. If the pressure rises, filtration in the glomeruli decreases, whereas resorption in the tubules increases; these two parallel changes lead to a diminution of urinary flow. If the pressure drops, filtration in the glomeruli increases and resorption in the tubules decreases; these two parallel changes thus lead to an increase of urinary flow. These results, besides confirming Podhradszky's (1939) experimented, other show that changes in the colloid pressure may infl pethidine in thubular but also glomerular function.

Inion faded away, e results we have to answer two [illegible] apparent benefit [illegible] pressure of the [illegible] an

Though no evidence has been obtained of any increase in toxicity when BAL is injected into animals with experimentally induced renal damage, or of renal irritation in any of the cases of this series, increased toxic effects were present in animals with hepatic damage, which suggests that care should be exercised in the administration of BAL to patients with impaired liver function (Cameron et al. 1947). It should be added that BAL is not generally indicated in the treatment of post-arsphenamine hepatitis, the immediate cause of which appears to be infective in most cases (Salaman et al. 1944). Local abscesses have developed at the injection sites in some cases treated in this country. These may have been due to the septic condition of the skin in patients with exfoliative dermatitis of some standing, who are, in any case, prone to intercurrent infections of all kinds. This complication is probably preventable by the administration of BAL early in the course of the condition. A possible contributory factor is the leakage of BAL into the subcutaneous tissue, which may be prevented by giving all the injections deep into the muscles. The abscesses, though troublesome, have healed satisfactorily with simple treatment, and do not, in our opinion, constitute a contra-indication to the use of BAL in such cases.

DISTRIBUTION

Up to now BAL has been manufactured by the Ministry of Supply, and, so that its therapeutic value could be firmly assessed, distribution has been effected only through the Medical Research Council. It is considered that the value of the compound has now been established, and arrangements are being made by the Ministry of Supply for the preparation and issue of ampoules of BAL by firms in a position to exercise adequate biological control.

We wish to thank Miss F. B. Uffelmann, of the Ministry of Supply; the various clinicians who have coöperated in this trial; and Messrs. Boots Pure Drug Co. Ltd. and Messrs. Burroughs Wellcome & Co. for dispensing the material used.

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Further detailed reports of biochemical, pharmacological, and clinical aspects of the work on BAL may be found in:

Biochemical Journal, 1946, vol. XL.
Journal of Clinical Investigation, 1946, vol. XXV.
Journal of Pharmacology and Experimental Therapeutics, 1946, vol. LXXXVII, suppl.

"... Many practitioners tend to believe that the psychiatrist either overlooks entirely or minimises unduly the somatic origin and significance of structural lesions. . . . The psychiatrist on the other hand believes that the practitioner fails to look at the human being as a whole, disregards the actions and reactions of the patient and concentrates on clinical procedures and laboratory measurements while treating disease as an accidental pathologic invasion unrelated to the particular character of the host."—JOSEPH T. WEARN, *J. Amer. med. Ass.*, Aug. 30, 1947, p. 1518.

KIDNEY FUNCTION IN DIABETES INSIPIDUS

A. GREINER
M.D. Budapest
MEMBER OF STAFF

L. PODHRADSZKY
M.D. Budapest
ASSOCIATE PROFESSOR OF PATHOLOGY

INTERNAL CLINIC, ROYAL HUNGARIAN PETER PAZMANY UNIVERSITY, BUDAPEST

BY creatinine-clearance and chloride-clearance tests on dogs Podhradszky (1939) showed that changes of 30–60 mm. H_2O in the colloid pressure of the serum did not significantly affect the glomerular filtration of the kidney. Tubular function, however, followed these shifts of colloid pressure very precisely—i.e., its rise was connected with increased reabsorption (lessened flow of urine) and its diminution with decreased reabsorption (increased flow of urine).

The results of these incomplete though promising experiments encouraged us to investigate kidney function in diabetes insipidus. It is well known that, during thirst, the blood of these patients undergoes remarkable concentration and urinary flow decreases at the same time. According to data obtained by Podhradszky (1940a) the colloid pressure of the serum of these patients is much increased during the periods of thirst. The increase of pressure is due not only to the increase of protein concentration in the general circulation but also to the coincident increase in the water-binding activity of the proteins. The increase of pressure resulting from these two factors reaches values of 80–120 mm. H_2O (7–8 mm. Hg) and so attains to a third or a quarter of the total physiological colloid pressure of the serum (300–400 mm. H_2O). In his experiments on dogs Podhradszky (1939) showed changes in tubular function under less pronounced (40–60 mm. H_2O) pressure variations. Consequently it seemed likely that the far greater physicochemical energy change in the sera of patients with diabetes insipidus would also affect kidney function.

Two cases of diabetes insipidus—one in a man and one in a woman—were experimentally investigated. The man's disease followed fracture of the base of the skull, whereas that of the woman seemed to be idiopathic. Both patients consumed more than 10 litres of water a day. We carried out three complete experiments—two of them, separated by an interval of two years, on the man. In spite of the small number of experiments, the agreement of the results in the two cases and the shortage of chemicals required for creatinine clearance justify publication of the work we have done so far.

METHODS

Creatinine and chloride clearances were measured in one-hour periods three times in twenty-four hours: the first in the morning, when the patient was allowed to drink freely; the second after ten hours' complete abstention from fluids; and the third next morning, after intake of fluid had again been allowed without restriction. Thus, during the first and third phases of the experiment the patient's water metabolism was in a balanced state, whereas in the second phase the patient was forced to reduce expenditure of fluids to the greatest possible extent.

Creatinine was measured colorimetrically, and chloride by Korányi's method. Urine flow was measured hourly during the twenty-four hours of the experiment. In the samples of blood drawn for the clearance tests, the absolute colloid pressure of the serum was measured by the method of Krogh and Nakazawa, and the total and partial concentration of the proteins by Howe's method. From these data the albumin/globulin (A/G) ratio and the reduced colloid pressure (the pressure exerted by 1% of the serum-proteins) was calculated.

nd tubular resorption reduced, with a consequent crease in urinary flow.

The changes seem to be proportional to the alterations f pressure.

Glomerular and tubular function may thus be con-derably increased or inhibited by the physicochemical hanges of energy dependent on the protein picture.

The mechanism regulating the protein picture may be e of the factors that determine kidney function.

POSTSCRIPT

Since this article was written Prof. E. B. Verney's 946) work has been published. In the light of his ork the question arises whether osmoreceptors are sceptible to colloid concentration—or rather to colloid motic activity—of the blood; and, if so, how far is line diuresis attributable to that. The possibility that ch a regulating mechanism, with its centre in the pophyseo-mesencephalic system, may participate in was mentioned by Podhradszky (1939). But in that e too, the possibility remains that physicochemical ergies set free by changes in the blood-proteins are ally—i.e., in the kidney—involved in the mechanism urine formation. If, on the other hand, osmoreceptors e not susceptible to colloid activity, the rôle of the roteins is probably that described in our present paper. he fact that quality as well as quantity of the proteins ems to be subject to active regulation calls for attention. may well be that, though osmoreceptors react to their tivity, physicochemical work is performed by them the tissues of the kidney too.

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MIDONE (MIADONE) AS AN OBSTETRIC ANALGESIC

TRIAL IN 62 CASES

FREDERICK PRESCOTT
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ICAL RESEARCH DIRECTOR,
WELLCOME RESEARCH
INSTITUTION

SHILA G. RANSOM
M.R C.S., D.A.
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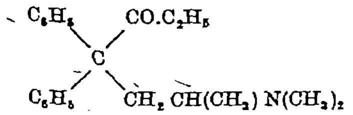
'Amidone,' also known as miadone and 'Physeptone' this country and 'Dolophine' in U.S.A., is a synthetic nalgesic developed during the war in Germany, where was provisionally called 'Höchst 10820.' It is *dl*-2-ethylamino-4 : 4-diphenyl heptane-5-one hydrochloride:


$$(C_6H_5)_2C(CO.C_2H_5)(CH_2\,CH(CH_3)\,N(CH_3)_2)$$

by them during the inhalation of oxygen containing 3% and 5% carbon dioxide. This is a more sensitive test of their action on the respiratory centre than are direct observations of their depressant effect on normal respiration. All three drugs diminished the response of the respiratory centre to the action of carbon dioxide: morphine produced the deepest and longest depression; pethidine caused an initial depression, but recovery was fairly rapid; amidone produced less initial depression than pethidine, but the effect lasted much longer, with the result that over a period of three hours amidone produced a greater depression of respiration than pethidine. During the investigation it had not been realised that the depressant effects of amidone lasted so long.

Since the analgesic effect of amidone was at least as good as that of morphine, and since it was less depressant to the respiratory centre, it was decided to carry out trials with amidone as an obstetric analgesic. We were encouraged to use it because of its greater analgesic action and because of preliminary reports of its successful use in America. Full details of its use in obstetrics have not yet been published in America.

CLINICAL TRIAL

Pethidine was used for the control cases, because its use in labour is now well established (Barnes 1947) and it is used as a routine in the obstetric department of University College Hospital. During the present investigation all the primigravidæ in the labour wards received either pethidine or amidone, hourly observations being recorded on special charts. All results were watched or checked by the same observer.

Dosage

The cases are grouped into two series according to dosage. In the first series pethidine was given in an initial dose of 100 mg., usually followed in an hour by another 100 mg. The first dose did not always give relief. Amidone was tried in various doses. It was at first given in the same way as pethidine, 10 mg. followed by another 10 mg. in an hour's time, 10 mg. of amidone being about equivalent in analgesic potency to 100 mg. of pethidine.

In an endeavour to get better results higher doses were tried: four patients began with 15 mg., ten with 20 mg., and three had 5 mg. or 10 mg. a quarter of an hour after 10 mg. had been given without much effect. Finally, in one case we gave three doses of 20 mg. in 16 hours, and this had a pronounced depressant effect on the baby. At the time of the deliveries we did not always recall which drug had been given, but on looking back over the records we found that where there had been some depression of the baby it was mostly amidone that had been given.

influence glomerular and tubular function; and (2) what explanation can be found for the difference between Podhradszky's (1939) results and our present ones—i.e., why changes of colloid pressure of the serum in his experiments mainly influenced tubular function, whereas in our experiments both tubular and glomerular functions were markedly affected by changes much the same from a qualitative point of view, only shifting on a larger scale.

(1) The first question can be answered partly by the well-known fact that, *under physiological conditions*, filtration in the glomeruli (blood-flow and permeability of the blood-vessels being regarded as constants) is directly proportional to the filtration pressure. The filtration pressure, being the difference between the arterial pressure of the vas afferens and the colloid pressure of the serum, can be influenced by altering either or both of its determining factors. With a constant arterial blood-pressure the rise in colloid pressure diminishes the filtration pressure, and glomerular filtration is therefore slowed; whereas a drop in colloid pressure leads to increased filtration pressure and hastens glomerular filtration. This has been proved by experiment and in practice so often that our results speak most decidedly for the glomerular filtration theory.

But it is equally conceivable that the colloid pressure of the serum-proteins also affects tubular resorption. The glomerular filtrate that streams through the tubules towards the calices has no colloid pressure at all. The blood that has passed the glomeruli and undergone a remarkable concentration by the filtration process streams towards the dense capillary network of the tubules. The glomerular filtrate is separated by only a single layer of cubical tubular epithelium from the blood in the tubular capillaries, the colloid pressure of which—owing to its greater protein concentration—is even higher than that of the circulating blood. It seems almost impossible in these circumstances that the tubular epithelium and glomerular filtrate could remain unaffected by water-binding power of the glomerular capillary blood. Histological and physical conditions thus suggest that a rise in colloid pressure may inhibit glomerular filtration and increase tubular resorption; lowering the colloid pressure, on the other hand, may have the opposite effect. So the final result of any rise in colloid pressure would be a reduction in urinary flow, whereas any drop *in the colloid pressure would increase urinary flow.* Our present results support this supposition, the more so since the changes observed in the glomerular and tubular functions seem to be proportional to the physicochemical energy changes originating from the changes in the protein picture.

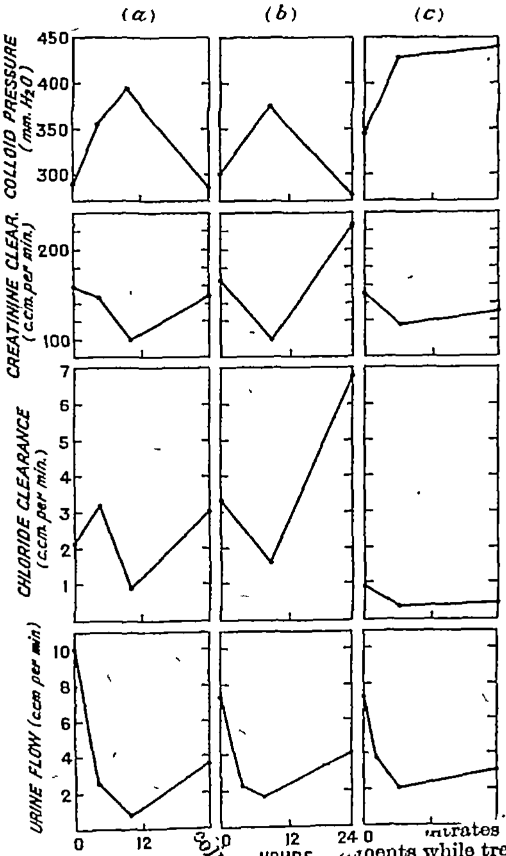


Fig. 3—Comparison of c
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es trav.—JOSEPH T. WEAL
947, p. 1618.

(2). The discrepancy between the results of the two sets of experiments can be explained partly by the different mechanisms involved, and partly by the different quantities of energy acting in the two experiments. In the anæsthetised dogs the functions of some complementary factors—e.g., variations of the arterial (glomerular) blood-pressure and secretion of antidiuretic hormone—may be altered or suspended, with the result that the kidney of an anæsthetised animal works very differently from that of our patients. Moreover, Podhradszky (1939), in his experiments on dogs, maintained the arterial blood-pressure at a constant level; hence changes in the filtration pressure might have occurred only as a result of the changes produced in the colloid pressure. By alternate administration of pure *Ringer solution* and of *Ringer-gum solution* he obtained changes in the colloid pressure of 40–60 mm. H_2O, which correspond to $^1/_5$–$^1/_6$ of the absolute colloid pressure and to $^1/_9$–$^1/_{12}$ of the filtration pressure in the dog. In our experiments the changes in colloid pressure range from 80–120 mm. H_2O, which is $^1/_3$–$^1/_4$ of the absolute colloid pressure and $^1/_5$–$^1/_7$ of the filtration pressure in man. The physicochemical energy set free by the changes of the protein picture in our experiments is absolutely and relatively much greater than that in Podhradszky's (1939) experiments on dogs, and this is perhaps the most important factor that explains the different results of the two sets of experiments. It seems clear that glomerular filtration needs a more pronounced change to become altered to any well registrable extent than does tubular resorption, even relatively small changes in which may greatly modify the urinary flow.

Gömöri and Podhradszky (1937) have shown that, after copious loss of salt and water, the plasma may become so condensed that colloid pressure reaches the level of glomerular blood-pressure. In such cases filtration pressure ceases to exist; and, since there is consequently no filtration at all, kidney function stops completely in spite of an intact kidney. Podhradszky's (1939) later experiments on dogs and our present investigations both show that the colloid pressure dependent on the protein picture may influence kidney function not only in cases of such extreme changes as described by Gömöri and Podhradszky (1937) but also if the change in pressure, compared with the absolute colloid pressure and filtration pressure, is relatively small. The organism may thus modify kidney function by adequate regulation of the protein picture.

SUMMARY

During unrestricted water intake, the serum-proteins of patients with diabetes insipidus are mostly hypo-active, and their reduced colloid pressure is below normal.

During thirsting periods the blood of such patients becomes concentrated, while the activity of the proteins increases, and so absolute colloid pressure rises by 25–30%.

Simultaneously with the rise in colloid pressure, glomerular filtration is reduced and tubular resorption increased, and so the flow of urine lessens; on the other hand, if pressure falls, glomerular filtration is increased

SUMMARY

midone was given to 62 carefully observed primividæ in labour, and pethidine to 85 controls.

midone relieved the pains of labour similarly to hidine, but had a much more depressant effect on the y, particularly when given over four hours before very.

or this reason it seemed unsafe to go on and the estigation was discontinued.

midone is not recommended as an analgesic in labour.

his investigation was undertaken at the suggestion of f. W. C. W. Nixon, director of the obstetric unit, University ege Hospital, where special facilities are given for research relief of pain in labour. We also thank Sister Billing and staff for most helpful coöperation.

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POTASSIUM CHLORATE POISONING

REPORT OF A CASE

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POTASSIUM chlorate poisoning is rare nowadays but resents several interesting features, in particular the tabolic changes which it produces. Many cases were orted at the end of the 19th century and in 1911 tthaus collected 155 cases, but since then only a few re been recorded. The published work was reviewed Cochrane and Smith in 1940.

Poisoning by potassium chlorate has usually arisen m mistakes in dispensing or unusual sensitivity to derate doses. The lethal dose seems to be extremely riable, as does the period elapsing between administran and onset of symptoms. Gastro-intestinal disturbces are common. Most investigators have mentioned unusual colour of the skin, and some have found thæmoglobin in the blood. The exact cause of death s been doubtful in most cases, though anuria is somenes recorded. The case described below shows some usual features but seems to illustrate the toxic effects potassium chlorate.

CASE-RECORD

A housewife, aged 61, was admitted to hospital on Sept. 12, 45, with a history that for 6–10 weeks she had sucked enty 5-grain tablets of potassium chlorate daily, because e believed that they would cure the cancer she imagined s growing on her tongue. On Sept. 8 she collapsed and was ted to have an abnormal colour. She had no vomiting or arrhœa. She refused hospital admission for 4 days.

On admission she was an obese woman, conscious, and not any apparent distress. She was not dyspnœic or orthoœic. The skin and mucosæ were deep grey-brown, and e scleræ dark yellow-brown. There was no evidence of y organic lesion of the tongue. Pulse-rate 90 per min.; gular pulse of good volume. Blood-pressure 130/80 mm. Hg. e venous pressure, measured from the sternal angle, was t raised clinically. The heart and the respiratory and rvous systems showed no abnormality. Liver and spleen ere not palpable.

Investigations.—Methæmoglobin was present in the serum admission and was detectable until Sept. 15. There was methæmoglobin in the washed lysed corpuscles at any time. e had not the equipment to make quantitative estimations methæmoglobin.

The hæmoglobin was 50% (Haldane) on admission, and e red-cell count 2,340,000 per c.mm. The blood-count se only slightly despite several intravenous infusions of ncentrated red cells.

On Sept. 13 the following values were obtained, but could not be repeated: serum-potassium 29 mg. per 100 c.cm.; plasma pigment 134 mg. per 100 c.cm., bilirubin 0·9 mg. per 100 c.cm., CO_2-combining power 52·8 c.cm. per 100 c.cm. The serum Van den Bergh was negative until death.

On Sept. 12 the urine contained hæmoglobin but no methæmoglobin, and thereafter no abnormal pigment was found. All specimens of urine contained about 70 mg. of protein per 100 c.cm., but no casts were seen. The urine was alkaline from Sept. 13.

Treatment.—Intravenous infusions of 4·28% sodium sulphate were given daily (about 1000 c.cm.) besides fluids by mouth and moderate doses of alkali. The urinary output rose after 31 hours' anuria, but the urea-concentrating power of the kidneys fell steadily, and the blood-urea level rose. Methylene blue 250–300 mg. and ascorbic acid 2500–3000 mg. were given daily in the sodium sulphate infusions (see figure).

Course of Illness.—Throughout her illness the patient was mainly rational, with intermittent confusion. Her colour improved steadily, but at the time of death both skin and mucosæ were still brown. At no time was there any vomiting or diarrhœa. The blood-pressure ranged from 130/80 to 120/70 mm. Hg. She showed no sign of circulatory failure, despite the intravenous administration of a large volume of fluid, until about 30 hours before death. There was then a rise of venous pressure, the liver became palpable, and there were signs of early pulmonary œdema. Intravenous infusions were stopped, and the signs of circulatory overloading receded, but the patient died suddenly and unexpectedly at 9 P.M. on Sept. 18.

NECROPSY

The body was that of an obese woman, with œdema of the dependent parts.

Brain: slight œdema, with senile atrophy of the cortex in the region of the vertex; pituitary body healthy.

Chest: a little clear yellow fluid was present in both pleural cavities; there was moderate œdema of both lungs.

Heart: myocardium soft, showing fatty change; no evidence of valvular disease.

Kidneys: soft and large (right kidney 11 oz., left kidney 12 oz.), showing fœtal lobulation; petechiæ were present on the surface, but the capsule stripped easily; the cortex showed brownish streaking.

Liver: weight 72 oz.; dark brown, with pattern diminished owing to cloudy swelling.

Spleen: weight 8 oz.; multiple petechial hæmorrhages.

HISTOLOGY

The *kidneys* showed no pathological change in the glomeruli beyond an excess of red blood corpuscles in the glomerular tufts. The first convoluted tubules contained a considerable amount of amorphous eosinophilic debris. The second convoluted tubules showed large dilatations and contained many casts of granular acellular dull brownish-red material, in striking contrast to the brilliant pink of the red cells in the adjoining congested capillaries. Many of the tubules were completely blocked by the pigment casts. The epithelium showed areas of cloudy swelling and necrosis, but mitoses and regeneration of the tubular epithelium were also evident.

The *liver* was congested. Kupffer cells were very prominent and filled with a brownish pigment, which was also abundant in the liver cells. The *spleen* showed congestion, hæmorrhages, and the same pigment. No significant histological change was found in any other organ.

DISCUSSION

The toxic action of potassium chlorate probably depends on the individual actions of the anion and kation of the molecule. The poisonous effects of potassium salts are well known, and the more acute cases of potassium chlorate poisoning are probably due mainly to the potassium ion (Stokvis 1886).

So long ago as 1876 Jaderholm recognised that one of the toxic actions of potassium chlorate was to produce methæmoglobinæmia. The conversion of hæmoglobin to methæmoglobin by potassium chlorate takes place readily in vitro but less readily in vivo (Ulrich and Shternov 1928). Riess (1882) and Huber (1912) suggested that the action of potassium chlorate on the red blood [illegible] lysis. Richardson

All patients were given trichlorethylene from the end of the first stage, if they needed it, with a Freedman's inhaler.

RESULTS

The results obtained in the two series are summarised in the accompanying table.

Contraction of Uterus.—Both pethidine and amidone had a variable effect on the length of the contractions and the interval between them. The commonest finding was a temporary lengthening of the interval. For example, in one case an interval of 1–2 min. became 7 min., then 5 min., and by half an hour 1–2 min. again. Often there was no effect, less often a shortening of the interval. With this change of the interval the length of the contraction was usually shortened temporarily, though in some cases it was lengthened or unaltered. The strength of the contractions, estimated roughly with the hand on the abdomen, did not seem to be altered. Not all the contractions were closely watched in this way; often the patients were left to sleep.

Though the number of cases is far too small to assess the length of labour statistically, there is a general impression that by relieving pain and anxiety pethidine tends to hasten labour. Amidone seemed to have a similar effect. One patient, beginning to feel distress, with cervix 3–4 fingers dilated, was given 15 mg. of amidone. She woke up an hour and fifty minutes later to exclaim that she thought "something was coming," which indeed it was—the baby in the bed.

Pain.—Being subjective, analgesia is not easy to assess accurately. Some patients volunteered expressions of relief and pleasure, which were a comfort to the observers. Otherwise they were questioned. Temperament always affects the answers to such inquiries; some patients, for example, report relief in their willingness to please and be helpful. The expression on their faces tells much, the anxious furrows smoothing out when there is relief. All were questioned later; there was a varying amount of forgetfulness then. Complete amnesia, however, was rare. In the majority, even when there was no relief during the contractions, there was rest in between. They said later that they had "no longer cared," were not waiting anxiously for the next pain, could relax and forget about it. Many went to sleep, stirring only for the pain (which might be as bad as before). In all this the two drugs similar, but amidone seemed to give less euphoria.

Other Effects.—Effects on fœtal heart-rate and maternal respiration, pulse, and blood-pressure were noted in several cases. The fœtal heart-rate was little altered but sometimes slowed a few beats per minute. Maternal respiration-rate often dropped—e.g., from 24 to 20 per min.—and the pulse was usually slowed; blood-pressure, especially the systolic, was slightly lowered—e.g., from 150/90 to 130/90 mm. Hg—but sometimes raised. These effects could have been due to relief of pain. In both groups of patients there were various degrees of dizziness, thirst, and nausea. There was less vomiting with amidone.

Second Stage.—If well managed, by the time they had to "bear down" in the second stage the patients were rested and refreshed and worked well. If they had had insufficient sedative they were tired; if too much sedative they were over-sleepy. There was no pronounced difference between pethidine and amidone in the second stage.

Condition of Infants.—The chief difference between pethidine and amidone appeared in the action on the babies. The exact blueness of newborn babies has not been measured colorimetrically, but babies born under the influence of pethidine appear bluer than those born without any sedative. They are usually vigorous, however, and cry well. Sometimes, although they are firm in tone, move their limbs, and screw up their faces, the first good cry is delayed. Only occasionally, where the labour appears to be normal, is there sufficient hypopnœa to make the baby go limp and cause anxiety. With amidone, where the first dose had been given over four hours before delivery, both the proportionate incidence and the degree of depression were greater. It was for this reason that the second series stopped at 14. We found ourselves rather anxiously selecting cases with prospects of being completed quickly; hence the inquiry had ceased to be impartial and scientific. We did not feel justified in continuing. Where the mother had been unrelieved, there was no sedative effect on the baby. Those babies which had been sleepy sometimes continued so for two or three days after birth and were slow to suck.

Third Stage.—This was not longer in the patients who had had amidone; nor was there undue loss of blood.

RESULTS IN TWO SERIES OF MOTHERS

		First series		Second series	
Analgesic		Amidone	Pethidine	Amidone	Pethidine
No. of cases		48	30	14	55
Average total amount of drug (mg.) ..		21·5	215	20	250
Average length of labour (hr.)		29 8	21·9	18	29 2
Effect on pain:	Worse	0	1	0	0
	None	8	4	1	5
	Doubtful	5	5	1	2
	Slight	8	7	3	9
	Good	25	9	8	31
	Complete	2	3	1	8
	Good + complete	27 (*56*%)	12 (*40*%)	9 (*64*%)	39 (*71*%)
Between pains:	No rest	3	2	3	3
	Rest..	25	28	11	52
	Rest + sleep	14	15	10	34
Amnesia		3	3	0	4
Effect on baby		1 stillbirth from difficult forceps delivery; respiratory depression in 10 but in 1 heart was irregular before drug given	5 slightly blue	Respiratory depression in 7	1 stillbirth, fœtal heart not heard before drug given; 11 blue (*only* 1 became pale) including 1 small mongol, 1 difficult breech, and 2 with cord round neck

ENICILLIN IN 1% BEESWAX-ARACHIS OIL

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SINCE penicillin is readily absorbed from the tissues er parenteral injection and is rapidly excreted by the dneys, to maintain a chemotherapeutic level in the sues it is necessary either to inject an aqueous solution short intervals or by continuous drip, or to administer in some slow-release vehicle.

Both frequent injections and a continuous drip are en impracticable and undesirable. They are difficult carry out unless the patient is in hospital and three- four-hourly injections cause the patient much inconnience, particularly at night. The incorporation of nicillin in a slow-release vehicle undoubtedly offers me important advantages; consequently, there has en much research into methods which delay the orption of penicillin from the site of injection.

The most widely used preparation, developed mainly Romansky and his colleagues, is a mixture of beeswax 5%) and arachis oil containing 100,000–300,000 its of penicillin per ml.; effective blood-penicillin vels persist for eight to twelve hours, and one or two jections a day give excellent clinical results. This rm of preparation may, however, be difficult to minister owing to its viscosity; it is necessary to warm e syringe and suspension to 37–50°C and then inject ith the minimum of delay, using a wide-bore needle. experienced workers commonly find that the needle comes blocked during the injection, and this may cause nsiderable inconvenience. To overcome this diffilty, it has been recommended that individual doses be spensed in separate syringes.

The inherent disadvantages of the present form beeswax preparation and the great demand for the ow-release product make it important that a more tisfactory product should be available, and many odifications have been tried.

Romansky and Rittman (1944) considered that the % beeswax mixture gave the most satisfactory results; ut it is interesting to note that absorption of penicillin om the tissues was also appreciably delayed by the se of lower concentrations of beeswax. Raiziss (1944) ound that simple suspensions of penicillin in arachis oil aintained the blood-penicillin level for a long time. irsh et al. (1947) recommended that pure crystalline enicillin G should be used, since the resulting preparaons have a reduced viscosity at all temperatures.

Slow-release vehicles have been studied for some years the Department of Pharmacy and Pharmacology, anchester University, and the use of suspensions of arious drugs in oily media indicated that, to obtain the aximal prolongation of the effect of a drug, the volume jected should be small, about 0·5–1 ml. being the ptimum bulk, and that there was no significant difference etween the results given by a plain oil vehicle and one ontaining 4–5% of beeswax.

The preliminary work was done on rabbits. Tests ere later carried out with penicillin, and the results ndicate that 1% beeswax in arachis oil forms an excelent vehicle for the crystalline form of penicillin. This reparation was consequently subjected to clinical trial.

PHARMACY

Though the preliminary results indicated that there was little to be gained by the addition of beeswax as regards the maintenance of the effective blood-penicillin level, it was found that there was a disadvantage from the pharmaceutical standpoint in its omission.

When a suspension of penicillin in plain oil was allowed to stand for several days, some difficulty was experienced in rediffusing the penicillin in the oil. A considerable amount of shaking was required to redistribute the penicillin which had settled to the bottom of the mixture. The addition of beeswax removed this difficulty, probably because it carried the penicillin with it in the form of a readily diffusible deposit of about the same density as the oil. Though 2% of beeswax gave a more readily diffusible deposit than did smaller proportions, it was considered that the viscosity of the preparation at ordinary temperature was unduly increased.

The British Pharmacopœia formula uses, for the oily injection of penicillin, the calcium salt of penicillin to the equivalent of 125,000 units per ml. in a vehicle of 4·5% w/v of white beeswax in arachis oil.

The calcium salt is specified for the official preparation because it is almost non-hygroscopic; and, to keep the volume to be injected to about 1 ml., it has been recommended by various authorities that the strength be increased to 300,000 units per ml.

Practically pure non-hygroscopic sodium penicillin is now being prepared, and a supply was kindly provided by Messrs. Imperial Chemical (Pharmaceuticals) Ltd. This proved very suitable for the preparation of the oily injection; it can be ground readily to a very fine powder without the danger of moisture being absorbed, and, when incorporated with the 1% beeswax-oil mixture, it gives a preparation which is satisfactory in all respects. The mixture remains perfectly fluid at ordinary temperatures, and any deposit is readily diffused by gentle shaking and is sufficiently finely divided to pass through a moderately fine needle. No heating is necessary and should be avoided, since on cooling there is a tendency for the beeswax to crystallise.

The formula and method of preparation for 100 ml. of the mixture are as follows:

Penicillin (non-hygroscopic sodium salt)	30,000,000 units
Beeswax (white or yellow)	1 g.
Arachis oil, sufficient to produce ..	100 ml.

The beeswax is added to the oil, and the mixture sterilised by heating in an oven at 150°C for an hour and allowed at the same time to filter through filter paper. When the oil-beeswax basis is nearly cool, the penicillin is triturated in a sterile mortar with a small amount of the basis until smooth, and then the rest of the basis is added gradually and the whole is triturated; the mixture is finally transferred to sterile containers. Aseptic methods are used throughout.

No moisture is present and the preparation is therefore stable at ordinary temperatures for several months.

The crystalline sodium-penicillin used for the preparation absorbed only 6% of its weight of moisture when exposed to moist air of 66% humidity and, after two months' exposure at ordinary temperature to such an atmosphere, exhibited no loss of potency.*

TECHNIQUE OF PENICILLIN ASSAY

The assay of serum-penicillin levels was made by the broth dilution method; the test organism was the Oxford staphylococcus, and the broth, containing glucose and Andrade's indicator, was prepared from the formula of Pulvertaft and Yudkin (1946).

Samples of blood were obtained by venepuncture and centrifuged, and the serum was placed at once in the refrigera-

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* Detailed comparisons of the hygroscopic qualities and stabilities of different samples of commercially available penicillin are being published in the *Quarterly Journal of Pharmacy and Pharmacology*.

(1937) suggested that the primary action of the drug was that exerted by the chlorate ion on the tissues. He considered that methæmoglobinæmia only followed hæmolysis, and that this action was of secondary importance. It seems possible that hæmoglobin is oxidised to methæmoglobin within the corpuscles, and that the hæmolysis, with liberation of methæmoglobin into the serum, follows (Ulrich and Shternov 1928). In our observations methæmoglobin was never detected in the washed corpuscles but was abundant in the serum; hence we conclude that hæmolysis took place before the formation of methæmoglobin.

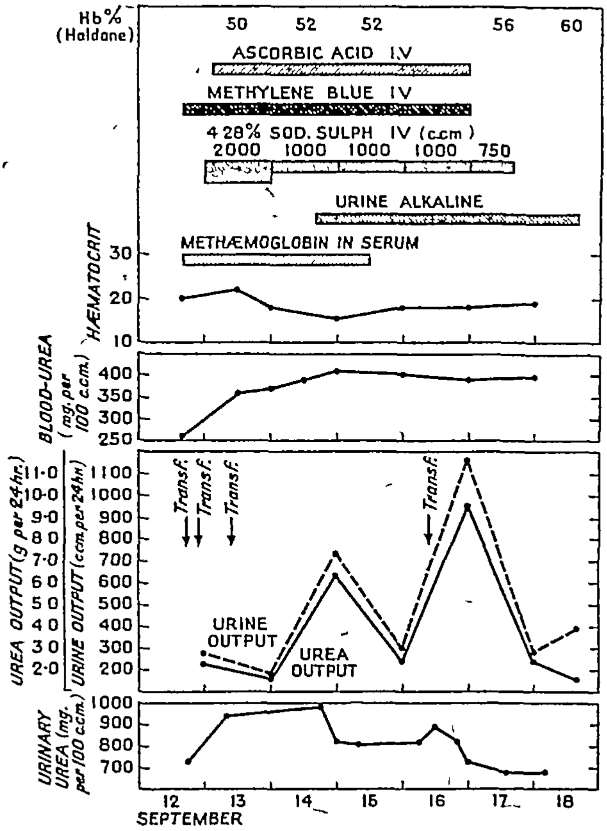

Chart of treatment and findings in a case of potassium chlorate poisoning.

Cushny (1941) states that the acute cases of poisoning are due to simple anoxæmia resulting from transformation of hæmoglobin to methæmoglobin. In the less acute forms hæmolysis occurs and renal damage results from the breakdown products of the corpuscles, which obstruct the renal tubules. In view of the work of Maegraith et al. (1945), a combination of anoxæmia and deposition of pigment causing tubular injury may well explain the profound renal damage in our case. The absence of concentrated urine, coupled with a histological picture similar to that of the crush syndrome (Bywaters and Beall 1941), is to be expected in cases where deposition of pigment has seriously damaged the convoluted tubules. Baker and Dodds (1925) claimed that hæmoglobin is precipitated in the renal tubules at a pH below 6·0, but this finding was not confirmed by Navasquez (1940) or Bing (1943, 1944); renal damage was not produced in their experiments by hæmoglobin injected intravenously, whatever the pH of the urine. On the other hand, the intravenous injection of methæmoglobin in dogs causes severe renal damage if the urine is acid, but not if the pH is above 7·0 (Bing 1943, 1944).

The aim of our treatment was to hasten the reduction of methæmoglobin to hæmoglobin with methylene blue and ascorbic acid, and to combat anoxæmia by slow infusion of concentrated red cells. Potassium citrate was also given to render the urine alkaline and thereby to decrease tubular damage.

The body normally slowly reduces methæmoglobin to hæmoglobin (Stimson and Ray 1927). Methylene blue can act as part of a reversible oxidation-reduction system and is in the reduced, or "leuco," form at the normal reduction potential of the body. It greatly accelerates the reduction of methæmoglobin to hæmoglobin in doses of 1·5–2·0 mg. per kg. of body-weight (Wendel 1937, 1939). Ascorbic acid is also a powerful reducing agent, which will reduce methylene blue to the leuco form rapidly in vitro. Treatment of the anæmia produced by the hæmolysis is important because of the possibility of anoxæmia increasing renal tubular damage. In most types of poisoning which produce methæmoglobinæmia the blood is free from methæmoglobin within 24–72 hours of discontinuing the drug (Harrop and Waterfield 1930, Paton and Eaton 1937). It has not been stated by these workers whether hæmolysis took place or not, but it is to be expected that it would cease about the same time as the methæmoglobinæmia. In our case the hæmatocrit readings did not rise despite transfusion; hence it is probable that hæmolysis continued and further pigment was thereby provided for deposition in the renal tubules. In this case methæmoglobin was present in the serum until eight days after discontinuing the drug. Judging by analogy with the cases mentioned above, it appears that the therapeutic measures aimed at speeding reduction of methæmoglobin to hæmoglobin were ineffective.

The renal aspect of the case was unfortunately true to type. In the hope of producing a diuresis, continuous infusions of sodium sulphate were given. On the last day of life, after several days of anuria and oliguria, the urine output rose. The urea-concentrating power of the kidneys had steadily declined, and the blood-urea level remained high, rising slightly, until the uræmic termination. The slight pulmonary œdema discovered at autopsy suggests that further transfusion would not have been possible, and that overloading the circulation is a very real danger in this type of case.

SUMMARY

A fatal case of potassium chlorate poisoning is described.

Severe hæmolysis, methæmoglobinæmia, and renal damage were produced by the drug.

Treatment with methylene blue and ascorbic acid appeared to be ineffective in speeding reduction of methæmoglobin to hæmoglobin.

Renal tubular damage due to deposition of pigment led to death in uræmia.

Our thanks are due to Dr. Philip Hamill for permission to publish this case; to Dr. Hans Loewenthal, for help with the pathological investigations; and to Dr. E. G. L. Bywaters for advice and encouragement.

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hat any improvement noted could not be placed to he credit of thorium-X alone. Alopecia areata with oncomitant curable physical disease or quickly soluble sychological trouble was not treated with thorium-X. or example, cases of alopecia areata in patients suffering rom debility after acute illnesses, girls also suffering from reviously undetected iron-deficiency anæmia, and dolescents overworking for vital academic examinations ere not selected. On the other hand, cases with long-tanding physical infirmities, such as one of muscular trophy following infantile paralysis, and cases with a ifelong personal and often familial psychopathic history ere included.

During these three years 50 cases were chosen and eated. Many of them were referred to other depart-ents at some time or other while having thorium-X eatment. As a result of findings in these departments became necessary to exclude 26 of the cases from this eport for the reasons given above—e.g., a case of ddison's anæmia, married women who became primiparæ, a case with symptoms for which surgical treatment was later given, several cases with uncorrected or mproperly corrected refractive errors, and several cases which dental treatment was needed. Any dental or phthalmological case in which the appropriate treatment was unduly delayed for any reason was excluded. astly, all patients who began treatment or responded or the first time to treatment during the summer f 1945 were excluded, lest any change noted be tributable to post-war causes.

The thorium-X was applied in varnish, in a dosage f 1500 electrostatic units per c.cm., once a month for eriods of from a few weeks to a year.

The details of the 24 cases finally selected are given n the accompanying table.

DISCUSSION

Of the 24 cases in the table, 22 showed satisfactory egrowth, usually within two or three months and not epending on the length of time the alopecia had been resent. Semon (1940) states that recovery of a patch oes not take place under three or four months. In 0 of the cases, including 3 of total alopecia areata and of the band type, the alopecia had lasted over four ears. In 9 of these 10, local treatment with light, asting months or even two years, had been without ffect. Yet in 5 of these 9 cases regrowth started within wo months, in 2 more within four months, and in the emaining 2 within eight months. In the 10th long-tanding case regrowth also took place, but this case had ot had local light. In the case where the beard besides he scalp was partially affected regrowth took place on the calp only. Regrowth was maintained in the case which eveloped thorium-X dermatitis. This case, the first of ts kind to be reported, is described more fully below.

In Corsi's (1943) series, where the selection of cases or treatment was not on the exclusive basis of this series nd treatments were given weekly, no regrowth occurred n the 2 cases of virtually total alopecia: in the 3 cases f total alopecia in the present series regrowth started within six months and was continued for a few months, fter which there was no further increase. The tendency or the new hair to grow pigmented at once, also noted y Corsi, was observed in the cases of total alopecia only. Regarding his suggestion, later approved by Prosser Thomas (1945), that thorium-X should not be applied hile the defluvium is still active. Isaak (1942) reports 2 cases which suggest that hair filters alpha-rays.

In comparing the efficacy of local light and thorium-X two facts emerge: (1) regrowth took place in 9 cases where local light had failed: and (2) the patients now had to attend for treatment once a month instead of from four up to as many as twelve times. Local treatment with light is usually given once a week (Semon 1940), but this often means in a busy department that the patient has to attend two or three times a week to have different areas treated.

Radiodermatitis resulting from subcutaneous injections of thorium-X has been reported (Weissenbach 1938). Regarding a recent favourable report on its use by injection in spondylitis and chronic rheumatism (Hernaman-Johnson 1946) and unpublished reports from other sources on its use in urology, there have been in the past several adverse reports on its use by subcutaneous or intravenous injection (Hamperl 1936, Roemheld 1937, Loup 1937, Zadek 1937, Weissenbach 1938, Bazy and Coste 1938, Deucher and Leigh-Smith 1943), the toxic effects being due possibly to errors in its preparation

Case no., sex, and age (yr.)	Type of disease	Known duration	Regrowth begun after thorium-X within—	Further progress of regrowth	Previous local light treatment
1, F, 36	Ord.	4 yr.	3 mth.	Continued for 7 months only	2 courses, each 3 months
2, F, 49	Ord.	5 mth.	3 mth.	Full regrowth	None
3, M, 11	Total	5 yr.	2 wk.	Full regrowth all parts except sides of scalp	Continuous for 2 years
4, M, 41	Ord. of scalp and beard	6 wk.	1 mth. scalp only	Maintained next 2 months, then ceased to attend	None
5, F, 47	Ord.	2 wk.	14 wk.	Full regrowth	None
6, F, 37	Total	7 yr.	4 mth.	Thorium erythema after 1 year	2 years, intermittent
7, F, 41	Band type	Several yr.	2 mth.	Partial regrowth, no increase after 6 months	Several months
8, F, 40	Total	23 yr.	6 mth.	No increase after 2 months	Many courses
9, F, 34	Ord.	6 mth.	5 mth.	Full regrowth	None
10, F, 16	Ord.	3 wk.	6 wk.	Ceased to attend	None
11, F, 23	Ord.	3 wk.	3 wk.	Ceased to attend	None
12, F, 17	Ord.	8 mth.	None	None after 9 months	None
13, F, 50	Ord.	20 yr.	None	None after 11 months	Several courses
14, M, 26	Ord.	6 mth.	2 mth.	Increasing 1 month later, then ceased to attend	None
15, M, 14	Ord.	2 mth.	5 mth.	Increasing 1 month later, then ceased to attend	None
16, M, 9	Ord.	2 wk.	5 mth.	Ceased to attend	None
17, M, 22	Ord.	3 mth.	7 mth.	Increasing 1 month later, then ceased to attend	None
18, M, 27	Ord.	3 mth.	2 mth.	Ceased to attend	None
19, M, 27	Ord.	4½ yr.	1 mth.	Ceased to attend	Long courses
20, F, 23	Ord.	4 days	6 wk.	Increasing for next 6 weeks then ceased to attend	None
21, F, 25	Ord.	3 wk.	1 mth.	Ceased to attend	None
22, F, 58	Ord.	Many yr.	8 mth.	Increasing 1 month later, then ceased to attend	Several courses
23, F, 38	Ord.	4 yr.	1 mth.	Ceased to attend	None
24, F, 36	Ord.	4 yr.	2 mth.	Increasing for 4 months only	Continuously for 2 years

Ord. = ordinary.

ASSAYS OF SERUM AFTER INTRAMUSCULAR INJECTION OF PENICILLIN IN BEESWAX-ARACHIS OIL OR IN AQUEOUS SOLUTION

Hours after injection	Serum-penicillin levels (units per ml.)	
	300,000 units in 1 % beeswax-arachis oil	300,000 units in aqueous solution
2	>1	2
3	1, 2, 1, 1/2	..
6	1/2, 1/4, 1/2	1/8, 1/2, 1, 0
8	1/2, 1/4, 1/32	1/8, 0
10	1/4, 1/4, 1/8, 1/8	1/8*, 0, 0, 0, 0
12	1/8, 1/8, 1/16, 1/16	..
13	1/4, 1/16, 1/4	..
14	1/16, 1/16, 1/16	..
15	1/32, 1/32	..
24	0, 0, 0, 0	..

* This case was one of long-standing diabetes, and delay in excretion might have been due to renal abnormality.

tor ; series of levels from one patient were invariably assayed together on the same day.

A series of twelve sterile tubes (3 in. by 3/8 in.) were prepared ; 0·5 ml. of the glucose broth was placed in all tubes except the first, 0·5 ml. of the serum was added to the first and second tubes, the contents of the second tube were well mixed and twofold dilutions were made in the remaining tubes except no. 12, which was the control and contained broth only. Inoculation with the test organism was carried out by the addition to each tube of a standard amount of a saline suspension of an 18-hour agar-slope culture containing about 500,000,000 organisms per ml. A comparable series of tubes containing known strengths of penicillin was always prepared as a control ; these results were remarkably constant throughout the investigation. The end-point was taken as the lowest dilution at which the staphylococcus grew after 18 hours' incubation, as indicated by the colour change and the presence of turbidity in the tube.

Inhibition of the organism in the tube containing serum alone was confirmed by inoculation of an agar plate ; cultures were invariably prepared from any tubes giving doubtful readings.

RESULTS

Trials of the preparation were made by two methods : (1) assays of the blood level at intervals after intramuscular injection ; and (2) clinical trials in cases of acute gonorrhœa. The injections were usually made into the gluteal muscles with a no. 2 serum needle, and in no instance was any reaction, local or general, reported. Since the preparation is fluid at room temperature its administration presented no difficulty.

(1) *Blood Levels*

Samples of blood were collected at various times after the intramuscular injection of penicillin 300,000 units in 1% beeswax-arachis oil contained in 1 ml. Assays of the serum were carried out, and the collective results are given in the accompanying table. A control group received an aqueous solution containing penicillin 300,000 units in 1 ml. ; assays of the serum levels are included in the table.

The serum-penicillin levels were maintained much longer after the injection of the 1% beeswax-arachis oil preparation than after that of the aqueous solution. The persistence of the serum-penicillin levels is comparable with that following the injection of the standard 4–5% beeswax preparation. Kirby et al. (1946) found that after the single intramuscular injection of 300,000 units of penicillin in 5% beeswax-peanut oil (1 ml.) penicillin could not be detected in two-thirds of the patients after 12 hours ; when the material was injected subcutaneously, assayable levels were generally present for 20 hours. These levels are considered to be therapeutically effective for all but overwhelming infections with sensitive organisms.

(2) *Clinical Trials*

Slow-release preparations have given good clinical results, particularly in acute gonorrhœa, for which they are now widely used. Clinical trials were consequently made with the new preparation ; 28 proved cases of acute gonorrhœa, 20 males and 8 females, were given an intramuscular injection of 1 ml. containing 300,000 units of penicillin in 1% beeswax-arachis oil. The results were wholly satisfactory.

In all cases a clinical cure was obtained and the usual tests of cure were successfully passed ; there was no complaint of local reaction, pain, &c. There was no difficulty in administering the preparation, which, being fluid at room temperature, was readily drawn into the syringe and injected into the patients with a no. 2 serum needle.

SUMMARY

Effective blood-penicillin levels were maintained and satisfactory clinical results obtained in acute gonorrhœa by the intramuscular injection of 1 ml. of a preparation containing 300,000 units of crystalline penicillin in 1% beeswax-arachis oil. This preparation is fluid at room temperature and can be injected without difficulty.

We wish to thank Messrs. Imperial Chemical (Pharmaceuticals) Ltd. for preparing and supplying the penicillin suspension, and Dr. L. Maddocks and Dr. G. Auckland for their coöperation with the clinical trials.

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ALOPECIA AREATA TREATED WITH THORIUM-X

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Thorium-X is the latest local remedy for alopecia areata, and the only published report is one on the results achieved in 35 cases by Corsi (1943), who continued an investigation initiated in 1937 at St. Bartholomew's Hospital by Dr. F. Jacobson with practical help from Dr. A. C. Roxburgh. The pioneer user of thorium-X in dermatology was Nagelschmidt (1916).

In assessing the value of a substance used locally (such as thorium-X) in the treatment of alopecia areata one must present findings whose value is not obscured by controversial factors. This is because the ætiology of the disease is unknown. There are three theories current (the toxic, the microbic, and the trophoneurotic) each capable of explaining certain cases but none applicable to all (MacLeod and Muende 1946). The suggestion of an endocrinopathic origin is unwarranted in the opinion of Waisman and Kepler (1941), who investigated this aspect in 138 cases. Prosser Thomas (1945) recognised the difficulty of assessing the value of any remedy in this condition, which tends to spontaneous recovery in many cases. Before expressing an opinion based on case-records all cases must be excluded in which a possible toxic, microbic, or trophoneurotic cause had been present and treated. Corsi, in his report, did exclude some treated cases on the grounds of patients ceasing to attend, interfering with controls, or proving unsuitable for unspecified reasons.

PRESENT INVESTIGATION

For the past three years cases for the series now reported were selected from the skin department of Oldchurch Hospital, Romford. In choosing cases for thorium-X many patients were excluded at once, as it was obvious same or a closely similar sign under the name of "pre-fixation tremor," noted in the early stages of three cases of poliomyelitis; so perhaps in the present epidemic it may prove to be less rare than heretofore.

According to the usual conception and authoritative definitions of the term (Myers 1925. Riley 1930). the sign we have described cannot be considered a true nystagmus, though there is a superficial resemblance; on the other hand, it has a certain family likeness to myoclonus. It is therefore interesting to find that Orzechowski (1927) described under the name "opsoclonia" or "myoclonic ataxia" a condition almost exactly resembling it. He speaks of "very rapid and unequal movements. which usually take place in the horizontal plane." He states that the movements are seen chiefly when the eyeballs change their position. and he notes the decrescendo effect of each group. Cerebellar signs of slight degree were always present (hypotonia, tremors, ataxia, &c.), and he also notes the tremor of the eyelids and particularly emphasises emotional lability. All examples that had come to his notice occurred in cases of non-epidemic encephalitis.

Orzechowski's opinion is that this phenomenon is caused by a lesion of the basal ganglia. with or without a disturbance of the cerebellum or its connexions: he envisages the possibility that a cerebellar lesion alone might cause it, but considers it unlikely. Physiologically he classes the disorder with myoclonus, and considers that it is related to the various disorders of muscular movement observed during and after encephalitis, and sometimes in other conditions.

We suggest that the name "opsoclonia" is very apt for the phenomenon we have described, and that it is almost certainly used in the sense intended by its author.

SUMMARY

A description is given of a case of probable polioencephalitis exhibiting a bizarre type of nystagmoid movement of the eyes. It is suggested that this is probably identical with that previously described under the name "opsoclonia" by Orzechowski in 1927.

We are indebted to Dr. T. H. G. Shore. under whose care the patient was admitted to hospital. for permission to describe the case; and to Dr. N. S. Alcock, who saw the patient as neurological consultant, for his opinion and advice

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REVOLT FROM THE BEDPAN AND THE ENEMA

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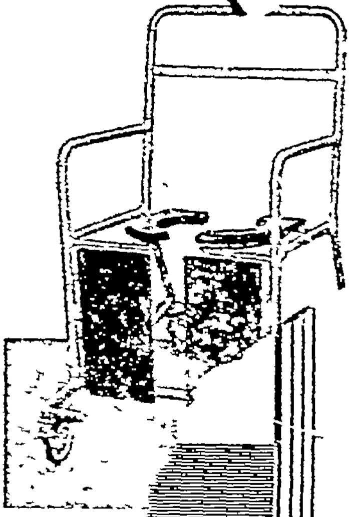
MAN is so constructed that defæcation is best effected in a sitting posture with drawn-up knees, so that the abdominal muscles can come into play. It is therefore unphysiological to defæcate while lying down.

In 1938 one of us drew attention in a lecture to the unnecessary giving of enemas in our hospitals, and showed that at one hospital about 60,000 were administered in about 160,000 attendance days. Enema treatment to such an extent at our hospitals is liable to give patients the impression that the healthy ought also to have recourse to enemas if they do not have a daily evacuation. Patients with chronic constipation often admit that their constipation started in hospital, where they received enemas, and that they subsequently felt obliged to continue them.

When we tried to limit or discontinue the use of enemas, we met with strong resistance from both nurses and patients. The patients re
as a manifest lack of prope
took up almost the same attit
substitute would have to be
that the superstitious belief in
evacuation would have to be disp

Early getting up after opera
practised in our surgical departme
against thrombosis and a means of sh
of disease and convalescence. As THE LANCET[1] points out, "a not uncommon way to die is from cardiac syncope or pulmonary embolism while on the bedpan." Lying down is no protection against such fatal complications, but, if anything, the opposite. One of our assistants. Dr. M. Felländer. has analysed the surgical department's statistics of thromboses and pulmonary emboli in patients not prophylactically treated with heparin or dicoumarol, and finds a death-rate from of 0·14% in 36,789 cases.



Wheel-chair, wit

To encourage spontaneous empty
a way which would suit the conven
bilities of the patients an endeavour
for the act of defæcation to take plac
with knees drawn up and in priv
feel strongly that they should be
One of us (G. B.) therefore designe
could be wheeled up to the bedsid
patient on it, pushed out to the
the basin there (see figure).

ADVANTAGES AND INDI

This arrangement obviates the nec
to move himself, and possesses the fol

(1) Defæcation takes place in a sitting
privacy.

(2) Offensive odour in the ward is avoided.

(3) Cleansing of bedpan and portable closet-pa
eliminated.

The experience gained during the past eight years has enabled us to widen more and more the indications for the use of the portable w.c. chair. Patients and nurses are extremely satisfied, and bedpans are used only by the patients who have to lie down all the time—e.g., those with fractures of the lower extremities in extension. large hip plasters, paresis of the lower extremities. and moribund patients.

Newly delivered women—and patients who have undergone cholecystectomy, gastric resection, or operation for vaginal prolapse are allowed to use the chair one or two days after the operation. Fever is no contra-indication, provided the w.c. is kept well heated. The non-compensated heart is undoubtedly strained far less when evacuation takes place in a sitting posture than lying down. Enemas and bowel washings are practically eliminated. No increased tendency to hernia, heart-

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[1] *Lancet*, 1946, i, 820.

and dosage (Weil and Galabert 1938). Lesser degrees of cutaneous damage from surface application of thorium-X are described by Airey (1945), who, with several years' experience, had seen slight atrophy and telangiectasia in a glossy skin from its long-continued use, but no serious ill effects.

Case 6 in the present series developed an erythema of the scalp after twelve months' treatment. There was no vesiculation, and the erythema had persisted unaltered six months later. The reddened area corresponds to the area painted and not to the scalp area. Regrowth had started on the crown of the head only, and for this reason treatment had been continued. Because of occasional shortages in the supply of thorium-X, due to uncertainty about the amount required, this case was treated fortnightly, each half of the scalp alternately. There may thus have been overlapping of the areas painted, with consequent treatment of some areas fortnightly. It is intended to follow up this case with serial biopsies and photographs.

Though thorium-X is commonly applied fortnightly or even weekly, it is well to recall that its first disintegration product, an indifferent gas with a half-life of about 1 min., may possibly diffuse further into the skin before transformation into more active states and cause demonstrable degeneration at a depth of 0·2–0·3 mm. (Lomholt 1923). This degeneration continues for a fortnight (Lomholt 1936), and Peck (1930) has shown that fair skin takes twenty-three days and dark skin forty-nine days to recover completely; but even then hyperpigmentation may persist for months. Roxburgh (1944) states that the redness persists two or three weeks and then gradually fades and is replaced by pigmentation.

SUMMARY

A series of 24 cases of alopecia areata, including 3 cases of total alopecia, were treated with monthly applications of thorium-X in varnish, for periods ranging from a few weeks to a year. From this series all cases were excluded in which improvement might have been attributable to concurrent somatic or psychological treatment.

Of the 24 cases 22 responded with satisfactory regrowth, and there were 2 failures.

One case after partial regrowth developed an erythema of the scalp which has now lasted six months. It is suggested that in this case, the first of its kind so far reported, treatment of adjacent areas overlapped and was in fact given fortnightly instead of monthly as in the other cases.

Cases of total alopecia responded with partial regrowth. Hitherto, treatment of such cases with thorium-X had failed, possibly because treatment had been given weekly.

The tendency, previously reported, to regrowth being pigmented at once was confirmed in the cases of total alopecia only. In 1 case with bald patches on the scalp and beard regrowth occurred on the scalp only.

Thorium-X is very efficacious in the therapy of alopecia areata and superior to local treatment with light, besides taking less time.

Treatments, however, should not be repeated on the same area more often than once a month.

My thanks are due to Dr. E. Miles, medical superintendent, Oldchurch Hospital, for permission to publish these cases.

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Continued at foot of next column

OPSOCLONIA

A RARE OCULAR SIGN IN POLIOENCEPHALITIS

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The current epidemic of acute anterior poliomyelitis is notable for the high proportion of cases with involvement of the brain stem. We have recently seen several cases in which ocular signs dominated the picture, and one we consider striking enough for publication.

A boy, aged 2 years 11 months, a healthy son of middle-class parents, was on holiday when he suddenly developed difficulty and unsteadiness in walking.

Next day it was noted that he squinted and moved his eyes in a curious jerky manner; he was also feverish, irritable, and off his food. The following morning he vomited shortly after getting up, and later that day was admitted to hospital.

On admission he was rather flushed, talkative, and emotionally labile, laughing one moment and in tears the next.

His eyes were the most arresting feature. He had a variable internal strabismus of the left eye, and both eyes showed rapid jerking nystagmoid movements of variable amplitude, occurring in groups of up to half a dozen, the first of each group of jerks being the largest in amplitude and the rest following in decrescendo.

There was no distinction between rapid and slow phases as in true nystagmus; the movements were usually in the horizontal but sometimes in the vertical or oblique planes, and there was occasionally a rotatory element. The movements were identical in the two eyes (with due allowance for the strabismus).

The movements occurred most often just before the gaze came to rest upon a point of fixation, but they also took place at other times, and were intensified by emotion. So far as it was possible to ascertain, they did not interfere with vision.

There were also a fine flutter of the eyelids associated with the movements of the eyeballs; tic-like twitching of the corners of the mouth; a rapid head-nodding tremor of small amplitude, in any plane, as though the balance of the head on the neck was slightly unstable; a slight degree of intention tremor of the upper limbs; and a very ataxic gait, the child walking with evident difficulty and distress on a wide base, staggering and clutching at any available support.

There were no other abnormalities; reflexes brisk and equal; no muscular weakness, tenderness, or spasm; no meningism; and no fever after the first day in hospital.

Lumbar puncture on two occasions gave a normal fluid without increase in pressure; a blood-count was within normal limits.

Progress.—The strabismus started to improve three days after admission and had vanished after a further three days. The other signs, including the emotional lability, increased for about four days after admission, remained stationary for a day or two, and then declined slowly. By the twelfth day in hospital the child was normal, and he was discharged on the fifteenth day.

A tentative diagnosis of polioencephalitis was made despite the normal cerebrospinal fluid.

DISCUSSION

The striking ocular phenomenon which was the principal feature of this case is apparently very rare and has received little attention in the literature. Strickland (1947), however, has referred to what is probably the

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BRONCHIAL ASTHMA

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failure, or pulmonary embolism has been observed. No death that can be laid to the account of the method has taken place during these years.

The relief in routine work that the portable w.c. chair brings is considerable. Nurses and probationers are as satisfied as the patients, who have no words to describe their delight at escaping the bedpan. Naturally, a patient who is seriously ill should not be left alone in the w.c., but he or she can be assisted there by the nurse just as well as when in bed. The water-closets must be made somewhat wider to allow the nurse to enter and help the patient. An account of the method was published[2] in 1939; it has quickly become popular and is now used in most of the Swedish hospitals.

Reviews of Books

Précis de diagnostic hématologique

G. HEMMELER, privat-docent at the Faculty of Medicine, University of Lausanne. Paris: Masson. 1947. Pp. 168. Fr. 700.

THIS little book deals succinctly with the diagnostic
information obtained from a standard blood-count, the
integ dy of stained blood-films, the determination of bleed-
life of a coagulation, and prothrombin times, and the
of serum iron. No other hæmatological
skin before re mentioned, though the salient changes in
cause demonstr are mentioned in the summary of each
(Lomholt 1923). tment is also briefly described. The
night (Lomholt 19 e and the descriptions of the various
fair skin takes twen tly be familiar to English physicians,
days to recover co y small points, not often found in
pigmentation may pe reveal Dr. Hemmeler's practical
states that the redne re also some curious statements:
then gradually fades chronic myeloid leukæmia is
and surely the hæmolytic anæmia
oung" hardly deserves separate
ment section reflects French diffi-
A series of 24 ca cost of liver treatment is deplored
cases of total alo pes that folic acid will replace it;
applications of tho fusion is recommended as the method
from a few weeks can be carried out in the patient's
were excluded in wi ons are all colour photomicrographs,
attributable to con très soignées," say the publishers.
treatment. the limitations of this method,
Of the 24 cases 22 res g as fine detail, whether of nuclear
granules, is unimportant. Thus
and there were 2 failur leucocytes in glandular fever is
One case after partial from the blood in chronic myeloid
of the scalp which nisable.
suggested that in th praiseworthy object of persuading
reported, treatment at blood-films; it is certainly odd
was in fact given f ysician who insists on viewing his
the other cases. nd electrocardiograms fights shy of
Cases of total a -film.
Hitherto, trea

he Skin

failed, possi JAMES H. SEQUEIRA, M.D. Lond., F.R.C.P.,
The te rs., consulting physician to the skin department,
pigme ondon Hospital; JOHN T. INGRAM, M.D. Lond., F.R.C.P., physician in charge of skin department, General Infirmary, Leeds; REGINALD T. BRAIN, M.D. Lond., F.R.C.P., physician in charge of skin departments, Royal Free Hospital and Hospital for Sick Children, Great Ormond Street. London: J. & A. Churchill. 1947. Pp. 771. 63s.

Sequeira's "Skins" has for many years been a leading full-size British textbook on the subject. Though twenty years have elapsed since the last edition, the authors have brought the work up to date without destroying its original character or spoiling its readableness. The senior author, having lived for years in the tropics, has developed the sections on tropical skin diseases. The relationship between psychological medicine and diseases of the skin has been properly stressed, and an important section has been added on the legal aspects of industrial dermatitis, with a brief useful account of the Workmen's Compensation Act. Illustrations are plentiful and good.

A Textbook of Medicine

(7th ed.) Editors: RUSSELL L. CECIL, M.D., SC.D., professor of clinical medicine, Cornell University; assisted by WALSH MCDERMOTT, M.D., asst. professor of medicine in the university. London and Philadelphia: W. B. Saunders. 1947. Pp. 1730. 50s.

Cecil's Medicine presents a wide cross-section of American teaching, and it is impossible to pick out specially any one of the 150 contributors who have coöperated in this really representative book. The several new coloured illustrations, and about 250 diagrams and photographs, are of varying quality and value. There are some 16 new articles, and a much larger number of completely revised sections. Most subjects are approached by way of a brief historical survey, and a few principal references are given at the end of each section. The balance of the whole is a little uneven: in some parts the teaching seems a trifle vague and ill defined, while in others it is brilliantly clear, concise, and informative. Readers will find some interesting differences between American and English opinion, and will hesitate to adopt all the advice in detail. The early stages of the medical treatment advised for simple peptic ulcer, for example, requires hourly feeds from 7 A.M. to 7 P.M.—not later—at first, and after two or three weeks 9 feeds between 8 A.M. and 6 P.M., with, in addition, 13 doses of alkaline powder of $^1/_2$–2 drachms, and a final gastric lavage at 9.30 P.M. What a day for the patient, let alone the nurses!

The section on diseases of the nervous system has been taken over by Dr. Wolff, who presents his subject well. Poliomyelitis and encephalitis are included in the section on the infectious diseases, however, and so is *syphilis of the central nervous system*. As a rule full instructions for treatment are given, but in places the reader may remain uncertain about what he may try to do for his patient. Thus in the treatment of cardiospasm no precise mention is made of bougies, octyl nitrite, or surgery. The use of streptomycin and of penicillin are in general well described.

Cecil's Medicine remains a first-class textbook—complete, reliable, well printed, well indexed, full of information, and with a wealth of authority behind it.

Pasteurisation (2nd ed. London: H. K. Lewis. 1947. Pp. 296. 21s.).—Mr. Harry Hill's practical book now records the developments in pasteurisation and other forms of heat treatment which have arisen since his first edition appeared in 1943. He foresees a time when such treatment will be compulsory everywhere, and rightly insists on the need for efficient methods of pasteurisation, especially when the high-temperature short-time process is used.

Surgical Applied Anatomy (11th ed. London: Cassell. 1947. Pp. 560. 20s.).—In his preface to this new edition of Sir Frederick Treves's famous *Anatomy*, Prof. Lambert Rogers, who has revised it, notes that it is probably the oldest textbook of surgical anatomy in current use. The first edition appeared in 1883, and new editions and reprints have followed one another at intervals of one or two years ever since. The honourable list of them on the flyleaf suggests that Professor Rogers is not mistaken in his hope that despite its age the book will still fulfil Treves's conception of a modern account of applied anatomy. The book remains convenient for the pocket, and the 192 illustrations—some in colour—are clear.

Old People's Welfare (2nd ed. Published for the National Old People's Welfare Committee by the National Council of Social Service, 26, Bedford Square, London, W.C.1. Pp. 72. 1s. 6d.).—The new edition of this useful guide to practical work for the welfare of the old has been thoroughly revised and brought up to date. A new introduction describes the growth of the movement, and a chapter has been added on occupational activities. These are mostly such pastimes as raffia- and wool-work, bead-threading, the making of scrap-books, painting, and toy-making. The Sheffield Council of Social Service offers the more rewarding solace of allotments to old-age pensioners. Plans for allowing old people to continue in light work, or to undertake simple home industries, do not seem to have matured as yet, though some of the handicrafts suggested in this guide produce saleable articles.

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2. Bohmansson, G. *Nord. Med. (Hyg.)* 1939, 4, 3657.

THE LANCET

LONDON: SATURDAY, OCT. 4, 1947

Water-supplies

CONSUMPTION of water in the British Isles is increasing at a rate above the normal average. This is clear from the report of the Metropolitan Water Board[1] for 1946–47. During this summer the drought aggravated the situation, but the problem is not a temporary one. London's supplies of water had been planned on the basis of a steady forseeable increase, calculated from the rise of consumption in past years, but this basis is now proving unsound. The average consumption per head per day in 1946–47 was 51·83 gallons, against the 45·26 gallons which would have been expected at the pre-war rate of increase. The average daily total consumption for 1947–48 looks like reaching 350 million gallons, a figure not anticipated until 1954, and the Board now expect consumption to reach the maximum for which its resources have been planned in two or three years instead of by 1960.

This is only one part of the water-supply picture as a whole. During the past century, piped water-supplies have been extended until 98% of the population of Great Britain is served—a record of which the industry may reasonably be proud. Nevertheless, the 2% without a piped supply represents nearly a million persons; and many of these live in remote villages and farms, where the provision of main water, though it bristles with extraordinary difficulties, is at least as urgently needed as in cities and towns. A piped water-supply to every farm and every village would improve the standard of living for the agricultural population and increase the production of food—its importance in the production of milk, for example, is obvious. The main obstacle is one of finance. Laying mains to remote farms, which may be miles away from the nearest piped supply, is very expensive. As an illustration, take a farm, needing a water-supply, which is 300 yards from a main along the highway. To extend a branch main for 300 yards would cost about £400. In addition the service connexion must be laid and pipes taken to the buildings and farmhouse. Even before the war this cost was prohibitive. Now the figure is out of all proportion to the income which the water undertaking may expect to receive in return; hundreds of country cottages are supplied for less than 10*s.* a year. Moreover, the trouble and expense do not end once the water-supply is laid on; work has then to be done to get the water out again, and this involves a further outlay on sewerage and sewage-disposal schemes. The Rural Water Supplies Act of 1934 placed at the disposal of the Minister of Health £1,000,000 to assist in the provision or improvement of schemes of water-supply in rural areas. The money was distributed by the Minister in lump-sum payments to local authorities towards capital expenditure on approved schemes, and, in fact, £9,000,000 worth of work was done with the Ministry's aid. This suggests that water undertakings tackled the task energetically within the limits of the Act, but their work did little more than scratch the surface. In 1944 the Rural Water Supplies and Sewerage Act provided a further £15,000,000 for water and sewerage schemes to be executed after the war, and in the same year the Agricultural (Miscellaneous) Provisions Act enabled the Minister of Agriculture to give a grant of up to 50% for laying water to farms and farm buildings. These grants were used to develop independent water-supply schemes and for the tapping of water undertakers' mains. It is largely as a result of these Acts that since 1934 the proportion of the population without a piped supply has been reduced from 5% to 2%. Attempts to reduce this figure still further are now hampered by the familiar difficulties of a post-war period. Restrictions on material and labour prohibit much new work being done, even if plant and machinery were obtainable. Meanwhile demands are rapidly increasing for a variety of reasons which affect rural supplies, even if indirectly. During the war the large numbers of men living together acquired new ideas on hygiene, and the habits learnt in the Services remain active after their return to civil life. These new standards of sanitation coincide with the building of new houses containing baths, sinks, and lavatories for tenants who often come from homes lacking in such fittings. All this means that water undertakings are finding it more and more difficult to satisfy the demands of their old customers and leave a margin for the new building going on in practically every town in the country. So there is little chance of much expansion in piped water-supplies to rural areas for some time to come. The new houses in rural areas should be built close to an existing mains system and not in isolation, and all houses should be built with the internal water system laid out, even if no water-supply exists at the time of building. This would do something towards speeding up future schemes. Local resources must also be developed to the utmost, and research should be pressed forward vigorously towards the development of a cheap material for mains and an economical method for laying them.

Lack of water no doubt causes inconvenience and annoyance to a small proportion of the population. But it is as well to relate this regrettable fact to the background of water-supplies as a whole. No other country in the world enjoys such an efficient supply—even the United States, the fabled land of enterprise, initiative, and high-pressure methods, has over 40,000,000 people without a piped supply, and in France half the population are without one. Nevertheless, the goal should still be to provide every household with an easily accessible supply, adequate in quantity, of appropriate hardness, and conforming to a high standard of bacteriological and chemical purity.

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[1] Forty-fourth Annual Report of the Metropolitan Water Board for the year ended March 31, 1947. Pp. 131. 5*s.*

St. Mary's Hospital

VACCINES

For Respiratory Affections

ANTI-CATARRH VACCINE

The ideal time for commencing prophylaxis against the "common cold" is during Autumn. Three graduated doses, or six if preferred, with an interval of from 7 to 10 days between each, are recommended. The vaccine especially designed for the purpose is "Anti-Catarrh Vaccine," containing *M. Catarrhalis,* with *Pneumococcus, B. Pneumoniæ, B. Septus, B. Influenzæ,* and *Streptococcus.*

Supplied in sets of 3 or 6 graduated doses, and in ampoules of 1 c.c.; also in bottles of 10 c.c. and 25 c.c.

INFLUENZA VIRUS VACCINE

A purified and concentrated vaccine for protection against both types A and B influenza virus. It is recommended that a first dose of 1 c.c. be administered early in October, followed by the same dose after two or three months. To afford protection against the secondary as well as against the primary infection, Influenza Virus Vaccine may be combined with Anti-Influenza Vaccine (mixed).

Supplied in 1 c.c. ampoules

These Vaccines are prepared in the Wright-Fleming Institute of Microbiology (late Inoculation Dept.), St. Mary's Hospital, London, W.2. Further particulars on request.

Sole Agents

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Laboratories: Hounslow, Middlesex *Inc. U.S.A., Liability Ltd.*

complications has been the safest. These anti-agents will not replace surgery entirely, because interference with the synthesis of thyroxine often gives rise to hypertrophy of the gland with unsightliness and occasionally tracheal compression and there is the ever-present danger of agranulocytosis, which may arise as long as a year after the start of treatment, while the patient is on a maintenance dosage. Often, too, symptoms recur on maintenance dosage and more and more recurrent cases are coming to surgery. In Dr. LAHEY's experience, the rate of recurrences has been very high in men, and he now advises men not to undergo treatment with the antithyroid agents alone. All cases of thyrotoxicosis at his clinic are now made non-toxic with propyl thiouracil, on the grounds that even in minimal cases of thyrotoxicosis one cannot forecast the degree of postoperative reaction. In this country only patients with a severe or average thyrotoxicosis are as a rule prepared in this way. At Boston the preparatory treatment is given at home, the patient being warned to report any disturbing manifestations. If the patient becomes sensitised and develops a feverish reaction to propyl thiouracil, treatment may be continued with thiouracil. The length of time taken in preparation varies. The basal metabolic rate (B.M.R.) in a primary case drops about 1% a day, whereas patients with a toxic adenoma show a daily fall of about 0·3%, since they store more thyroxine. If the B.M.R is slow in dropping the patient is put to bed in hospital. With a B.M.R. of +50% the preparatory rest in hospital lasts about seven weeks; a B.M.R. of +15% is considered satisfactory. The thiourea drugs give rise to increased hyperplasia, vascularity, and friability of the gland, greatly increasing the technical difficulty of its removal; this difficulty is minimised by giving Lugol's iodine, and at the Lahey Clinic the ideal has been found to be a full course of propyl thiouracil followed two weeks before operation by iodine, the first week in conjunction with the propyl thiouracil and the final week alone. This procedure is adopted because agranulocytosis does not appear after the propyl thiouracil has been discontinued for a week. Patients who rapidly develop myxœdema are taken off treatment and sent home to regain a normal metabolic level. Children no longer present any particular difficulty: 200 under 12 years of age have been operated on at Boston, the youngest being aged $2^{1}/_{2}$. The preparatory dosage of thiouracil is the same as for an adult, and the operation is just as safe. Pregnant women are prepared in the same way with no adverse effects on infant or mother; the ideal is to operate as early as possible in pregnancy. Psychotics with associated hyperthyroidism are made non-toxic with the drug and maintained in a non-toxic state for a longer period than usual to stabilise their emotions Where diabetes and hyperthyroidism coincide, the raised metabolism makes it impossible to control the diabetes, but if the metabolism is first lowered with thiouracil the blood-sugar can be controlled and the patient made safe for operation. In 1921 Dr. LAHEY recommended complete thyroidectomy in cases of hyperthyroidism with advanced cardiac failure; the mortality was 6% but the results strikingly successful; these patients are now also treated with propyl thiouracil and complete rest, and are allowed to become stabilised before operation is undertaken.

When Dr. LAHEY last visited England he watched CECIL JOLL at work, and was astonished at his apparently inadequate exposure and his bloodless teasing method of using dissecting forceps to free the gland and dislocate it forward. But all agree that JOLL's results fully justified this technique. It is Dr. LAHEY's practice to ligate the four main arteries of the thyroid to lessen the chances of postoperative reactions, hæmorrhage, and recurrences, and in every case he demonstrates the recurrent laryngeal nerves and parathyroid bodies; this last proceeding is not the general rule in this country. He implies that it is necessary to ligate and sever all tethering veins—the middle thyroids draining into the internal jugulars, and the inferior thyroids draining into the innominate —so that the lobes can be completely dislocated forward before their section and removal is begun. The infrahyoid muscles are cut transversely in all cases.

In conclusion, Dr. LAHEY remarked how great a change has come over thyroid surgery during the past four years, since the advent of the antithyroid agents. This has been the experience everywhere—in Edinburgh, for example, as speakers at the International Society of Surgery remarked (see p. 517), there has been a striking reduction in thyroidectomies—but all agree that the next four years may show as many changes and still further improvements.

Annotations

IRON POISONING

IRON tablets are not usually looked on as dangerous. Indeed the average woman seems able to consume six or ten of the common gr. 3 tablets of ferrous sulphate every day for weeks without toxic effects. The pharmacological textbooks take the same view; "general intoxication due to orally administered iron," say Goodman and Gilman, "is almost unknown." The report by Forbes[1] last March of two fatalities in young children who had taken ferrous sulphate tablets was a surprise, in spite of the fact that the doses were large. Forbes's first case was a boy of $3^{1}/_{4}$ years who swallowed 50 tablets of a well-known brand containing gr. 3 of ferrous sulphate together with very small amounts of copper and manganese sulphates; he died 53 hours later and his liver showed evidence of necrosis. The second case was a child aged 1 year who was known to have swallowed 30–35 of the same tablets and died in 30 hours; his liver was not necrotic and aspiration pneumonia following vomiting hastened the end. In May, Thomson[2] reported two more cases of intoxication in children following doses of the same tablets. The first case was fatal; a child of 10 months who had swallowed 39 tablets died in 21 hours and the stomach mucosa was acutely inflamed and necrotic; the liver was not affected. The second child, aged 2 years, obtained only 10 tablets and had vomiting and melæna but recovered. Because of the lack of any firm information Somers[3] estimated the toxicity of various iron preparations in rabbits, guineapigs, and mice. He soon found that the copper and manganese were not important and that it was the iron that caused the animals to die. Very large doses were needed, but with these the animals died quite quickly in coma or convulsions. The autopsies were disappointing in that no lesion that could account for the deaths was found in the stomach, liver, kidneys, or elsewhere. When these results are applied to man on a dose-for-weight basis it is clear that the average adult

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1. Forbes, G. *Brit. med. J.* 1947, i, 367.
2. Thomson, J. *Ibid*, p. 640.
3. Somers, G. F. *Ibid*, 1947, ii, 201.

Chemotherapy and Cancer

Systematic research has lately been so successful in various scientific fields that there are some grounds for the suggestion that cancer-research workers should give up following clues and embark on a systematic trial of all known organic compounds, in the hope of finding one which will destroy cancer cells and leave normal cells unharmed. Probably more trials of this kind have been begun than have been published or completed. For example, between 1936 and 1944 as many as 977 substances and mixtures of substances were tested at the National Cancer Institute, Washington, on 18,395 tumour-bearing mice. A sustained pursuit of this sort might be lucky, as Edison was in his search for a suitable metal for electric bulb filaments. But unless the job was tackled by hybrid ant-men those employed would soon be clamouring for relief from their ordeal. The strongest argument, however, for following clues is that these clues are still promising enough to lure us on.

What are these clues? The observation that the course of prostatic cancer was modified by orchidectomy led to the idea that a hormone antagonistic to androgen might have a similar action. The idea was confirmed by the administration of œstrogens, which in a few cases appear to have arrested the disease. Urethane, a substance which interferes with and arrests mitotic division in certain cells, was found to reduce the white-cell count in some forms of leukæmia to normal, and, if administration is continued, the count is kept low and the patient benefited at least as much as by X-ray treatment.[1] Urethane sometimes has a favourable effect on prostatic tumours which have failed to respond to other forms of treatment, but its action here is not anti-androgenic. Colchicine, another chemical which arrests mitosis, is too poisonous to the host to be useful in treating tumours. The nitrogen mustards disturb mitosis and have a palliative action in lymphadenoma,[2] a disease related to cancer in that there is a progressive proliferation of reticulo-endothelium. These chemicals have provided starting-points for the synthetic chemists, for their molecules might be so modified as to make them more toxic to tumour cells and less so to the host. The clue of antagonistic hormone action appears to have only a limited application, since, even if antagonists were found for every hormone, many forms of cancer would still go unprovided for. Nevertheless this clue is of great theoretical interest and might lead on to others—for example, the starvation of cells of their peculiar aids to multiplication. Poisoning of the peculiar food of cancer cells has already been achieved in the administration of radioactive iodine for malignant thyroid tumours. Further developments of this idea must await the biochemist's demonstration that other cells require peculiar nourishment and that this nourishment can be made lethal without destroying the host. A lengthy systematic search would have been required to discover this exquisite application of previous observation, knowledge, and theory.

All chemotherapeutic assaults on cancer cells must depend on finding or widening a gap between the lethal effects on them and on normal cells. Failure to demonstrate some such gap detracts from the value of observations, even in tissue-culture, of antibiotic action against malignant cells. Testing antibiotics can be regarded either as part of a systematic search or as a clue-following method. Their potency in high dilution against bacteria makes it imperative to try their effects in malignant disease, but when tissue cells are the object of trial control observations on normal ones is an essential part of any investigation.

Many think that prevention of cancer is likely to be attained sooner than cure. This mainly applies to inaccessible or metastatic growths; yet the statistical studies of E. L. and N. M. Kennaway[3] point to the possibility of preventing skin cancer by raising the standard of living of some sections of the population. The essentials of this rise in standard are probably an increasing use of soap and water. May not atmospheric pollution with specific carcinogenic chemicals derived from coal contribute to the incidence of cancer? The experimental prevention of carcinogenic action by competitive chemicals achieved in recent years by Crabtree[4] and by Lacassagne[5] provides another clue which may one day lead to an advance in prophylaxis. It is one of the attractions of the tumour viruses and of the virus theory of cancer that they provide some hope of prevention in the future. Experimental work on these lines is in its early stages but the tumour agents so far isolated have been found to have antigenic properties, producing neutralising antibodies in the blood, and with some examples of virus tumours animals are immune to reinoculation with the same virus. Out of these observations only preventive measures, not cures, can be hoped for, because once the tumour agent has become established inside the cells it is under the protection of those cells. To sum up: chemotherapeutic attempts are dogged by the problem of the gap in lethal action; serology by the problem of penetration of the malignant cell.

Surgery of Hyperthyroidism

Dr. Frank H. Lahey, director of the Lahey Clinic at Boston, told the large audience which came to the Royal College of Surgeons on Sept 23 to hear his Cecil Joll lecture that in 26,000 operations for hyperthyroidism performed on 23,000 patients the clinic's mortality was 0·75%. This figure is astonishing when one realises that quite 1000 of these patients were so toxic that it was necessary to do a partial thyroidectomy in several stages, before the days of thiouracil. During the past four years, when patients have been prepared with thiouracil, there has been only 1 death—from coronary thrombosis—in 1000 cases.

By bringing down the high metabolic rate to normal the thiourea drugs make the patient safe for operation and remove the need for multiple-stage procedures. Of the three thiouracil agents now in use Dr. Lahey finds that all are equally effective in abolishing symptoms but thiouracil has been abandoned because of its higher incidence of complications, while propyl thiouracil with its 1·25% of have been accustomed, provided these are moderate. In the main, the food habits of the old, he thinks, should not be seriously changed from those which the individual made during middle life, though quantities may be smaller: "the aged may live and maintain good nutrition on a relatively low caloric diet." Vitamin upplements are needed—particularly, he thinks, of B and C. Dr. Pyke and his colleagues found the intake of vitamin B adequate in the groups they studied, but noted that the intake of vitamin D was low. Since this vitamin has an important influence on calcium storage, adequate doses might delay that progressive decalcification of bone which leads to the easy fractures of old age.

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[1] Paterson, E., Haddow, A., ApThomas, I., Watkinson, J. M. *Lancet*, 1946, i, 677.

[2] ApThomas, M. I. R., Cullumbine, H. *Ibid*, 1947, i, 899. Leading article, *Ibid*, p. 914.

[3] Kennaway, E. L., Kennaway, N. M. *Acta Univ. int. contra Cancrum*, 1947, 2, 101.

[4] Crabtree, H. G. *Cancer Res.* 1941, 1, 39; *Ibid*, 1944, 4, 688; *Ibid*, 1945, 5, 346; *Ibid*, 1946, 6, 553.

[5] Lacassagne, A., Buu-Hoï, Ng. Ph., Rudali, A. *Brit. J. exp. Path.* 1945, 26, 5.

WORLD MEDICAL ASSOCIATION

At a conference held in London last year, it was greed to set up a World Medical Association,[1] and a ortnight ago Sir Hugh Lett presided over a meeting of the delegates of national medical associations from 48 ountries to decide on the aims and procedure of the new body. The meeting was stormy. Before the new ssociation was fairly in being, many delegates were nxious to modify some of the articles and by-laws drawn up by the organising committee. But finally it was decided that the W.M.A. should deal with "medical politics," that the unit of membership should be a national medical association and not a country, and that each association should have two votes. Eligibility for membership was defined as follows:

(1) Those medical associations which sent delegates or bservers to the International Medical Conference in London in September, 1946; and

(2) Any other national or territorial medical association which is fully representative of the medical profession in its ountry or territory or of the members of the medical profession of a recognised ethnic group in its country or territory.

It was later agreed that German delegates should not be admitted to the association until organised medicine in Germany condemns the past criminal acts of German doctors.

On Sept. 18, when the first meeting of the new association proper was held, Prof. E. Marquis, director of the school of medicine of Rennes, was elected president, Dr. T. C. Routley (Canada) chairman of the council, and Dr. Charles Hill (London) hon. acting secretary. The atmosphere did not remain peaceful for long, for the routine business of the presentation of credentials revealed irregularities in the qualifications of some delegates; and when Dr. O. Leuch (Switzerland), the treasurer, announced the offer by the American delegates of $50,000 a year for five years, the pace quickened. The money is needed, because the subscriptions of the member associations are inadequate for the work to be done, but many members were unwilling to accept the conditions attached to the gift. Dr. L. H. Bauer, one of the American delegates, explained that the gift came not from the American Medical Association but from industrialists who were friends of the A.M.A. and were anxious to promote the interests of the W.M.A. The money would be under the control of a committee in the U.S.A. comprising 5 doctors and 4 laymen. One of the conditions was that the headquarters of W.M.A. should be in North America, and this was agreed to irrespective of the gift. But a condition which laid down that the council should work out a scheme of associate membership, so that the industrialist donors could attend the association's meetings, was hotly debated. Dr. P. B. Mukerji, president of the Indian Medical Association, opposed acceptance; he preferred to see the W.M.A. self-supporting, even if this meant relying largely on voluntary effort. On a show of hands the gift was refused by 32 votes to 31, but at a recount next day, when some members refrained from voting, it was accepted. Thus the new association will largely be financed—as well as housed—by North America.

STAGGERED HOURS FOR WOMEN AND YOUNG PEOPLE

The shortage of coal and electricity and the unemployment resulting from the closing of factories during the severities of last winter form the background of an order [1] lately issued by the Minister of Labour. This relaxes some of the provisions of the Factories Act, 1937, which restrict the hours and conditions of work for women and for young people under 18. It has been made "to facilitate the spreading of the electricity load by means of staggered hours of work in factories" and it applies to factories using electricity generated outside for any purpose other than lighting or ventilation. In essence, while the total hours of work must not be increased, women and youths over 16 may do their turn of work over any period during the 24 hours; girls of 16–18 may work between 6 A.M. and 11 P.M.; whereas all young people under 16 may start work at 7 A.M. or finish at 6.30 P.M. All three groups may work on Saturday afternoon or on Sunday, provided other rest days are substituted for them. The order came into force on Sept. 22, but no employer may take advantage of it without first obtaining a "certificate of permission" from a district inspector of factories. Presumably such certificates, which will be a valuable safeguard, will not be given except for the express purpose of spreading the electricity load.

The order allows a wide variety of arrangements for staggering hours of work, and the district inspector of factories may allow double day-shift working by women and young persons of 16 or over; he may also sanction day- and night-shift working or a three-shift system for women aged 18 and over and youths of 16 and over. At first sight the relaxations, however expedient they may be, seem to be a retrograde step. In particular, as far as night work for women and young people is concerned, they reverse the carefully considered policy laid down in the Factories Act, 1937, and in the International Labour Conventions of 1920 and 1934. The International Labour Office in written evidence to the Committee on Double Day-Shift Working [2] stated that "everywhere night work was considered undesirable and efforts had been made for many years to eliminate it in all activities where it was not required for technical reasons." A possible danger underlying the order is that, if the electricity suppliers find that by staggering hours of work their task is made easier, they may make strong representations to have the system made permanent. Though the order is presumably designed to meet an emergency, it gives no indication about the time it is to remain in force, but perhaps the fact that it has been made under a defence regulation gives it a transient air. The reasons why women should not work at night are sociological rather than medical, but a good medical case could be made out against working adolescents and youngsters during abnormal and irregular hours. As regards the double day-shift system, the committee which recently considered the matter think that its wider use would make an important contribution to the economic well-being of the country. "But," they add, "the evidence has also convinced us that the system must necessarily involve some measure of segregation and dislocation of family life and other social and would have to swallow some hundreds of gr. 3 ferrous sulphate tablets before there was any danger. But for children the number for a lethal dose is in tens rather than hundreds. Since these tablets are usually dispensed in bottles of 50 or more, an enterprising explorer, mistaking them for sweets, may soon swallow a dangerous dose. These facts have, so far, been hidden in the medical journals, but now the daily press report that the Liverpool coroner has had to consider the death of yet another child, aged 18 months, who swallowed 15–16 tablets. Doctors should therefore warn mothers—and it is usually the mothers who are taking iron—that the tablets *must* be kept out of reach and are dangerous to children. These fatalities are easily preventable and there should be no more.

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[1] *Lancet*, 1946, ii, 501.

[1] S.R.O. 1947, no. 1870. The Factories (Hours of Employment in Factories Using Electricity) Order, dated Aug. 27, 1947, made by the Minister of Labour and National Service under Regulation 59 of the Defence (General) Regulations, 1939. H.M. Stationery Office. 2*d*.

[2] Report of Committee on Double Day-Shift Working. Cmd. 7147. H.M. Stationery Office. 1947. Pp. 50. 1*s*.

PENICILLIN OR SULPHONAMIDES FOR CEREBROSPINAL FEVER?

THE striking success of sulphonamides in the treatment of meningococcal infections is due first to the even diffusion and rapid bacteriostatic action of these drugs; secondly, to the virtual absence of sulphonamide resistance in meningococci, at least when the more active compounds are employed; and thirdly, to the ease of their application. Under this treatment, the case-fatality rate has fallen to such low levels, except in infants, elderly persons, and fulminating infections, that it will be difficult to prove the superiority of any other drug, except possibly in these three groups. One of the first reports on penicillin treatment [1] seemed promising, but it was related only to the favourable age-group of Service personnel, and even there an ominous feature was the reappearance of meningococci in the spinal fluid after its disappearance in 4 out of 65 cases. Subsequent reports [2 3] on small numbers of cases were less favourable to penicillin, as was also the larger controlled trial of Vengsarker and his colleagues,[4] who found the clinical and spinal-fluid response to be slower and the fatality-rate higher with penicillin than with sulphadiazine. At the time of the general release of penicillin supplies in this country in 1946 there was a tendency for penicillin to be employed intrathecally as a routine in meningococcal meningitis in addition to sulphonamides, but this practice was the subject of unfavourable comment in our correspondence columns.[5]

The Scientific Advisory Committee of the Department of Health for Scotland has now produced a second report on the treatment of meningococcal meningitis,[6] supplementary to that published in 1944. It compares the results of penicillin and sulphonamide treatments given alternately, as far as possible, to children under 6 years of age. The treatment was carried out in five large hospitals for infectious diseases. The dosage schedule for sulphathiazole (or other active sulphonamide) was similar to that recommended in War Memo. no. 10 of the Medical Research Council. The penicillin scheme of treatment consisted of 200,000 units systemically on the first day of treatment, and 5000 units intrathecally each day for four days for children under 1 year of age, and double these amounts for children aged 1–5 years. The number of cases treated was, unfortunately, too small for statistically significant results to be obtained. Nevertheless, the results exhibit a clear trend in favour of sulphonamide treatment. Although this result was converse to the expectation of the authors it was in line with the impression gained clinically as the trial progressed. The actual figures showed 11 unsuccessful results with penicillin out of 35 treatments, compared with 5 unsuccessful results with sulphonamides out of 31 treatments. When the age-distribution of the two groups is taken into account, however, the superiority of sulphonamides is even more apparent, for less than half of the penicillin cases were in the unfavourable age-group under 1 year, compared with two-thirds of the sulphonamide cases. An additional group of 15 cases, which all recovered, received treatment with both drugs, and, although no conclusion can be drawn from this, the committee has embarked on a further investigation of the effects of combined treatment. Certain minor findings of the report are that sex-distribution may be neglected in comparison of results, that the age-groups under 1 year should be separated from that of 1–5 years, that the occurrence of complications was a most important factor in determining the outcome, and that the duration of illness before admission—that is, delay in starting hospital treatment—appeared to be a factor in worsening prognosis. The complications which are enumerated appear to indicate that all the cases under treatment were the "ordinary form" of the disease. It is to be hoped that in future inquiries the committee will include fulminating septicæmia and other highly fatal forms of the disease, for it is in these that the combination of sulphonamides and penicillin is likely to be most successful.

DIET IN OLD AGE

THE studies of diets eaten by old people in London, published in our columns last week,[1] bear out some findings at the University of Illinois lately reviewed by Prof. Jacob Meyer.[2] He and his colleagues, studying carbohydrate digestion in the aged, found that though their salivary ptyalin is diminished 80% of the carbohydrate they eat is converted into dextrin in the stomach. Its further digestion is probably completed by pancreatic amylase, which is not diminished. Lacking teeth, old people often prefer a soft mushy diet composed mainly of carbohydrate; and he thinks it should not be restricted, even if there is some fear of diabetes: "It is wiser to permit them to have carbohydrates and spill some sugar, than subject them to the distress of weighed and measured diets plus insulin." Gastric secretion, he finds, is reduced in volume and in acid and pepsin content, the only exception being a greater psychic secretion of gastric juice. This increased flow, however, does not aid digestion but merely dilutes the secretion poured out in subsequent phases, so protein digestion is probably reduced in the stomach. Pancreatic trypsin, on the other hand, is as concentrated as in young people; and there is evidence that old people use 80% of their protein intake. Though further studies are needed, Professor Meyer considers that the protein per kg. taken by the old should be about the same as for a normal adult; certainly, he thinks, no drastic change of habit is called for, unless the protein diet has been deficient. "The fear that protein intake may increase renal damage or cause increased tension should not be taken too seriously." Since lipase in the pancreatic secretion is much diminished the tendency of the old to eat less fat than formerly has a sound physiological basis.

Because of their greater intake of carbohydrate, Meyer considers the aged need more vitamin B than the average adult; and he also mentions studies by H. A. Rafsky and B. Newman who showed that large doses of vitamin C were needed before saturation level with this vitamin was reached in a group of old people. The relationship of vitamin deficiency to the ageing process still needs study: he mentions that mental symptoms in the aged have been reported to improve when ample doses of nicotinic acid were given. He sees no point in forbidding alcohol, tobacco, or coffee in amounts to which old people

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1. Rosenburg, D. H., Arling, P. A. *J. Amer. med. Ass.* 1944, **125**, 1011.
2. Meads, M., et al. *New Engl. J. Med.* 1944, **231**, 509.
3. White, W. L., et al. *Amer. J. med. Sci.* 1945, **210**, 1.
4. Vengsarker, S. G., et al. *Indian med. Gaz.* 1946, **81**, 113.
5. *Lancet*, 1946, ii, 360.
6. Cerebro-Spinal Fever. Report to Department of Health for Scotland. Edinburgh: H.M. Stationery Office. 1947. Pp. 13. 4*d*.

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1. Pyke, M., Harrison, R., Holmes, S., Chamberlain, K. *Lancet*, Sept. 27, p. 461.
2. *Geriatrics*, 1947, **2**, 149.

INTERNATIONAL SOCIETY OF SURGERY

12th Congress of the International Society of y was continued in Edinburgh from Sept. 23 to 26. eeting was attended by 106 members.

REATMENT OF THYROTOXICOSIS

D. M. **Dunlop** (Edinburgh) suggested that the ery and study of the goitrogenic substances and recently of radioactive iodine may be ushering in nd medical era. Patients treated with thiouracil to feel better after a week, but the maximum is not obtained for a month or more. The blood terol tends to rise, but since there is very wide dual variation, its level is not a good index of ss. The basal metabolic rate falls in 10–30 days; ecause its estimation is often inaccurate, this also l not be taken as a guide. Professor Dunlop is l chiefly by the body-weight which begins to se after about a week. The last features to reflect nprovement are the increased pulse-rate and pulse-re. Indeed, some patients, though fully controlled, nue to have a slight persistent tachycardia.

gives 0·6 g. of thiouracil daily for 3 or 4 weeks, hereafter a maintenance dose of 0·2–0·05 g. daily. yrotoxic auricular fibrillation the effect of thiouracil ilar to that of thyroidectomy in that some cases spontaneously to normal rhythm, while some t only after quinidine, and a few persist unchanged te thiouracil and quinidine. Exophthalmos is not benefited by thiouracil; and in this respect idectomy is superior. Eventually the goitre often ses slightly; but with overdosage the gland ges. Hence thiouracil should be used with care or t all with pressure symptoms or retrosternal exten- Pregnancy is no bar to its use; and in Professor op's series the women have been delivered of normal ts free from goitre. Of the toxic manifestations, nulocytosis is the most important, though in his ience it is infrequent. It may occur either during nitial high-dose period or during the subsequent tenance period.

ofessor Dunlop emphasised the need for protracted ment. When the drug is stopped after a few ths the symptoms almost always return: they can, ever, be controlled by restarting treatment. In a cases, cessation of the thiouracil has not been wed by any recurrence; so far as can be told, e patients have been cured.

hiouracil is a most valuable drug in preoperative tment. Its advantage over iodine is that there is critical day of maximum effect; if the surgeon or patient has a cold or other incidental infection, the ration can be postponed without detriment. Sur-ns dislike the high vascularity of the thiouracil gland; difficulty is surmounted by stopping thiouracil 12 days before operation and giving iodine during interval until operation.

f 76 patients treated with thiouracil, 66 have shown lts comparable to those in successful thyroidectomy. 10 there were toxic effects or drug resistance which ed him to recommend thyroidectomy. There has n no death. For young people he considers treatment thiouracil to be much preferable to thyroidectomy. econdary or nodular toxic goitre he has had many cesses, but he still wonders whether thyroidectomy ght not have a better long-range effect on the diovascular disorder.

Mr. K. **Paterson Brown** (Edinburgh) said that the troduction of thiouracil has resulted in a precipitous ll in the number of thyroidectomies carried out in nburgh; but in the last two years there has been a ght rise again. The present practice is to refer all cases to physicians; and patients return for surgical treatment only on the physician's advice.

The use of *thiouracil in preoperative preparation* has gone through three phases. In the first, thiouracil alone was used; this was not satisfactory, for the gland was found to be very friable and very vascular. In the second phase thiouracil was used up to and even after operation, and iodine was given for 10 days before operation; this too was unsatisfactory, for the full effect of iodine in reducing vascularity did not seem to be achieved and there was an undue risk of wound sepsis. Now thiouracil is given until 10–12 days before operation, and iodine alone is then given; he has found that throughout the operation the pulse-rate is lower with this method than with others.

The indications for thyroidectomy in primary toxic goitre are failure to control symptoms with thiouracil, failure to control cardiac manifestations with thiouracil, increasing size of the gland and pressure symptoms, desire on the part of the patient for operative treatment, and toxic reactions with thiouracil. In secondary toxic goitre surgery is still the method of choice, for pressure symptoms are common. There seems to be a danger of subsequent cardiac breakdown even with thiouracil; and there is at least a theoretical possibility of subsequent malignant change.

Mr. Paterson Brown underlined the value of pulse charts during operation. The curve of the chart is more important than the absolute rate. The rate increases with intubation, at the incision, and during the mobilisation of the first lobe—even to 150–170 per min.—but if things are going well no further rise occurs as the second lobe is dealt with; and as the operation comes to an end the rate is already falling.

Complications are uncommon. The most important is postoperative hæmorrhage, which is always due to oozing from the cut surfaces of the gland. Symptoms begin 5–6 hours after operation; and early recognition is vital. There is rapidly increasing dyspnœa, which may be fatal. The wound must be quickly reopened, the clot removed, and a loose gauze pack inserted. The administration of penicillin should be begun. The wound can be resutured after a day or two.

SURGICAL TREATMENT OF BLOOD DISORDERS

Dr. H. N. **Robson** (Edinburgh), discussing idiopathic thrombocytopenic purpura, said that splenectomy should be carried out in chronic cases where bleeding interferes with social or economic efficiency, or where it endangers life. In acute cases it should be undertaken where conservative treatment has failed to control bleeding, and where there is evidence of intracranial hæmorrhage. Splenectomy is contra-indicated in children until medical treatment has been given a thorough trial: it is also contra-indicated where the condition is not idiopathic, and in the presence of spontaneous remission.

Dr. J. R. **Clark** (Edinburgh), dealing with hæmolytic anæmia, said that the indications for operation are the occurrence of symptoms in childhood, the formation of biliary stones, the recurrence of crises, and failure to respond to blood-transfusion.

Dr. R. H. **Girdwood** (Edinburgh) spoke of the surgical treatment of Banti's syndrome. Whipple in 1945 showed that splenic anæmia is a syndrome associated with portal hypertension. The clinical features alone may not indicate the site of the block: and each case should be assessed on the results of clinical and hæmatological examination, barium swallow, liver-function tests, and liver biopsy. Operation should be carried out whenever educational disadvantages for the workers." These disadvantages must be carefully weighed against the technical and economic results of legislation which allows night work for women and young people in addition to the double day-shift.

GUIDE TO CONVALESCENT HOMES

King Edward's Hospital Fund for London has again done a public service, this time by producing a *Directory of Convalescent Homes*.[1] So far, 130 homes have been visited and listed, and it is hoped in time to make the directory complete: visits are being made to homes as their existence comes to the Fund's notice. This is the first attempt ever made to compile a list of convalescent homes, and it represents much painstaking work. The directory is a loose-leaf volume with a serviceable binding; new information will be added as it is gained, so purchasers will receive additional pages from time to time. Each home has a page to itself, on which are set out, under bold headings and in well-spaced type, details of the number of beds, the types of patient accepted, treatment undertaken, including dressings, any special diets offered, the usual length of stay, visiting and receiving days, schooling for children, religion, charges, staffing, hours of rising and going to bed, the name of the nearest station, and the types of recreation available. Some general comments at the end leave space for notes. This information will be exceedingly valuable to almoners, hospitals, and doctors wishing to send patients for a period of convalescence.

The book has been cleverly indexed under three headings:

> *Index I* is an alphabetical list of homes, giving the reference number of each.
>
> *Index II* gives the same information, but the homes are grouped according to the class of patient admitted—men, women, or children.
>
> *Index III* is an alphabetical list of all details contained in the information sheets: it carries references to the various qualifications applying to patients—e.g., type of illness, religion, profession, place of residence, and so on. It is thus possible to look up the special requirements of any patient.

Sir Henry Tidy, in the preface, hopes that the directory will not only ease the work of those who send patients to convalescent homes but expedite the admission and recovery of patients. This useful volume might with advantage be supplemented by a central bureau, on the lines of the Fund's Emergency Bed Service, which would keep track of vacancies in convalescent homes, and thus help greatly in the placing of patients.

The Fund plans, so far as other commitments allow, to help convalescent homes in their post-war difficulties, and to that end has appointed a committee on which there are representatives of users and owners of homes, the Institute of Almoners, and the British Pædiatric and Invalid Children's Aid Associations.

RESPIRATORY DIFFICULTIES IN THE NEWBORN

NEARLY an eighth of the deaths in the neonatal period are ascribed in this country to "asphyxia during or after birth" or to "atelectasis." Any information which will help to reduce this figure is therefore welcome. Gruenwald,[2] of Brooklyn, has studied surface tension as a factor in the resistance of the lungs of newborn babies to aeration, and he suggests a way in which this surface tension might be reduced. He starts from an observation which indicated that whereas in the lungs of stillborn infants all the alveoli are usually uniformly expanded with fluid, in many liveborn infants who have breathed for a few hours or days areas of complete atelectasis alternate with aerated areas for days after birth. The importance of aspiration of amniotic fluid has been stressed in recent years by many writers. Gruenwald takes the view that the normal fœtal lung is atelectatic and that the expansion of the alveoli with fluid is the result of episodes of anoxia. Here is the first practical point—the supreme importance of preventing anoxia at or near term, not only for its disastrous action on the nervous system but also because of its effects on the aeration of the lungs.

In the present discussions on the relief of pain in childbirth this danger of anoxia must not be forgotten. But Gruenwald went on to determine why it was that fluid could so easily expand the lung alveoli while the normal entrance of air seemed often to be relatively inefficient. He devised a simple apparatus to expand at necropsy the non-aerated lungs of newborn or stillborn infants with fluid and with air. The fluid was 0·85% saline with a small amount of indian ink added so that expanded areas could easily be seen by their dark colour. The fluid was introduced through rubber tubing, and a glass cannula was inserted through the main bronchus into one of its branches. In 15 cases tested with up to four recordings for fluid and the same number for air, using very small portions of the lung for each measurement, a much greater pressure was always required to introduce air than fluid. The average relation of pressure of fluid and air was 1 to 2; the smallest difference recorded was 1 to 1·3 and the largest 1 to 4·3. The explanation offered for this difference is that surface tension counteracts the establishment of the very large area of contact between a fluid surface —i.e., the moist alveolar wall—and air, whereas surface tension will not resist the entrance of fluid. The next step was to modify the experiment by using amyl acetate to lower the surface tension; this was either mixed with the air used to test the pressure required to introduce it, or was mixed with saline which was introduced into the lungs, aspirated, and followed by pure air. The pressures required to introduce air showed a definite reduction when amyl acetate was used, amounting to nearly half the difference between the values for pure saline and air. When amyl acetate was used the aeration was also more diffuse than usual.

The practical application of Gruenwald's observations is that substances to reduce surface tension might be usefully introduced into the respirator or other apparatus used to administer air or oxygen to newborn babies.

RADIOLYMPIA

THE radio industry, placing itself on show at Olympia for the first time since 1939, reveals how much it has gained from the impulse of war. Ordinary receiving-sets seem to be little changed from their pre-war counterparts: plastics are now often favoured; and improvements in valves and loudspeakers make for better hearing. One firm offer a special attachment for the deaf. The greatest advance, however, is in the cost, which is between 75% and 100% above that before the war, excluding the $33^{1}/_{3}$% purchase-tax payable on the trade price. There is much in the exhibition to catch the eye and hold the ear: such as a demonstration of aids to the safe landing of aeroplanes; a radio-equipped police car at work; and radar displays. In the electronic section there is a model railway on which three trains, unaided by the hand of man, survive the perils of intersecting lines with inhuman assurance. Only one stand is devoted to hearing-aids—with miniature valve amplification and operating on batteries or the mains. This firm also make attachments for telephone listening, and group-hearing systems for public buildings.

The wireless manufacturer can supply customers in this country with no great delay; and owners of the many sets now uttering only the cracked tones of senility will no doubt flock to Olympia to jump the price and take their choice.

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[1] Obtainable from the Convalescent Homes Committee of the Fund, at 10, Old Jewry, London, E.C.2, price 5s.

[2] Gruenwald, P. *Amer. J. Obstet. Gynec.* 1947, 53, 996.

TREATMENT OF CARCINOMA OF THE RECTOSIGMOID REGION

Mr. T. M. **Millar** (Edinburgh) examined the anatomical and pathological justification for the radical abdominoperineal excision of Miles. The chief direction of lymphatic spread from the lower sigmoid colon and upper rectum is along the line of the superior hæmorrhoidal vessels, and retrograde spread down the rectum occurs only after the nodes above the tumour have become blocked by malignant tissue. It is therefore best to undertake anterior resection, by which a considerable part of the pelvic colon above the tumour with the associated lymphatic drainage area are removed; but only a small portion is removed distal to the tumour, o that after an end-to-end anastomosis the patient is eft with part of the rectum and an intact anal sphincter. Wherever it is possible Mr. Millar carries out this operation without preliminary colostomy; but a decision on this point as also on the choice between anterior resection and abdominoperineal excision must be made after direct examination of the tumour and its metastatic pread.

PROTEIN METABOLISM AFTER GASTRIC OPERATION

Mr. A. W. **Wilkinson** (Edinburgh) presented observations made in association with Miss B. H. **Billing**. The nitrogen balance has been studied in 17 patients treated for peptic ulcer by gastrectomy, in 6 who underwent various operations on bones, and in 4 normal controls. The severity of the katabolic phase of negative nitrogen balance after operation cannot be correlated with the extent of operative trauma or the amount of weight lost. It cannot be due to starvation only, for it is not prevented by the administration of protein hydrolysates and glucose during the immediate postoperative period. However, the duration of negative nitrogen balance can be shortened by increasing the rate at which the daily intake of both nitrogen and calories are restored o normal. Differences in the degree and duration of the katabolic phase on the one hand after gastrectomy and on the other after operations on bones suggest that trauma to different tissues evokes a different response in so far as protein and amino-acid requirements are concerned.

SURGERY IN PORTAL HYPERTENSION

Professor **Learmonth** gave the normal intravenous pressures as: in the systemic veins ±140 mm. water; in the portal vein ±65 mm.; and in the hepatic vein 0±10 mm. In portal hypertension, however, the portal venous pressure is increased up to 500 mm. water; the highest portal pressure observed by him was 350 mm. Portal hypertension may be due to intrahepatic obstruction (chiefly cirrhosis of the liver), which is associated with medial hypertrophy of the portal vein and its tributaries, quite comparable to the medial arterial hypertrophy of arterial hypertension, or with intimal thickening and even calcification. Extrahepatic obstruction is due to thrombosis of the portal vein or one of its tributaries, or to cavernomatous transformation of the portal vein. Occasionally, an anastomotic channel develops between the splenic vein and the left renal vein; this he has observed in 1 patient, and it has been described in 5 others.

The choice of operation is based on the site of the obstruction; this is estimated by preliminary investigations into the existence of blood dyscrasia, œsophageal varices, and impairment of hepatic function and by the direct manometric measurement of the pressure in the portal, splenic, and superior mesenteric veins after laparotomy. Portal and splenic venograms are also used. If the block is in the splenic vein splenectomy is curative. If the site of blockage is in the portal vein lienorenal anastomosis is carried out by splenectomy, left nephrectomy, and end-to-end anastomosis of the splenic and renal veins. He has had no opportunity of carrying out a portocaval anastomosis. For intestinal infarction Professor Learmonth considers that anticoagulant therapy is preferable to enterectomy, while for ascites a Talma-Morrison operation or a portocaval anastomosis is indicated.

ADVANCES IN VASCULAR SURGERY

Speaking to the International Society in London on Sept. 16, Prof. **René Leriche** (Paris) declared that most of the notable advances in the technique of surgery of the blood-vessels are derived from Alexis Carrel's work forty years ago on suture, anastomosis, and grafting. The study of vasoconstrictive reactions has led to such procedures as intra-arterial injection of 'Novocain' or of 'Eupaverin,' arterial resection, circumarterial sympathectomy, ganglionectomy, adrenalectomy, and blocking of the sympathetic nerves to eliminate vasospasm. The study of thrombosis, also derived from Carrel, has led to the use of heparin to prevent intravascular clotting. Finally, arteriography has revealed to the surgeon the lesion with which he has to deal.

The introduction of these procedures has greatly facilitated surgery of the blood-vessels. Thus, in resection of a main artery damaged by trauma, sympathectomy or sympathetic block prevents vasoconstriction of the collateral vessels and allows the blood to return to the distal part of the resected artery, so that arterial continuity can be restored by lateral or circular suture or grafting, in which case penicillin and heparin are indicated. Sympathectomy, or sympathetic block, is also useful in dealing with aneurysms and arteriovenous fistulæ. With aneurysms, the collateral circulation can be promoted by compression of the aorta or of the femoral artery. In arteriovenous fistulæ, sympathectomy or sympathetic block is usually sufficient to prevent gangrene, but embolectomy should always be attempted with the use of heparin, which may even allow recanalisation. In late cases arteriectomy should be performed.

In obliterative thrombo-arteritis cures have been effected, lasting up to 19 years, by bilateral ganglionectomy and unilateral adrenalectomy. If large vessels are implicated, resection and ganglionectomy may produce good and lasting results. Ganglionectomy and arterial resection, either separately or together, have also produced good results in senile arteritis, avoiding the need for amputation.

For congenital malformations, such as pulmonary stenosis, patent ductus arteriosus, and coarctation of the aorta, Gross, Blalock, Alexander, and Crafoord have opened a new chapter in arterial surgery, for which Professor Leriche said he could but express his admiration.

In surgery of the veins, heparinisation and lumbar sympathetic block have revolutionised the treatment of phlebitis of the leg. Where there is early massive thrombosis, the thrombus should be removed by operation and the vein either sutured or resected; but this operation is successful only when the thrombus is new—after a few days it is often impossible.

In pulmonary embolism intravenous injection and infiltration of the stellate ganglia with novocain, together with heparinisation, have minimised the need for Trendelenburg's operation.

Œdema, pain, and skin changes due to phlebitis are best treated by ganglionectomy, with or without resection of the segment of vein concerned. Here phlebography is a help.

After trauma the large veins can often be easily sutured, especially the vena cava. A wound of the portal vein must always be sutured, provided a portocaval anastomosis has previously been effected; otherwise it will be fatal.

there is danger of death from hæmorrhage, provided this danger is greater than that of death from liver failure. The choice of operation must depend upon the exact site of obstruction as observed when the abdomen is opened.

Prof. J. R. LEARMONTH (Edinburgh) has carried out splenectomy on 24 cases of thrombocytopenic purpura. Of these, 3 died, 3 retain their symptoms, and 18 are alive and well. The platelet count and capillary fragility rise and the bleeding-time falls immediately after splenectomy; but the return of the platelet count to normal may be slow. He prefers to operate during remission; during a crisis he operates only if conservative measures have failed. In primary hæmolytic anæmia the surgeon is expected to relieve the anæmia and to deal with the biliary complications. The hæmoglobin begins to rise immediately after splenectomy; and the reticulocyte count falls to normal after 5–10 days. The surgeon must satisfy himself that no biliary calculi are left. He carries out choledochography; and if stones are present in the duct he uses solution G for lavage. Acute biliary complications should be treated alone and splenectomy carried out later.

Dr. GIRDWOOD discussed the follow up after operation on patients with these various blood disorders. Of 10 cases of idiopathic thrombocytopenic purpura, 2 had epistaxis after operation; the remainder are clinically well although several still show hæmatological abnormalities.

Of 7 cases of hæmolytic anæmia treated by splenectomy, 6 appear to be well as regards the blood disorder, though 1 is still anæmic. The evidence is in favour of splenectomy for congenital and acquired hæmolytic anæmia, but the final outcome in any individual case is uncertain; the prognosis is less good in the acquired type and differentiation of this from the congenital type is sometimes difficult. In the Edinburgh series none has had a hæmolytic crisis after operation.

The follow up of 9 cases of Banti's syndrome is unsatisfactory in that insufficient time has elapsed to assess the results of treatment in the 7 cases that have survived operation. Of these, 1 died later from hæmatemesis. No other patient had hæmatemesis after operation.

PEPTIC ULCERATION

Prof. C. F. W. ILLINGWORTH (Glasgow) expressed the view that the excellence of the results obtained by subtotal gastrectomy should not obscure the fact that this treatment is not uniformly effective. The mortality is still too high, and careful follow-up studies show poor results in a certain proportion of cases. Moreover, the great frequency of peptic ulceration (it is estimated that there are nearly a million cases in Great Britain) underlines the need for a wider approach to the problem. Essentially, three main purposes underlie this treatment: to control the acidity of the gastric juice, to protect the mucous membrane against its activity, and to put the ulcerated part at rest.

Vagotomy might be expected to reduce the appetite secretion and diminish gastric motility; but Professor Illingworth's experience with the subdiaphragmatic operation has been disappointing. The hypermotility of the stomach characteristic of ulcer cases usually returns within a few years; and then or later symptoms recur. It remains to be seen whether the supradiaphragmatic method will prove more satisfactory; but this technique is open to objection for other reasons. The validity of the theory that the danger period is the interdigestive phase in the night may be doubted. There is scope for investigation of drugs paralysing the parasympathetic endings, and of anti-histamine substances.

Mr. W. QUARRY WOOD (Edinburgh) referred to Somervell's method, which is designed to reduce the blood-supply by ligature of four-fifths or five-sixths of the gastric blood-vessels along with gastro-enterostomy. In a personal series of 42 cases treated in this way he has found the late results to be unsatisfactory. The reduction of acidity is usually only temporary, and in 4 stomal ulceration developed.

Mr. A. G. R. LOWDON (Edinburgh) described the clinical features of gastrojejunocolic fistula. Though rapid wasting is usual the symptoms are sometimes intermittent. The severe diarrhœa so characteristic of the disease is due fundamentally to jejunitis caused by the contents of the colon entering the small intestine and not to gastric contents entering the colon. Therefore the fistulæ are more easily demonstrated by barium enema than by barium meal, and symptoms can be rapidly and completely relieved by proximal colostomy. A two-stage operation is nearly always advisable. At the first stage a defunctioning colostomy is made in the proximal part of the transverse colon; this is simple and effective. Experience has shown that this measure controls the symptoms immediately and allows rehabilitation of the patient for partial gastrectomy as the second stage. Transverse colostomy is to be preferred to the exteriorisation of the ascending colon suggested by Pfeiffer.

d-TUBOCURARINE CHLORIDE AS AN ADJUVANT IN ANÆSTHESIA

Dr. JOHN GILLIES (Edinburgh) described two series of operations, in one of which curare was employed as part of the anæsthetic technique, and in the other conventional inhalational anæsthesia. Curare, used carefully in combination with general anæsthesia just deep enough to damp down the effects of sensory stimuli without interfering with the vasomotor compensating mechanism, provides excellent operating conditions for the surgeon and serious postoperative morbidity, both respiratory and circulatory, is reduced. Compared with full general anæsthesia and spinal analgesia, there is less disturbance of normal physiological functions. The smaller risk of circulatory depression and the apparent absence of shock noted by most observers, must be due to the small amount of general narcotic employed; curare may have some central effect, but its nature has not yet been defined. In the prevention of shock, however, curare *is not a substitute for adequate replacement of fluid* loss during operation. The only method likely to challenge this new technique is that of well-planned and *efficient regional analgesia combined* with very light controlled basal narcosis by means of 'Pentothal' and oxygen or cyclopropane and oxygen.

CIRCULATION IN PERITONITIS

Prof. W. C. WILSON (Aberdeen) described 30 cases of severe peritonitis, 12 of them fatal, which have been studied by serial estimations of plasma and blood volume, and of total circulating protein, albumin, and hæmoglobin. The plasma volume is reduced by as much as 30%; the slight degree of hæmoconcentration observed is insufficient to account for this, and it seems that the change is due mainly to exudation of plasma into the peritoneal cavity associated with intracellular destruction of red cells. In the terminal stages stagnation of blood in various parts of the vascular bed contributes to the reduction in circulating volume. The reduction in total circulating protein roughly parallels that of the plasma volume; but there is a disproportionate and persistent fall in the total circulating albumin which may be due to failure of synthesis by the liver. However, the changes in plasma volume, protein, and albumin are not strikingly greater in fatal than in non-fatal cases; and evidently these changes are not the primary cause of death. The indefinite and little-understood concept of bacterial toxæmia has still to be invoked.

four years, whereas the gastrectomies have been wed up for ten years; the results are therefore d in favour of the vagotomies. The mortality for gastrectomy against 0 for vagotomy) and the ence of recurrent ulcer (3% against 1%) are the most rtant points in which gastrectomy is a worse opera- than vagotomy. Apart from this the functional ts have been almost identical. The unfavourable ts of gastrectomy include gastritis, which may e bleeding; the "dumping" syndrome, which may lisabling but tends to improve with time; some ee of weight loss; and what Dr. Allen calls "G.I. plaints." The commonest undesirable effects of tomy are a feeling of fullness and diarrhœa; in r cases there is persistent ulcer pain and in some r severe bleeding. In the cases which develop late ruction gastrojejunostomy has to be done and this cure them, whereas it has no effect on the sensation ullness. On the basis of these results Dr. Allen ludes that vagotomy will have a permanent and ite place in the treatment of duodenal ulcer.

r. Allen summarised the present position of the tment of duodenal ulcer in seven points: (1) Either rectomy or vagotomy will bring immediate relief lmost all cases. (2) For gastrojejunal ulcer vagotomy he treatment of choice. (3) In younger patients otomy may be tried before gastrectomy is con- red. (4) Vagotomy has no place in the treatment of ric ulcer because of the impossibility of being sure a gastric ulcer is not malignant until it has been oved. (5) The transthoracic approach is essential nsure an adequate neurectomy. (6) Many years of w-up studies are necessary before the operation of otomy can be properly evaluated. (7) For cicatricial truction gastrectomy is the best treatment.

Recurring Dislocation of the Shoulder

rof. W. E. **Gallie**, of Toronto, said that in his erience early superficial operations for this condition, h as the Clairmont procedure, never revealed the ected capsular defect. But passive dislocation during ration shows the humeral head simply slipping ward over the anterior edge of the glenoid into a ovial-lined cavity in front of the scapular neck, a ity formed by detached labrum and capsule exactly described by Bankart.

The first dislocation, occurring as it nearly always s in an active young man of 19–20, is usually indis- guishable from an ordinary traumatic subcoracoid placement; but in 17% the causative exertion is rial. Bilateral dislocation is quite common, and is ual in the 6–7% of cases occurring in epileptics, in om initial displacement most often happens in bed. many patients dislocation is only partial at first, the ad riding up on the glenoid rim and then sliding back, d this is repeated until displacement becomes com- ete; but of course in many instances of true luxation e head only moves forward through a distance equal half its breadth. Patients may complain that moderate duction and external rotation movements give them feeling of instability, because the humeral head teeters the glenoid rim before falling back, and that they ways go in fear of sudden dislocation.

In the typical case, an athletic young man dislocates s shoulder in a ski-ing or football accident; the lesion iffers in no way from an ordinary dislocation, and duction is effected as usual. Several months later ackward leverage of the elbow with the shoulder partly bducted produces a recurrence, and this is followed by ore and more frequent repetitions evoked by less and ss trauma. Inspection of the living pathology shows the rticular cartilage of the glenoid flowing smoothly over he anterior lip on to the scapular neck without obstruction, owing to the separation and detachment of the capsule and labrum, which have not healed down after reduction. It must be assumed that such separation occurs in most cases of ordinary anterior dislocation of the shoulder, and that healing takes place in all save those which become recurrent. It is difficult to adduce any congenital anomaly predisposing to such a failure to heal, though the humeral head is occasionally over-large or the glenoid unduly flat. Even in the double dislocations of epileptics, strong muscular contraction seems to be the prime cause. Prof. J. C. B. Grant's dissections showed that the anterior part of the labrum may be considered part of the inferior glenohumeral ligament; but the firmness of attachment of these structures varies, and it may be that recurrences only take place when ligament and labrum are so firmly fused that they are both torn off the bone together.

So far as operative measures are concerned, Professor Gallie still finds that his original method of 1927, with slight modifications, gives very satisfactory results. It is necessary to block the front of the joint, either by reinforcing the anterior ligaments or otherwise, and it is the remoteness of this region of the scapular neck that is the difficulty. He adopts the usual anterior deltopectoral exposure; the short head of biceps and coracobrachialis are retracted inwards, and subscapularis is held upwards without dividing it. A hole is drilled through the neck of the scapula just inside the rim and half an inch above the inferior border of the neck, and a fascial strip can be drawn through by cutting down on the threaded tip of the drill when it is pushed through into the infraspinous fossa behind. Fascial ligaments are constructed binding the scapular neck to the bicipital groove of the humeral head and to the coracoid process, and subsequent operations and sections have made it abundantly clear that these ligaments function perfectly for the rest of the patient's life. Movements are allowed 4 weeks after operation, and are usually complete in another month. In 175 cases there have been no deaths and only 7 recurrences, 5 being due to placing the new ligaments too low, before it was realised that displacement is always directly anterior; these were cured by placing new fascial bands at a higher level at a second operation. In 2 cases a severe injury caused the recurrence but only one of these went on to frequent repetition calling for another operation.

It was clear that the operation is simple, safe, and reliable, and Professor Gallie concluded by showing a film to illustrate the essential steps in his procedure.

Medicine and the Law

The Brighton Sanatorium Inquiry

After four days' hearing by Dr. N. R. Beattie, a senior medical officer of the Ministry of Health, the public inquiry into conditions at the Brighton sanatorium has ended and the verdict of the Minister must be awaited.

Last November a petition from male tuberculosis patients found its way to a local ratepayers' association, whence copies were circulated to the mayor, the town clerk, and all the members of the borough council. Female patients later signed a petition; some of them were subsequently discharged, and one (Mrs. Guile) died after discharge. The clergyman who conducted her funeral felt so strongly about her case that he used the occasion (thereby incurring the censure of his bishop) to make statements from which one might infer that the borough council and its medical officers were to blame for her death. Apart from such accusations, the allegations mainly concerned the food and the cooking. Dr. S. J. Firth, medical director of the municipal hospital services, and Miss Stringer, chairman of the health committee, were in the witness-box for some hours. The proceedings, recorded in the *Brighton and Hove Gazette* and other

TREATMENT OF FRACTURES

At the third scientific session of the congress, on Sept. 17th, Prof. ROBERT DANIS (Brussels) discussed his experience with some 1300 fractures over the past eighteen years. He was opposed to the views of those surgeons who regard operation as indicated only when closed methods have failed, and he was particularly critical of simple open reduction which relies on complementary external methods of fixation. In his view, operative fixation is destined to become the method of choice for most cases. If, under guaranteed asepsis, the fragments could be fixed and apposed by a pressure regulated at will, then plaster fixation could be dispensed with and rapid consolidation would be inevitable. At the same time articular damage, muscular atrophy, and œdema would be minimised. Such a method of fixation can be obtained by the use of his "coaptors"—metal plates which after being fixed to the bones can be shortened to press the fragments firmly together, thus providing the longitudinal compression which is the essential stimulus to sound ossification of callus. In many cases failure of osteosynthesis is due to an obvious breach of asepsis, the use of a poor-quality metal plate or its imperfect fixation; but there are many other instances without obvious cause for failure which must be due to inadequacy of the pressure exerted in the line of the bone axis across the fragments. The vital importance of axial pressure has been recognised clinically only in the last few years, though its effects have been obvious in tissue-culture and pathological findings for much longer. The coaptors, which can be approximated just as far as the surgeon wishes, supply this compression factor under direct control, and Professor Danis illustrated their use in fractures of the shafts of the forearm bones, of the humerus and femur, and in certain transverse fractures of the tibia. The only other factors necessary to success are a strict no-touch technique, good stainless steel plates kept away from the deep surface of the skin, and a rock-like fixation at the end of operation.

Spiral fractures of the tibia are fixed very simply with a steel wire, and protected thereafter only with a short celluloid splint which does not include the ankle or knee.

Professor Danis favours the use of Orell's *os purum* in operating on cases of non-union, as it is not only well tolerated but very osteogenetic, even in the presence of some infection. He introduces it around the fracture site in the form of little "bricks," and he does not interfere with the pseudarthrosis at all unless deformity or distortion make this necessary. He concluded by illustrating briefly the management of two particularly troublesome fractures. For old fractures of the os calcis with gross flattening of the long arch, he restores the hollowing of the sole by detaching the tuberosity of the bone and fixing it to the body with a nail at a lower level. Old depressed fractures of the tibial plateau can be improved by cutting a wedge from beneath the depressed side and turning this wedge into the long axis of the bone so as to raise the flattened articular surface.

Special Articles

MOYNIHAN LECTURES

DURING the week Sept. 22–27 three Moynihan lectures were delivered at the Royal College of Surgeons, two of which are summarised below.

Surgery of Duodenal Ulcer

In his lecture on Sept. 22, Dr. Arthur W. Allen, president of the American College of Surgeons, explained that he had chosen the treatment of duodenal ulcer as his subject because it is now being critically re-examined by surgeons. About 10% of duodenal ulcers cannot be cured by conservative measures, and until recently subtotal gastrectomy was thought to be the treatment of choice for these resistant cases. But a few years ago misgivings began to arise. Some patients were not made better by gastrectomy and a very few were made worse by the side-effects of the operation.

It is 40 years since Pavlov showed by the experiment with his famous pouch that section of the vagus abolishes the stimulant effect of a meal on the gastric secretion. Why was no progress made along this line in the search for an answer to the problem of duodenal ulcer? Dr. Allen put forward two possible reasons—first, the discovery about the same time of the important rôle played by the hormone mechanism controlled by the pyloric mucous membrane; and secondly, the spectacular results obtained, at least for a time, by the introduction of *gastrojejunostomy*.

Four types of gastrectomy are done by Dr. Allen and his colleagues for duodenal ulcer. In all of them the whole of the lesser curve is removed and as much of the greater curve as will permit the formation of a mechanically sound anastomosis. They differ in their treatment of the duodenum. In the first and most satisfactory method the first part of the duodenum is excised, including the ulcer. When the ulceration is further from the pylorus the duodenum may be divided and safely closed proximal to it. The third type of operation is applied to cases where there is extensive ulceration and adhesions near the pylorus. In these cases the stomach is divided *proximal to the pylorus and then the mucosa of the* pyloric antrum is entirely removed by dissection. Dr. Allen thought that this last step was one of the features of Finsterer's original operation of "gastrectomy for exclusion," but to do the operation without this step is to set up ideal conditions for the development of gastrojejunal ulcer. The fourth type of operation is done for the same kind of case as type three and consists in two stages. In the first stage a type-three gastrectomy is done but without the removal of the antral mucosa. Six weeks later the pyloric antrum and the first part of the duodenum are removed. Dr. Allen himself has not used this fourth type of operation, which has been devised chiefly for the use of less experienced surgeons. Using these operations (chiefly type one) 106 gastrectomies have been done for uncomplicated duodenal ulcer with 4 deaths. Dr. Allen emphasised that the most important cause of death in gastrectomy for duodenal ulcer is leakage of the duodenal stump.

The best vagotomy operation consists in the removal from above the diaphragm of at least two inches of the vagi and the encapsulation of the upper cut ends in a cylinder of silk in order to prevent regeneration. In addition the diaphragm may be opened so as to sever the nerves at their point of decussation. Of 103 such vagotomies done, 75 were for uncomplicated duodenal ulcer with no deaths, 22 for jejunal ulcer with no deaths, and 6 for miscellaneous conditions. In this last group there has been 1 death, which may have been the result of vagus collapse, for the nerves were not injected with 'Novocain' before division, a precaution which should always be observed. Dr. Allen demonstrated the effectiveness of vagotomy by the insulin response before and after operation, and his graphs were convincing evidence of a satisfactory physiological result. Nevertheless at the Massachusetts General Hospital there has recently been a slight falling off in the popularity of *vagotomy in favour of gastrectomy* for uncomplicated *duodenal ulcer*.

Comparison of the clinical results of the two operations shows a very even balance, but Dr. Allen emphasised that the vagotomies have been followed up for not more

In England Now

Running Commentary by Peripatetic Correspondents

THIS week's Pathé Gazette is showing a strange piece exhibitionism: Mirin Dajo is a Dutchman who allows other man to thrust swords through him—and not erely through silent areas, so to speak, but from side side of his upper abdomen in the perilous neighbour-od of stomach and spleen: and again from back to e just below the right lung. The scene of this particular monstration is the Bürgerspital at Basle, and the ctors watching it conduct Dajo, transfixed with his ord, to the X-ray room for photographs. Unfor-nately the resulting films are not shown. The com-nion who operates with the sword takes trouble about carefully pinking Dajo through previous scars and lowing some line well known to him. The most he ts from Dajo is a slight frown: and on withdrawal of e sword there is no bleeding. No-one need doubt the ts: the camera close-up shows the sword going in. e little alp of stretched skin which appears before it rforates the opposite side of the chest, and the cuff skin dragged up by the blade as the operator pushes well through. This stretching of the skin at the point exit seems to be the only uncomfortable part of the siness, for the operator, before he stands back and ows Dajo to display himself, slides the cuff back along e blade until it lies flush with the chest wall.

The trick—if such a genuine performance can be lled a trick—is comparable to that seen in India, where kirs will transfix their necks with knives. In the ck, however, provided the muscle masses are pulled ll forward, a blade can slide across in front of the inal column without encountering any large important uctures. In Dajo's case the sword running trans-rsely through the upper abdomen must pass just hind the stomach, just in front of the spleen, and then front of the spine, escaping the great vessels; and must ally transfix the liver above the level of its hilum. fore piercing the skin again. The blade running rough the right side of the chest must pass below the ssels of the hilum of the lung. Pathé have taken the uble to get an expert opinion on this feat; and a mmentator recounts the explanation. Bullets and her missiles are known sometimes to pass through the dy in much the same harmless way, travelling along embranous planes, and pushing soft viscera out of their y. If a sword could be passed successfully along such safe path, fibrous tissue would form along its course, d it would become increasingly easy to repeat the iracle with each attempt. Moreover, as the scar tissue ew older it would become avascular, and transfixion ould be bloodless. It was evident from the care with hich the operator thrust Dajo through that he was llowing a known course, and he was probably able to dge, from the sensation transmitted to him from the int of the blade, that he was following the line of ar tissue. Moreover, Dajo would probably have let m know if he happened to veer off it. Yes, it was easy see, at this stage, how the thing was managed; but hat about the first time?

* * *

We called it a summer school, but the Germans called "Internationales Medizinertreffen," which shows that mposity dies hard. There were about 150 German udents from various universities and a Swiss and 2 utch students, as well as a Swiss neurosurgeon, a wedish tuberculosis physician, and 3 "Britishers" pharmacologist, a physiologist, and a junior surgeon) lecturers; all but one lectured in German. Lectures cupied all the mornings, and the rest of the day was ken up with informal meetings, excursions, and dances. ubjects covered a wide range with a notable absence of inical general medicine. The whole thing was under e ægis of the Foreign Office, personified by the niversity Education Control Officer. This lady com-ined enthusiasm with energy and drive on such a scale nd with such resulting efficiency that the cynic was mazed; the cynic also developed doubts as to whether ll would be quite well between her and her "higher ps" of the Civil Service and the C.C.G. in the long run.

The Germans took our information "lying down" n very few subjects, notably anæsthesia, penicillin, and such. Usually they produced a badly conducted incoherent discussion designed to prove that our information was out of date, useless to them, and made up of discarded German theories. This was quite untrue, for the lectures were packed with good and fresh meat which they badly needed. Their only technique of blood-transfusion was the direct donor-to-patient method with a three-way syringe. Their only anæsthetics, given by sisters, were chloroform and open ether, even for incision of abscesses in Casualty. Their surgery was very slick from the operative point of view, but the cynic saw nothing new except the intramedullary nailing of fractures (Marknagelung) of Küntscher. This was extremely impressive in its results and advantages, and it would surely be worth while to send a young surgeon out from England to learn from these people (who have already made most of the possible mistakes) the technique, indications, and limitations of a method which might revolutionise the treatment of many fractures. Küntscher's method was received with a flood of abuse and contradiction at the congress of surgeons in Berlin in 1940 but has since gone from strength to strength.

* * *

Ramadan having ended, the Arabs presented us with two chickens as what they called a Christmas present, so we decided to continue the work on hens described by your peripatetic correspondent of July 19.

Your correspondent's observations on the immobilisation of hens with their beaks on a chalk line were corroborated in every detail and also found to work with brown, red, purple, blue, and yellow chalks—all placed in the coronal plane—i.e., at right-angles to the beak and on a neutral greyish background (the top of the officers' mess bar). Lines placed in the sagittal plane had no effect. Various other chalk marks, however, worked successfully in the coronal plane—viz., an interrupted line where the beak is placed in the 2-inch gap; a circle of diameter 3 inches where the beak is placed on the circumference; a cross where the beak is placed either at the intersection or at the end of one arm; and a squiggly spirochætal line where the beak is placed on or within an inch of it. The thinner the lines the better were the results. Both hens would also remain immobile if their beaks were put into a pool of "Sarona Rot," a particularly virulent form of Palestinian "port-type" wine. Finally, all experiments were repeated with the hens' eyes blindfolded—without success (except, for some reason, with the Sarona Rot). It would appear, then, that the effect is due to a visual hypnotism caused by the hen's seeing two precisely similar objects with both eyes at once—an experience which is rare and apparently unnerving for it.

Besides the above phenomena we also noted that if a hen's head is tucked under its wing and the body rocked gently to and fro (as in Riley's Rocking Stretcher) six or seven times, it can be put down in a deep sleep, sometimes even lying on its side with one leg in the air.

Further research with these two subjects will be impossible as they are due to make positively their last appearance to the accompaniment of green peas and roast potatoes. Two pigeons also presented to us we were unable to use experimentally owing to the decision of a black spaniel (who is after all only an honorary member of the mess) to try their effect as a test-meal on his gastric secretion.

* * *

My friend Douglas was always mighty tough and it is hard that one so obviously cut out for big-game hunting should have been condemned by fate to follow the relatively old-maidish and humdrum pursuit of surgery. His latest letter, however, testifies to the old fire that still burns within him. It runs thus:

> Shot a rat this evening outside the kitchen from my *machan* in the consulting-room. I can't describe the agonies of waiting, rigidly motionless in the silent dusk, until at last I discerned the long, low, stealthy form noiselessly advancing on the bait (a nice fresh rabbit skin).
>
> Despite my long wait, and although horribly cramped by my vigil, I was just able to swing down the barrel with the almost imperceptible fluid motion which is the least alarming of all perceptible movements to the creatures of the wild. My eye darted along the sights, my finger tightened on the trigger. "Chock!" said my trusty airgun, and the rat, jumping a full foot in the air, fell back for the last time with a dose of lead (gr. 5) in his innards.

papers, indicate that strong feelings were aroused. It is perhaps not surprising in the circumstances to find sharp differences of opinion and of testimony. One patient, for instance, says she had only a tea-cup of milk each evening; another says he had plenty of milk three times daily. One patient recalls being served with a plate full of maggots; another praises the food and claims that his weight went up 2 stone during six months at the sanatorium. The father of Mrs. Guile suggested to her medical attendant that he was "experimenting" on his patient; her husband wrote a letter of thanks to the town clerk for the treatment of his late wife; "my honest opinion is that she was too ill and irritable to worry about food."

Whatever be the findings of the Minister on the facts elicited at the inquiry, one can hardly doubt that similar allegations have been, and will be, made so long as hospitals are short of doctors, nurses, and equipment, and so long as food shortages give patients and everybody else a ground for grumbling. A memorandum by Dr. Firth was read at the inquiry. When a letter of complaint from 15 patients was referred to the hospital services subcommittee, he had observed that the hospital was a sanatorium in name only; the hospital facilities were not really satisfactory for tuberculosis patients, and extensive alterations and buildings must be planned if true sanatorium treatment is to be given there. His words will be echoed doubtless by hospital authorities elsewhere while medical needs have to take their place in the queue along with other competing claims.

Pending the decision of the Minister on the Brighton case, praise or blame cannot be allotted. Two general comments meanwhile suggest themselves. The public inquiry, held by a public servant, still commands respect and is still regarded as the best method of ventilating grievances of this kind; the umpire's verdict will presumably still be final. Secondly, even if the criticisms are held to have been exaggerated or unjust, it is something that local opinion should be stirred to insist on the highest standard in local health services.

Public Health

Food-poisoning

On Sept. 7, 8, and 9 there occurred at Kincardine O'Neil, an Aberdeenshire village with a population of about 200, an outbreak of food-poisoning which involved no less than 97 people, including the farmer who supplied milk to the village, his family, and his farm-workers. The symptoms consisted of vomiting, nausea, abdominal pain, and diarrhœa, lasting 3–4 days; thereafter most patients recovered rapidly. There was no death.

Investigation at once showed that the only common food was milk; and when the dairy supplying the village was visited it was found that a cow had become ill about Sept. 5 and had been so ill on the 6th that a veterinary surgeon was called. This animal had died on the 7th, and post-mortem examination on the 8th showed signs of severe enteritis with advanced inflammatory changes in the small intestine. The herd at the farm consisted of some sixteen cows in milk; in addition to the animal which had died, another cow had been off her food and two calves had had diarrhœa.

Twenty-one specimens of fæces from various households showed the presence of *Salmonella dublin*; samples of milk obtained from the cows on the 5th and 6th showed the same organism, while a sample of the bulk supply taken on the 9th, after the cow had died, gave negative results. From the material obtained from the carcase of the cow at the post-mortem examination a gram-negative non-lactose-fermenting organism was obtained, and this also was proved to be *S. dublin*. All the other cows and the two calves were then investigated; *S. dublin* was not obtained from the fæces of any cow but it was recovered from the fæces of both calves.

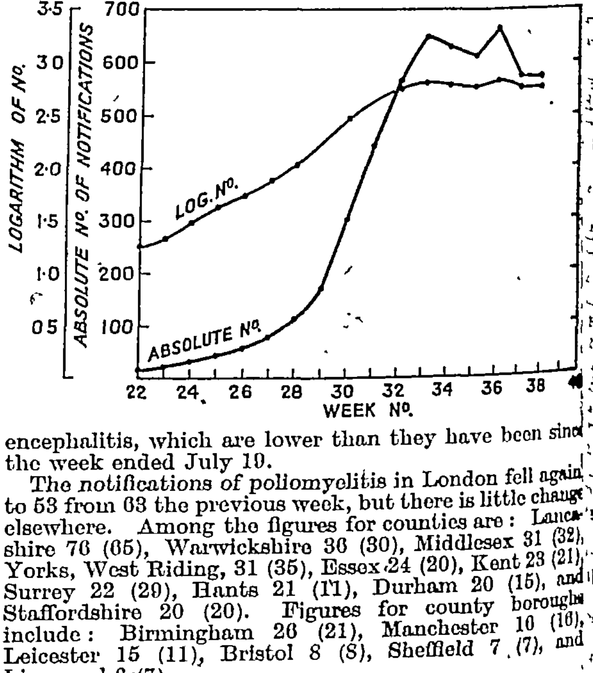
It is evident therefore that this outbreak was due to the infection of a dairy cow. The animal presumably developed septicæmia as a complication of enteritis; and since her milk was added to that of the other cows the whole supply was infected.

Cholera in Egypt

Cholera broke out in Egypt about Sept. 22; and over a hundred new cases are now being identified each day; but up to the beginning of this week Cairo was still free from the infection. The *Times* reports vigorous countermeasures by the government: the opening of schools and universities in Cairo and Alexandria has been postponed, and public gatherings are forbidden; the movement of people out of the infected areas has been stopped. The whole population is to be inoculated with anti-cholera vaccine, supplies of which have been obtained from Britain, the United States, and South Africa; public vaccination was to start last Wednesday. The government has offered a reward of £E.1000 for information about black-marketeers, *who charge £E.5 for each injection.* Passengers leaving this country for Egypt are now required to undergo vaccination against cholera. It is not yet known whether any special investigations are planned by the Egyptian authorities; epidemiologists have for some time been pressing for a controlled study of the sulpha drugs, and particularly of sulphamezathine, in this disease.

Poliomyelitis and Polioencephalitis

The number of notifications of poliomyelitis in England and Wales in the week ended Sept. 20 was 571 (572) and of polioencephalitis 23 (42). Figures in parentheses are those for the previous week. The most interesting feature is the sudden fall in notifications of polioencephalitis, which are lower than they have been since the week ended July 19.



The notifications of poliomyelitis in London fell again to 53 from 63 the previous week, but there is little change elsewhere. Among the figures for counties are: Lancashire 76 (65), Warwickshire 36 (30), Middlesex 31 (32), Yorks, West Riding, 31 (35), Essex 24 (20), Kent 23 (21), Surrey 22 (29), Hants 21 (11), Durham 20 (15), and Staffordshire 20 (20). Figures for county boroughs include: Birmingham 26 (21), Manchester 10 (16), Leicester 15 (11), Bristol 8 (8), Sheffield 7 (7), and Liverpool 6 (7).

Infectious Disease in England and Wales

WEEK ENDED SEPT. 20

Notifications.—Smallpox, 0; scarlet fever, 805; whooping-cough, 1378; diphtheria, 189; paratyphoid, 23; typhoid, 16; measles (excluding rubella), 1066; pneumonia (primary or influenzal), 252; cerebrospinal fever, 35; poliomyelitis, 571; polioencephalitis, 23; encephalitis lethargica, 3; dysentery, 100; puerperal pyrexia, 115; ophthalmia neonatorum, 55. No case of cholera, plague, or typhus was notified during the week.

Deaths.—In 126 great towns there were no deaths from enteric fever or scarlet fever, 2 (0) from measles, 2 (0) from diphtheria, 9 (0) from whooping-cough, 82 (4) from diarrhœa and enteritis under two years, and 1 (0) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 209 (corresponding to a rate of 24 per thousand total births), including 23 in *London*.

JECTION OF JOINTS WITH ACID POTASSIUM PHOSPHATE

SIR.—At the end of their letter on acid injection of nts (Sept. 20) Dr. Mandel and Dr. Nicolson mention need for physiotherapy to treat the associated ositis.

In my smaller series of cases, 60 hips and knees, the ositic condition has benefited by concurrent injections the myalgic spots with 'Novocain,' but the great d has been for re-education in posture and walking d above all redevelopment of wasted muscles.

It is usually reported that wasting occurs regularly y in osteoarthritis of the hip-joint; but patients with ir knee-joints affected have commonly remarked that, en the pain has diminished and the mobility increased, joint "feels as if it is giving way"; and their driceps are found to be very weak.

When practicable all acid injection cases which have wn marked improvement—about 60%—are sent to rehabilitation department for strenuous non-weight-ring exercises and for the correction of such ormities as may have arisen; and emphasis is laid the importance of doing such exercises at home for periods every day. The necessity of restoring muscle er and correcting posture cannot be overstated. genu valgum, scoliosis, and the ordinary hip flexion ormity are left untreated much of the improvement ed is lost.

ck. EDWARD S. VERGETTE.

SOCIAL MEDICINE

SIR,—Dr. Beryl Harding's letter (Sept. 27) might well onsidered in connexion with a letter from Miss Amy le, chairman of the Women Public Health Officers' ciation, which appeared in the *Times* of Sept. 12.

Dr. Harding wants there to be available to the general ctitioner "a service of voluntary workers, or part-e paid workers . . . *under trained supervision* . . . to e effect to the G.P.'s instructions . . . more especially re cases need handling in terms of hygiene."

I wonder whether Dr. Harding would agree with s Sayle that "in the future the health visitor will the generalised medical social worker for the whole ulation." If this were accepted the health visitor ll surely supply "the trained supervision to give ct to the G.P.'s instructions." The fact that Dr. rding does not automatically turn to the health itor to provide the service required seems to indicate t she visualises a function the health visitor of today not able to fulfil. It cannot be disputed that her mary function is to advise and teach the laws of healthy ng. She is par excellence the health worker in the al setting, but she is not the social worker in the lth setting. It could well be argued that this consti-es the fundamental difference between the health itor and the almoner. At present there does, however, ear to be a no-man's-land untouched by either pro-sion, and the indications are that the whole subject the functions of the various workers in the health m still requires considerable thought and clarification.

stitute of Almoners,
London, W.C.1.

MARJORIE STEEL
Secretary.

MORE STONES FOR OUR GLASS HOUSE

SIR,—It is customary, when a new term is introduced o medicine or an allied science, that it should be ived from a dead language (or sometimes, regrettably, m a combination of dead languages). Unfortunately, ds are not always chosen with the care used by the Sir Arthur Hurst when he coined the term chalasia."

Two examples come to mind. Fallot's tetralogy is y much in the news now; but a "tetralogy," accord-to the *Concise Oxford Dictionary*, is "a group of four matic or operatic works, esp. three tragedies and a yric drama." The word "tetrad" would surely be re correct, and Fallot would then be brought into line th Hutchinson and Charcot. The other example is halassæmia," an alternative name for Mediterranean æmia. This word might be taken to mean "a condition which the blood resembles the sea"; and if it thought necessary to have a Greek-derived alternative for a disease which already has two names, "thalassanæmia" might be a better choice.

Both these forms are given in medical dictionaries: but it is hardly to be expected that words well established by usage will be displaced. It is just as well to be aware, however, that some of the terms we use should not really have the meanings we give them.

London, W.10. KEITH LOVEL.

HORMONE TREATMENT BY IMPLANTING PELLETS

SIR,—As a historical footnote to your annotation of Sept. 27, it is perhaps worth pointing out that subcutaneous implantation of pellets is not, as has generally been assumed, a new method, although its application with the object of prolonging the action of the implanted substance is new.

In 1861 G.-V. Lafargue,[1] of St. Emilion, published details of a method which he described as "inoculation hypodermique par enchevillement" (cheville = plug or pellet), in which the skin was punctured obliquely to a depth of 60–70 mm. with a darning needle and a pellet of morphine or other drug was inserted into the subcutaneous tissue through the puncture, which was sealed with collodion or stamp-paper. Lafargue also described the use of a "dry syringe," which was a crude injector or implantation-gun.

Bruns[2] in 1869 published particulars of a greatly improved instrument which he described as an "Implantationsnadel." This was used for the implantation of various drugs in the form of pellets, for which Bruns proposed the name "Bacilli medicamentosi."

A fuller discussion of the origins of this and other forms of hypodermic medication will be found in a study[3] I have recently published.

Pound Hill, Sussex. N. HOWARD-JONES.

PRIVATE WARDS IN HOLLAND

SIR,—In connexion with your article (Sept. 6) on treatment in private wards under the National Health Service, our experiences in the Netherlands may be of some interest.

Here there are hardly any nursing-homes. Some hospitals, mostly university clinics, have ordinary wards only; most hospitals contain ordinary wards, small wards, and single rooms. These different wards and rooms are indicated by "classes," as on the railways. Third class is the ordinary ward (with 12–20 beds in old-fashioned and 6–8 beds in more modern hospitals); "second class B" or "middle class" is a small ward (with 3–4 beds); "second class A" or "second class" is a room with 2 beds; while first class is a single, one-bedded room.

Over here only a small minority of the patients have free hospital nursing and treatment. A minority in the third class pays its own costs and is not insured; the great majority of the patients in ordinary wards are insured for the costs of nursing and treatment by a national insurance scheme which is compulsory for all employees earning a salary below an amount specified by law (the premium varying with the salary and half being paid by the employer). All others with an income less than this specified amount can voluntarily join this national scheme, under which doctors' fees are also paid. Those with higher incomes can, of course, join private insurance schemes.

Patients who wish to be nursed in a second-class ward or room, or in a single room, pay the hospital and their doctor privately. If they are insured under the national scheme they pay the difference between the rates under the insurance system and the private (second- or first-class) rates. Second- and first-class rates are normally fixed so that the full maintenance costs are covered. Nowadays this is not always the case with class 2B rates, since prices have risen so much; but the rates charged to classes 2A and 1 provide a surplus which is devoted to the needs of the hospital as a whole; and this surplus helps to make up the financial deficit from the running of the ordinary wards.

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1. Lafargue, G.-V. *Bull. gén. thér. méd. chir.* 1861, 60, 22, 150.
2. Bruns, V. von. Arznei-Operationen, 1869, Tübingen.
3. Howard-Jones, N. *J. Hist. Med. allied Sci.* 1947, 2, 201.

Letters to the Editor

THE CLINICAL PATHOLOGIST

SIR,—As chairman of the Association of Clinical Pathologists' committee on training of clinical pathologists, I should like to comment on your leading article of Sept. 20. I confine my remarks entirely to the matter of training and qualification.

During the past few years the development of laboratory methods in medicine has created a vast and growing demand for such workers in hospitals: the demand has greatly exceeded the supply, and a number of appointments have been made of individuals who have had quite inadequate clinical and laboratory training. This has been a matter of serious concern to the Association of Clinical Pathologists, and it was decided, as a matter of urgency, to lay down some broad outlines of training suitable for hospital pathologists.

As your leading article rightly states, three years' laboratory experience suffices only to give a general grounding in medical laboratory work. The individual will further develop his specialty during the last year of his five years' training and subsequently. However desirable a longer period of training may be in theory, in practice five years' post-registration training is as much as can reasonably be asked of candidates at present. There is no ideal higher examination for pathologists: probably the best is the M.D. (Path.) of the University of London, but this is only available to London graduates. As regards the M.R.C.P., it may be that one year's clinical experience by itself is inadequate, although the Royal College of Physicians' committee on neurology recommended that all budding neurologists should obtain the M.R.C.P. *during* or at the end of the 18 months' period of general medical training, and in practice a fair number of candidates do obtain the M.R.C.P. only one year after graduation. In the case of the trainee clinical pathologist, much of his experience subsequent to the year's clinical appointment has a definite clinical bearing, and covers some of the ground demanded by the M.R.C.P. examination.

Your article is in error in implying that a higher medical qualification is practicable only for a few leaders of the profession. At the present time 50% of the members of the Association of Clinical Pathologists hold one or more higher medical qualifications, and nearly 25% possess the F.R.C.P. or M.R.C.P.; in addition, many hold science degrees or diplomas such as the D.P.H. and D.T.M. It is already the custom in a number of laboratories to encourage the junior members of the staff to acquire an M.R.C.P. at the earliest opportunity.

It may be that eventually a special examination will be the solution; and this is under consideration by the committee at the present time. Until such a special qualification has been worked out, it is surely desirable that trainees should be encouraged to take, if possible, one of the existing higher examinations.

London, S.E.13. E. N. ALLOTT.

SIR,—In your leading article the question is asked: "How came it that the clinical pathologist undertook to combine the diverse techniques of all four laboratories?" No-one conversant with the history of pathology in this country could have asked such a question, since it is the separation of the four laboratories that is the new departure; at least, the separation of bacteriology from morbid anatomy and the appearance of hæmatology as an independent culture. Biochemistry is a child of the present generation; it was no more than an embryo till 1920 or later.

We clinical pathologists can claim to carry on the English tradition of pathology—i.e., the cultivation of the science as a whole in its relation to clinical medicine. We are not "a new genus of less highly differentiated specialist" but rather we follow the lead of great British pathologists such as Robert Muir, A. E. Boycott, and many others who contributed to all branches of pathology. Even in the academic field this tradition persists, for there are still many chairs "of pathology" in the wider sense. An arrangement of this kind at Oxford enabled Sir Howard Florey, a pure histopathologist, to concentrate the energies of his department on the preparation of penicillin.

Nor is there anything new in hospital pathologists having care of patients. In fact this was the original arrangement in most London hospitals, and till very recently it was widespread in the smaller provincial hospitals. My father was honorary pathologist and assistant physician at St. Thomas's Hospital before he was given the then combined chairs of pathology and clinical medicine at Edinburgh; and at Moorfields and other special hospitals in London the post of pathologist was held till very recently by aspirants to the clinical staff.

The teaching hospitals in London are still divided as to their preference. Some have a clinical laboratory under the charge of a clinical pathologist; others have separate laboratories for each branch of pathology. The London Hospital and University College Hospital have had clinical pathologists for a quarter of a century, in addition to special departments under professorial staff. There is much to be said for this arrangement. It provides a training on a broad basis for young pathologists; it works for close liaison between the clinician and the laboratory whence he obtains many of the data he needs for diagnosis; and it ensures that a single specimen of, for example, cerebrospinal fluid is examined as a whole by a pathologist who knows something of the clinical side of the case, instead of being sent to one laboratory for cytology, to another for chemistry, to a third for bacteriology, and perhaps to a fourth for serology. (This is no fantasy. I am told that cerebrospinal fluids are examined in this piecemeal fashion in at least one teaching hospital in London.)

The aim of clinical pathology is to bring the facilities of the pathological laboratory into the closest possible relation to the hospital patient. The clinical laboratory is the old "side-room" enlarged and improved to cope with the advances of medical science. The goal of the clinical pathologist is primarily the diagnosis of disease and the control of treatment; but in carrying out this utilitarian task he gains a broader knowledge of the natural history of diseases than is possible for any worker in an isolated department, and so makes his own special contribution to the progress of medicine.

National Hospital, Queen Square,
London, W.C.1.
J. G. GREENFIELD.

ORIGIN OF CEREBRAL SURGERY

SIR,—In your leading article of Sept. 20 on Cushing you state that: "Cerebral surgery started in London at the National Hospital, Queen Square, and Victor Horsley . . . must always be regarded as its *founder*." This does less than justice to the Maida Vale Hospital for Nervous Diseases, in those far-off days known as the Hospital for Epilepsy and Paralysis, and located in Portland Terrace, Regent's Park.

Memories in these crowded days are short; but reference to the back numbers of THE LANCET, 1934, ii, 715, 1062, 1207, and 1255 will recall the fact that a big dinner was held at the Dorchester Hotel on Nov. 29, 1934, with Lord Horder in the chair, to celebrate the jubilee of the first removal by operation of a cerebral tumour, a glioma, by Rickman Godlee, on Nov. 27, 1884. This tumour had been accurately diagnosed and localised by Hughes Bennett, physician to the hospital; the man lived for four weeks, and would probably have survived but for infection of the wound, with subsequent meningitis.

It is, perhaps, worth recalling that both Hughlings Jackson and David Ferrier were present at the operation; and you rightly mentioned in your article that the work of these two famous men instigated the development of intracranial surgery. It was not Sir Victor Horsley, however, but Sir Rickman Godlee who first operated for cerebral tumour.

At the jubilee dinner was Sir James Crichton-Browne, who, over sixty years previously, when head of the West Riding Asylum, had encouraged Ferrier to do his original work in the laboratories at the asylum. Many of the National Hospital physicians were *also* present at the dinner. At the Royal Society of Medicine, before the dinner, Wilfred Trotter, F.R.S., gave an address on the subject, entitled A Landmark in Neurology, which THE LANCET published on Dec. 1, 1934.

London, W.1. WILFRED HARRIS.

5 g. of sulphadiazine daily for five days, without effect he fever. Right nephrectomy was therefore undertaken une 17. A tumour about 2 inches in diameter was found te upper pole of the kidney and this was identified oscopically as a hypernephroma.

nce the second day after operation this man's perature has not risen above normal. On Aug. 20, months after operation, the E.S.R. was only 16 mm. hr. The patient had gained 2 stone in weight and back at work.

usalem. BENJAMIN DOLL.

Obituary

JOHN CROSTHWAITE BRIDGE

C.B.E., M.R.C.P.E., F.R.C.S.E., D.P.H.

r. J. C. Bridge, consulting medical officer to Imperial nical Industries and formerly H.M. senior medical ector of factories, died at his home at Worthing on . 27. He was a notable pioneer in industrial medicine his wise counsel will be missed in the difficult times d.

Press Portrait

orn in Essex on June 5, 1877, the son of the Rev. es Henry Bridge, he was educated at Carlisle mmar School and at Middlesex Hospital to which was awarded an entrance exhibition. He took the Conjoint diploma in 1902; the D.P.H. (Camb.) in 1906; the F.R.C.S.E. in 1910; and the M.R.C.P.E. in 1920. He was also a barrister-at-law of the Middle Temple, having been called in 1913. Early in his career he became interested in preventive medicine, and at the Carnegie Institute, Dunfermline, he was a pioneer in the medical examination of schoolchildren. Later he served as assistant M.O.H. for the county borough of Devonport and as M.O.H. for Breconshire. In January, 1914, he entered the Home Office as Medical Inspector of Factories under Sir Thomas Legge, and thus with E. L. Collis, became one of a triumvirate whose rk is appreciated both in this country and abroad. 1927 Bridge succeeded Legge as Senior Medical pector and he held this post until he retired in 1942. that occasion we wrote: "*for the past 44 years the eption and development of industrial medicine in s country has been directed by two outstanding blic servants. The present intense and widespread erest in the health of the industrial worker and in upational medicine is a tribute to the soundness of foundations which these pioneers have laid.*"

It is not easy to assess Bridge's work because he did in an unobtrusive and disarming way, and his name not associated with any special subject. He took s credit than was his due for any progress made by staff. He used to disclaim any special knowledge scientific subjects, but he had a flair for picking out e essentials of any complicated problem, whether entific, legal, or clinical; and his modesty covered unrivalled knowledge of industrial and occupational alth matters. During his term of office the number of edical inspectors increased and the subjects dealt th became more complex. Bridge took all difficulties his stride and guided his staff with an easy and friendly cipline; the affection with which they regarded him re witness to his qualities as a chief. If good administration can be defined as a capacity for getting things one in the most sensible way and in drawing the best om one's colleagues, then Bridge was an ideal administrator. His capacity for listening, together with his gal training and prodigious memory, made him an cellent chairman of committees.

He was chairman of the Institute of Professional Civil Servants from 1922 to 1926 and again in 1930–31, and he played an important part in building the institution up to its present strength. After he retired from the Factory Department he became chairman of the Association of Industrial Medical Officers. He was a member of many committees, including the Industrial Pulmonary Diseases Committee and the Industrial Solvents Committee of the Medical Research Council; the Ministry of Health Committee on Cancer; the Prevention of Blindness Committee, and the various other departmental committees in connexion with workmen's compensation, silicosis, pneumoconiosis, and anthrax. In the international field he was a member of the International Correspondence Committee of the I.L.O. and of the Commission Internationale Permanente pour la Médecine du Travail. His work at Geneva kept him in touch with all that was happening in industrial medicine throughout the world and his reputation was deservedly international.

Bridge was made C.B.E. in 1934, and from 1937 to 1941 he was hon. physician to the King.

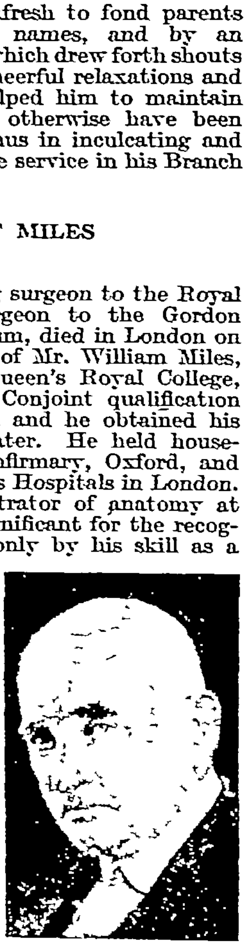
He married in 1904 Bessie, daughter of Gateward Coleridge Davies. She died in 1933 and in 1935 he married Joan, daughter of James S. Hann, of Finchley.

J. M. D. writes: "Bridge was above all a good colleague, and his first casual introductions of a new junior as 'my colleague' did much to implant in the newcomer a lasting sense of fellowship and corporate responsibility. Nor did he limit his interest to his younger colleagues at work; their wives and families too were equally his concern, and he was at his best in their homes. There he was wont to endear himself afresh to fond parents by remembering the childrens' names, and by an unexpected capacity for capering which drew forth shouts of glee from youngsters. These cheerful relaxations and a generosity in sharing credit helped him to maintain easily a discipline which might otherwise have been irksome, and Bridge succeeded thus in inculcating and fostering a team spirit which made service in his Branch a recognised privilege."

WILLIAM ERNEST MILES

F.R.C.S.

Mr. W. Ernest Miles, consulting surgeon to the Royal Cancer Hospital and senior surgeon to the Gordon Hospital for Diseases of the Rectum, died in London on Sept. 24. Born in 1869 the son of Mr. William Miles, B.A., J.P., he was educated at Queen's Royal College, Trinidad. In 1891 he took the Conjoint qualification from St. Bartholomew's Hospital and he obtained his surgical fellowship three years later. He held house-appointments at the Radcliffe Infirmary, Oxford, and at the Metropolitan and St. Mark's Hospitals in London. Till 1899 he was also a demonstrator of anatomy at Bart's, an interest which was significant for the recognition he was later to win not only by his skill as a surgeon, but also by his outstanding researches in the spread of cancer of the large intestine and rectum. Writing of this work, which Miles in 1923 embodied in his Lettsomian lectures, C. E. D. writes:


Janet Jevons

"When planning an operation for the eradication of any form of malignant disease the surgeon has first to take stock of all possible paths of lymphatic spread. This was accomplished for the rectum by the pioneer work of Mr. Ernest Miles. He gave a detailed description of the rectal lymphatics, describing them as arranged in three groups—intramural, intermediary, and extramural. He pointed out that the main direction of lymphatic drainage was upwards by efferents accompanying the superior hæmorrhoidal vessels to drain into lymphatic glands along the main trunk of the superior

In Dutch hospitals ordinary wards and private wards (small wards and single rooms) have been incorporated for some decades in the same hospitals. The ordinary wards have *isolation rooms* in which third-class patients are nursed, when need be, without extra charge. The private rooms (classes 2A and 1) are separated from each other only if separation is medically indicated (for instance in separate departments for medical and surgical diseases), and they are never placed in the ordinary ward units or blocks but are grouped together in separate units; and it is the same with the small wards (class 2B).

It should be explained that the nursing and medical attention are exactly the same in the ordinary wards as in the small wards or single rooms. Units of single- or two-bedded rooms have relatively more nurses, but only because these are less economical than larger wards: a decreasing number of beds in a ward or room means an increasing nurse-bed ratio.

Why, then, do patients wish to be accommodated in small wards or single rooms? For three reasons: (1) greater privacy, (2) better catering, and (3) longer and more visiting hours. Points (1) and (3) are most important to the patients.

Experience has proved the awkwardness of mixing classes. In particular, the difference in visiting hours gives rise to jealousy among the patients nursed in the ordinary wards. Moreover, nursing supervision and administration is difficult.

The idea of making no distinction, save any that is medically indicated, in nursing attention is a fine one; but in our country I fear it is impracticable at this time, since the deficits of the private hospitals are not covered by the public treasury; third-class rates do not meet costs, and the hospitals need the financial surplus derived from first- and second-class accommodation. There is a very strong feeling in the Netherlands against privately owned nursing-homes, run as a business enterprise, for the nursing of the wealthier patients: we prefer that all should enter hospital. In our experience, however, it is necessary to group ordinary wards, small wards, and single rooms in separate blocks or nursing units; and this separation does not impede administration.

J. C. J. BURKENS
Medical Director.

Diaconess Hospital, Meppel, Holland.

CALCIFEROL IN PULMONARY TUBERCULOSIS

SIR,—I read with great interest Dr. Phelan's letter (May 31) quoting certain of my publications, following the article by Dr. Feeny, Dr. Sandiland, and Dr. Franklin, published on April 5. I should like in a few words to indicate my view of the present status of calciferol in pulmonary tuberculosis of adults.

1. My first two publications with Bachet[1] concerned patients who had been severely undernourished and were in a grave state of nutritional deficiency. Vitamin-calcium therapy had, in these subjects, a manifest action in slowing down the evolutionary process; almost all of them had very advanced tuberculosis, apparently beyond therapeutic reach, which incited us to try this medication; it proved very useful for them.

2. More recent trials in tuberculous patients who had not undergone severe dietary restrictions have not afforded such encouraging results; and some are disappointing. This group presented toxic signs more quickly; thus they had to be given smaller doses than the first group. However, insufficient time has elapsed to draw conclusions.

3. Dosage is still undefined; but in any case it seems reasonable to avoid the appearance of toxic symptoms. There is *amazing variation in tolerance*, perhaps owing to variations in the previous state of vitaminisation in vitamin D_2.

4. It appears that calciferol preparations used on the Continent are better tolerated than certain similar British products, which cause intoxication with smaller doses.

5. Our work, clinical as well as experimental in the dog, has already enabled us to state that the intramuscular route does not entail intoxication.[2] No hypercalcæmia or hyperazotæmia is noticed, even with extremely high doses, there any clinical, digestive, renal, or general but it remains to be seen if, corresponding to this better tolerance, the parenteral route does not entail loss of therapeutic efficacy.

6. It is important to pursue the study of calciferol in pulmonary tuberculosis of adults. This can be justified by the proved efficacy of calciferol in certain types of extrapulmonary tuberculosis—for example, lupus, other cu forms, and serous tuberculosis. In 1930 Meerseman[3] stressed the importance of vitamin D in the treatment of experimental tuberculosis *in the guineapig*; *in guineapigs* which were infected with tuberculosis and were at the same time calciferol, a remarkable proportion did not develop clinical tuberculosis; whereas in a control series, without vitamin therapy, all the animals died. Levaditi and Li Yan Po showed that irradiated ergosterol produced in the rabbit an elective calcium precipitation at the point of bacillary infection; and, according to Raab,[5] cultures of tubercle bacilli do not grow but degenerate in the presence of calciferol. The impressive array of clinical and experimental results call for further investigations.

7. Other questions remain unanswered. Does addition of calcium facilitate, as suggested by some authors, the appearance of signs of intoxication, in the same way as in the animal? Should vitamin A, held by many to act as an antagonist to vitamin D_2, be utilised as a regulator?

Finally, it should be emphasised that these studies must never oust or delay the application of classical methods, such as collapse therapy, whose value has been proved.

Centre de Recherches de
l'Hôpital Foch, Paris.

HUGUES GOUN

ABUSE OF THE EMERGENCY BED SERVICE

SIR,—I should like to put on record two examp cases which we have been receiving from doctors th the Emergency Bed Service.

The first was a man who arrived with an unintell note which when deciphered said that he was suff from acute appendicitis and required admission. details of any clinical findings were included in the On examination of the patient it was quite app that the doctor had not examined him previously had no symptom and bore not a single sign of "emergency" condition from which he was report have been suffering.

The second was a case which I accepted at the morning. According to the doctor the patient suffering from severe vomiting through food-poi and was in a state of collapse. Preparations were to admit her and carry out emergency treatment, bu when she arrived she felt perfectly well. Furthermor *it transpired that she had not even been seen by th* doctor concerned, and all the arrangements had bee made over the telephone.

The Emergency Bed Service is an excellent organisation, and I feel it is a pity that unfair advantage taken of it by a certain section of the profession.

R. S. KAGAN
Resident Medical Officer.

Westminster Hospital,
London, S.W.1.

SEDIMENTATION-RATE IN HYPERNEPHROMA

SIR,—The article by Dr. Catlin, Mr. Bintcliffe, an Dr. Marson in your issue of Aug. 2 prompts me to recor the following case.

A man, aged 42, came under treatment for tonsillitis an maxillary sinusitis in November, 1945. The erythrocyte-sedimentation rate (E.S.R.) was 47 mm. in 1 hr. (Westergren When treatment was completed he was kept under observatio since the E.S.R. remained high, *ranging* from 47 mm. up t 110 mm. in 1 hr.

Sixteen months after he was first seen he began to complai of tiredness, and he was observed to be mildly pyrexial in th evenings. The hæmoglobin was 75%, and red-cell coun 3,900,000 per c.mm. The evening pyrexia continued, and tw months later intravenous pyelography showed compressio of the calyces of the right kidney. The patient was treat

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[1] Gounelle, H., Bachet, M. *Bull. Soc. méd. Hôp. Paris*, 1946, p. 247; *Ibid*, 1947, p. 44.

[2] Gounelle, H., Bachet, M., Sassier, R. *C.R. Soc. Biol. Paris*, 1946, **140**, 827. Gounelle, H., Sassier, R., Marche, J. *Ibid*, 1947, **141**, 216.

[3] Meerseman, F., Thibault, G. *Ibid*, 1930, **105**, 398. Meerseman, F. *Rev. Tuberc., Paris*, 1936, p. 1055.

[4] Levaditi, C., Li, Y. P. *Bull. Acad. Méd. Paris*, 1930, **103**, 501; *Pr. méd.* 1930, p. 168.

[5] Raab, W. *Dis. Chest*, 1946, **12**, 68.

hæmorrhoidal artery and beyond this to the inferior mesenteric and aortic glands. Mr. Miles planned the abdominoperineal operation in 1906 and began to employ it in the following year. He took this step because he was convinced that the tissues of the upward zone of spread lay beyond the reach of any operation carried out solely from the perineum. He pointed out that when the perineal route is employed it is seldom possible to reach the glands situated above the bifurcation of the superior hæmorrhoidal vessels yet glandular spread may have extended higher than this. The chief merit of the abdominoperineal operation (and similar combined operations such as the perineo-abdominal and synchronous combined operation) is that they permit the removal of glands at a higher level than is possible by perineal excision. The new operation introduced by Miles forty years ago extended the scope of surgery in the treatment of rectal cancer and brought a prospect of cure to some patients who could not have been cured by earlier surgical procedures." One of his colleagues relates that only a few weeks ago he saw a patient operated upon by Mr. Miles in 1939 who showed no evidence of recurrence anywhere. With D. H. Goodsall, he collaborated in the publication of *Diseases of the Anus and Rectum*, a standard work in proctology, which Miles himself later rewrote and enlarged.

Miles's work in London was interrupted by the first world war, and he served in France and Belgium from 1914 to 1919, latterly as senior surgeon and commandant of an Allied Forces base hospital and consulting surgeon to the Etaples area. On demobilisation he returned to the Royal Cancer Hospital where he collected round him a team of brilliant young men some of whom have unfortunately predeceased him—Cecil Jóll, Jocelyn Swan, and Cecil Rowntree.

"To see Miles at work with his assistants," writes M. S., "was to see British surgery at its best. There was a calm, unhurried atmosphere about the theatre, and the leisurely manner in which he went about his work made the whole performance seem at first somewhat slow. This was deceptive, of course, for there was an economy of movement and an effortless ease which only skill and experience could bring about. There was *no delay, no hitch*, everything looked simple, and the operation moved on quietly to its close. A glance at the clock showed that it had all taken place in an incredibly short space of time—in fact, as Lord Moynihan remarked, 'the clock stood still.' And after it all there was the chat about the operation, the cup of tea and the cigarette; all very friendly, for Miles was the most approachable of men, and was kindness itself to visiting surgeons and students."

At home his abilities were recognised by many appointments apart from his hospital ones. He was consulting surgeon to the Army, a member of the National Radium Commission, the British Empire Cancer Campaign and the editorial committee of the *British Journal of Surgery*. The abdominoperineal operation brought him fame and honorary fellowships from many countries—America, France, Ireland, and only a few weeks ago Greece. The fellowship of the Irish college specially appealed to him for on his mother's side he was of Irish descent. Another tribute which pleased him was the present and letter which reached him on his last birthday from the members of the staff of St. Mark's Hospital, "wishing him every happiness in his retirement, acknowledging him as a great friend and a trusted leader in their specialty." As a young man he had excelled at tennis, and in later years he enjoyed golf, but racing was his favourite relaxation and nothing pleased him more than to entertain his friends in his box at Ascot. "The Gordon Hospital," writes P. D., "largely through Mr. Miles's capacity and teaching, attained a wide popularity, especially in the United States, and year by year American proctologists and other postgraduates visited the hospital and attended its lectures. Miles was a general surgeon besides being a proctologist, but in time he became almost entirely occupied by his specialty and the treatment of cancer in general. A man of outspoken convictions he made great friendships and I believe, strong enmities, but in his latter years he attained great and lasting happiness."

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hæmorrhoidal artery and beyond this to the inferior mesenteric and aortic glands. Mr. Miles planned the abdominoperineal operation in 1906 and began to employ it in the following year. He took this step because he was convinced that the tissues of the upward zone of spread lay beyond the reach of any operation carried out solely from the perineum. He pointed out that when the perineal route is employed it is seldom possible to reach the glands situated above the bifurcation of the superior hæmorrhoidal vessels yet glandular spread may have extended higher than this. The chief merit of the abdominoperineal operation (and similar combined operations such as the perineo-abdominal and synchronous combined operation) is that they permit the removal of glands at a higher level than is possible by perineal excision. The new operation introduced by Miles forty years ago extended the scope of surgery in the treatment of rectal cancer and brought a prospect of cure to some patients who could not have been cured by earlier surgical procedures." One of his colleagues relates that only a few weeks ago he saw a patient operated upon by Mr. Miles in 1939 who showed no evidence of recurrence anywhere. With D. H. Goodsall, he collaborated in the publication of *Diseases of the Anus and Rectum*, a standard work in proctology, which Miles himself later rewrote and enlarged.

Miles's work in London was interrupted by the first world war, and he served in France and Belgium from 1914 to 1919, latterly as senior surgeon and commandant of an Allied Forces base hospital and consulting surgeon to the Etaples area. On demobilisation he returned to the Royal Cancer Hospital where he collected round him a team of brilliant young men some of whom have unfortunately predeceased him—Cecil Joll, Jocelyn Swan, and Cecil Rowntree.

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Ministry of Health

Mr. Aneurin Bevan, the Minister of Health, has appointed Mr. E. J. S. Clarke to be his private secretary.

Royal Appointment

Surgeon Rear-Admiral O. D. Brownfield, O.B.E., has been appointed an honorary physician to the King in place of the late Surgeon Rear-Admiral H. M. Whelan.

Regional Boards' Appointments

The following appointments as senior administrative officers of hospital boards have been made: *North-west Metropolitan region:* Dr. H. M. C. Macaulay (M.O.H. for Middlesex); *Leeds region:* Dr. A. B. Williamson (M.O.H., Portsmouth); *Welsh region:* Dr. A. T. Jones (medical officer, Welsh Board of Health).

Prospective Candidates

Dr. Charles Hill, secretary of the British Medical Association, has been chosen as prospective parliamentary candidate of the United Liberal and Conservative Association for Luton. Dr. J. W. Clegg, pathologist to the Brompton Hospital, has been adopted as prospective Liberal candidate for the Wells division of Somerset.

Award to Ministries

On Oct. 9 in Atlantic City, Sir Wilson Jameson, on behalf of the British Ministries of Food and Health, will accept an award from the American Public Health Association "for the war-induced programme of food distribution in Great Britain resulting in improved public-health standards there."

Diary of the Week

OCT. 5 TO 11

Monday, 6th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
5 P.M. Mr. N. R. Barrett: Neoplasms of the Lung.
6.15 P.M. Dr. H. J. Brennan: Endotracheal Anæsthesia.
ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
4.30 P.M. *Epidemiology and State Medicine.* Mr. K. I. Nissen: Poliomyelitis in St. Helena, 1945. Dr. L. M. Laurent: Acute Meningo-encephalitis of Undetermined Virus Ætiology.

Tuesday, 7th

ROYAL COLLEGE OF SURGEONS
5 P.M. Mr. A. Lawrence Abel: Surgery of the Œsophagus.
6.15 P.M. Dr. A. D. Marston: Pre-anæsthetic Treatment.
ROYAL SOCIETY OF MEDICINE
8.30 P.M. *Orthopædics.* Mr. George Perkins: Flat-foot or Instability of the Longitudinal Arch. (Presidential address.)
UNIVERSITY COLLEGE, Gower Street, W.C.1
5.15 P.M. Prof. J. Z. Young, F.R.S.: Structure of Peripheral Nerve and of Nerve-endings. (First lecture.)
CHADWICK LECTURE
2.30 P.M. (26, Portland Place, W.1.) Brigadier A. E. Richmond: Positive Health—its Attainment in the Soldier, and the Army's Contribution to it in the Civilian.
LONDON SCHOOL OF DERMATOLOGY, 5, Lisle Street, W.C.2
5 P.M. Dr. R. T. Brain: Congenital Abnormalities.

Wednesday, 8th

ROYAL COLLEGE OF SURGEONS
5 P.M. Dr. G. F. Rowbotham: Head Injuries.
6.15 P.M. Dr. C. Langton Hewer: Anæsthesia for Thoracic Surgery.
ROYAL SOCIETY OF MEDICINE
4.30 P.M. *Physical Medicine.* Dr. W. S. Tegner: Rheumatoid Arthritis. (Presidential address.)
UNIVERSITY COLLEGE
5 P.M. M. H. Pirenne, Dr. Sc. (Liége): Physiological Mechanisms of Vision. (First of six lectures.)
UNIVERSITY OF GLASGOW
8 P.M. (Department of Ophthalmology.) Prof. A. Lowenstein: Pathology and Clinical Aspects of Ocular Glass Membranes.

Thursday, 9th

ROYAL COLLEGE OF SURGEONS
5 P.M. Mr. A. M. A. Moore: Surgery of the Tendons.
6.15 P.M. Dr. T. Cecil Gray: *d*-Tubocurarine Chloride and its Use in Anæsthesia.
ROYAL SOCIETY OF MEDICINE
5 P.M. *Ophthalmology.* Dr. H. Arruga (Barcelona): Detachment of the Retina.
LONDON JEWISH HOSPITAL MEDICAL SOCIETY
3 P.M. (Woburn House, W.C.1.) Dr. Hugh Gainsborough: Presidential Address.
LONDON SCHOOL OF DERMATOLOGY
5 P.M. Dr. C. W. McKeeny: X-ray Technique.

Friday, 10th

ROYAL COLLEGE OF SURGEONS
5 P.M. Prof. J. R. Learmonth: Surgery of Portal Hypertension.
6.15 P.M. Dr. John Gillies: Volatile Anæsthetic Agents.
LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY
7.30 P.M. Dr. J. T. Ingram: Sir Jonathan Hutchinson, Dermatologist.

Appointments

ASHWIN, R. F., M.B. Camb., D.M.R.D.: asst. radiologist, York General Hospital and York County Hospital.
ELTON, ARNOLD, M.B. Lond., F.R.C.S.: surgical registrar, Ch Cross Hospital, London.
EMBERSON, G. A., M.A., M.D. Camb., M.R.C.P., D.C.H.: pædiat Royal West Sussex Hospital, Chichester.
GREGORY, I. L., M.B. Manc.: resident surgical officer, Bolton Infirmary.
HILL, R. L. T. M.B. Glasg.: radiologist, Hull Royal Infirmary.
HOCKEN, M. E., M.B. Glasg., D.P.H.: senior school M.O. and de M.O.H., Rotherham.
IMRIE, C. H., M.B. St. And., D.P.H.: asst. county M.O. and M East Suffolk.
JEWESBURY, E. C. O., M.A., D.M. Oxfd, M.R.C.P., D.P.M.: assistant, neurological department, St. Thomas's Ho London.
JUSTICE, J. J., B.SC., M.B. Glasg., D.P.M.: psychiatrist, D County Council.
MACKEITH, R. C., M.A., D.M. Oxfd, M.R.C.P., D.C.H.: assist the director of the department of pædiatrics, Guy's H medical school, London.
PATTINSON, HUGH, M.B. Edin., D.P.H.: asst. county M.O. district M.O.H., Hunts County Council.
PRITCHARD, P. V., M.D. Edin., F.R.C.P.E., D.P.H.: county co. Antrim.
WILSON, DONALD, M.B. Lond., M.R.C.P.: physician i.c. depart of physical medicine, Royal West Sussex Hospital, Chich Municipal Hospital of St. Richards, Chichester; War Mem Hospital, Bognor Regis; and Worthing Hospital.
WOOD, P. M., M.B. Edin., M.R.C.P.E., D.O.M.S.: ophthalmic surg Royal Halifax Infirmary.

County Borough of West Ham:

HINDEN, ELCHON, M.D. Camb., M.R.C.P.: pædiatrician.
LAWLESS, D. J., B.SC., M.B. N.U.I., D.P.H.: medical direc mass miniature radiography unit.

Lancashire County Council:

Asst. county M.O.H.:
BUCHANAN, M.B. Glasg., D.P.H.
COUPER, W. R. M., M.B. Edin., D.P.H.

Wrexham Emergency (County General) Hospital and Wrexham East Denbighshire War Memorial Hospital:

BARRACLOUGH, RONALD, M.B.E., M.B. Aberd., D.L.O.: asst. surgeon.
EVANS, P. R. C., C.M., M.D. Lond., M.R.C.P.: asst. physician.
FORBES, J. R., M.D. Lond., M.R.C.P.: physician.
WHITING, R. J., M.B. Lond., D.A.: anæsthetist.

Colonial Service:

MURLEY, J. R. P., M.R.C.S.: M.O., British Somaliland.
THORNTON, THOMAS, M.B. St. And., F.R.C.S.: surgeon special Palestine.

Births, Marriages, and Deaths

BIRTHS

ALLEN.—On Sept. 23, at Buckland Newton, Dorset, the wife Lieutenant Michael Allen, R.A.M.C.—a son.
HARRIS.—On Sept. 21, at Windsor, the wife of Dr. Cyril Har —a daughter.
HARWOOD.—On Sept. 19, at Carshalton, the wife of Dr. H. Harwood—a son.
HUNT.—On Sept. 24, in London, the wife of Mr. A. H. Hunt, F.R.C —a daughter.
MACWILLIAM.—On Sept. 22, at Burnley, the wife of Dr. J. MacWilliam—a daughter.
MONYPENNY.—On Sept. 24, at Sheffield, to Dr. Isabelle Monypenn (*née* Little), wife of Dr. E. R. Monypenny—a daughter.
NICOLL.—On Sept. 24, in London, the wife of Lieut.-Colonel J. A Vere Nicoll, R.A.M.C.—a daughter.
O'BRIEN.—On Sept. 14, in London, the wife of Dr. D. J. O'Brie —a son.
THOMSON.—On Sept. 23, at Bournemouth, the wife of Dr. R. W Thomson—a daughter.
WOODARD.—On Sept. 23, in London, the wife of Dr. C. R. Woodar —a son.

MARRIAGES

ARMSON—NEWTON.—On Sept. 20, at Hanbury, Gerald Armso M.R.C.S., to Margaret Fenella Newton.
GRAY—GOODCHILD.—On Sept. 20, at East Horndon, Essex, Pet William Spencer Gray, M.B., to Maria Louisa Goodchild.
MICHELL—PEARCE.—On Aug. 30, in London, Guy Michell, M.B to Anne Pearce, S.R.N.

DEATHS

BRIDGE.—On Sept. 27, at Worthing, John Crosthwaite Brid O.B.E., M.R.C.P.E., F.R.C.S.E., D.P.H.
COPLAND.—On Sept. 21, at Leeds, James George Copland, M. M.D. Aberd., aged 65.
EDWARDS.—On Sept. 18, at Fordingbridge, Hants, Walter Goldworthy Edwards, L.R.C.P.E., surgeon captain, R.N. (retd.).
FARMER.—On Sept. 20, at Ludlow, William Henry Farmer, M.R.C. aged 76.
JOSEPH.—On Sept. 8, in Australia, Henry Stanley Joseph, M. Lond., F.R.C.S.
LAPAGE.—On Sept. 23, at Didsbury, Manchester, Charles P. Lapage, M.D. Manc., F.R.C.P.
MILES.—On Sept. 24, in London, William Ernest Miles, T.D., F.R.C. F.R.C.S.I., F.A.C.S.
RITCHIE.—On Sept. 25, in London, Douglas David Ritchie, M. M.D. St. And.
STRATHAIRN.—On Sept. 19, at Nicosia, Cyprus, George Ce Strathairn, M.B. Edin., D.P.H.

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The health and physique of the mother depend on the conditions existing at various times from her birth till the birth of her child. Before the war the diet of the high income-group was much superior to that of the poor, and the present investigation has shown that, during the war years, in Aberdeen at least, the high income-group still had a much better diet than the poor. The former had therefore from birth a superior environment leading to better physique and health, and during pregnancy a better diet. One could therefore expect a much better "reproductive performance" from group 1 than group 2. It must also be remembered that the patients in group 1 are much quicker in seeking the best possible medical advice, and more conscientious in carrying out any instructions. How far a first-class diet, backed up by intensive health education, during pregnancy can overcome the handicap of poor health and physique is uncertain.

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We know that the stillbirth-rate rises with age in each parity and that after the second pregnancy it rises with increasing parity. Fig. 1 is an analysis of the births in England and Wales for 1939 and shows that in social class V over half the primiparæ were under the age of 25, whereas in class I the figure was only 17%. This high proportion of young mothers in social class V tends to lower the stillbirth-rate in this group.

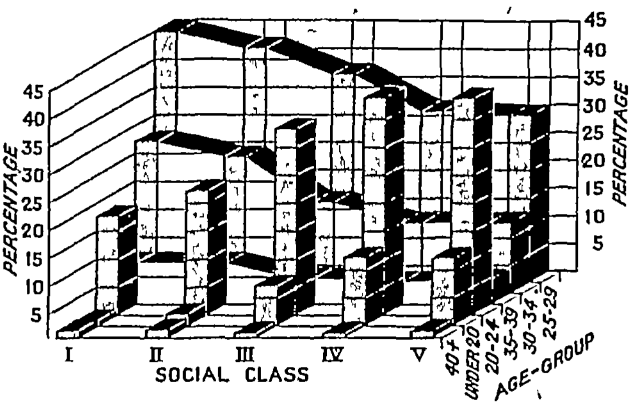


Fig. 1—Analysis of first births in England and Wales in 1939, by social class and age at birth of child.

In social classes I and II the average age at the birth of the first child is about 5 years greater than in social classes III, IV, and V. Families are smaller; so relatively there are more first births. These two factors tend to raise the stillbirth-rate in classes I and II. There are no families of 6 or over, however, in social classes I and II, whereas in classes III, IV, and V large families are still found (6%). In Aberdeen 12% of women in classes III, IV, and V had 6 or more children, with a consequent increase in the stillbirth-rate.

Fig. 2 is an analysis of the stillbirth-rates in primiparæ in the various social classes in England and Wales for 1939: it shows a steady rise with increasing age, starting at 20 years, except in class I, where the rise does not begin until 30. Fig. 3 shows a similar analysis for second pregnancies. Here the difference between social class I and the others is even clearer. In class I the stillbirth-rate rises very little till the age of 40, whereas in class V it rises steadily after 30.

At ages 30-34 the stillbirth-rate in second pregnancies in class V is three times that in class I. The fact that the difference in the stillbirth-rate between classes I and V is greater in a second pregnancy than a first is probably attributable to different factors operating in the two classes. Certain adverse factors in social class V—such as contracted pelvis and poor physique, health, and nutrition—influence the second pregnancy as well as the first, whereas in social class I one of the most important adverse factors in a first labour is difficult labour, due to uterine dysfunction and occipito-posterior positions which does not usually recur in a second labour.

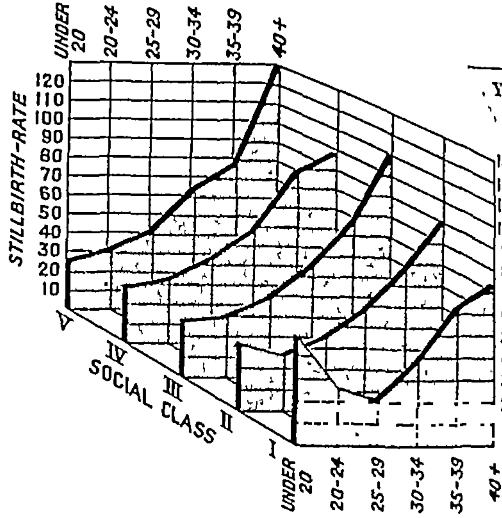
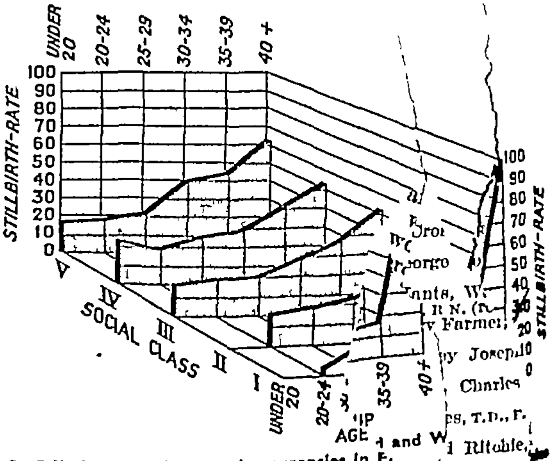


Fig. 2—Stillbirth-rate in primiparæ in England and Wales in [illegible] analysed by age-group and social class.

OBSTETRIC SKILL

To test the influence of skilled care during pregnancy and labour in lowering fœtal mortality, the results obtained by obstetric specialists working in private practice among patients in social classes I and II (group A1), and in hospital practice with patients in social classes III, IV, and V (group B1), have been compared with the results obtained where the standard of obstetric care is average and variable. For this latter group national statistics have been used. Social classes I and II (group A) and social classes III, IV, and V (group B) are obtained by appropriate addition from the data already shown in figs. 2 and 3.

The figures in group A1 are the collected results of six obstetric specialists, and I am much indebted to colleagues in Edinburgh, Glasgow, Leeds, Liverpool, and Belfast for furnishing me with notes of their cases. The total number is small, 2028, but the similarity of the results obtained by each is very striking and suggests that with a larger series the results would be the same. The patients in group B1 were booked cases in the Aberdeen Maternity Hospital.



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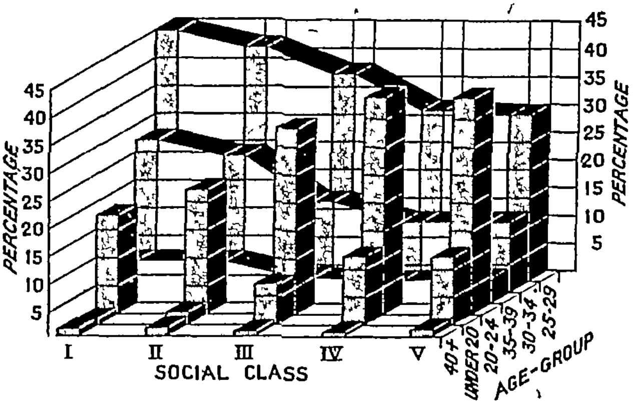

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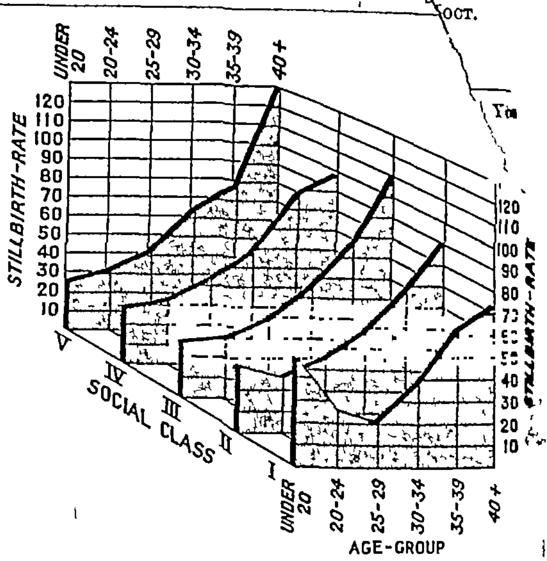

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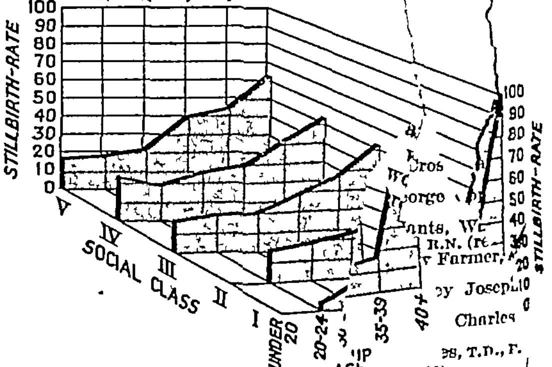

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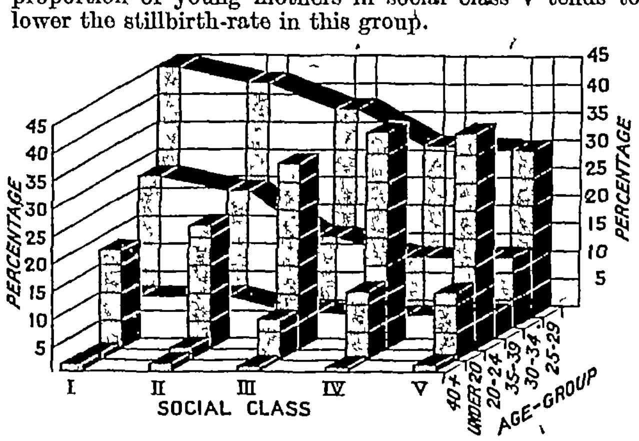

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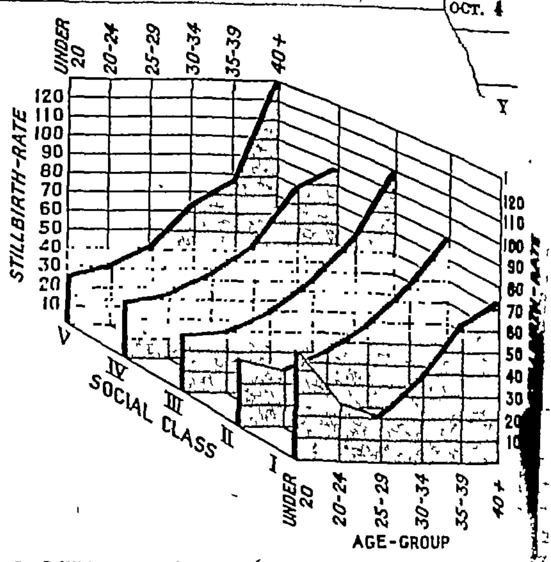

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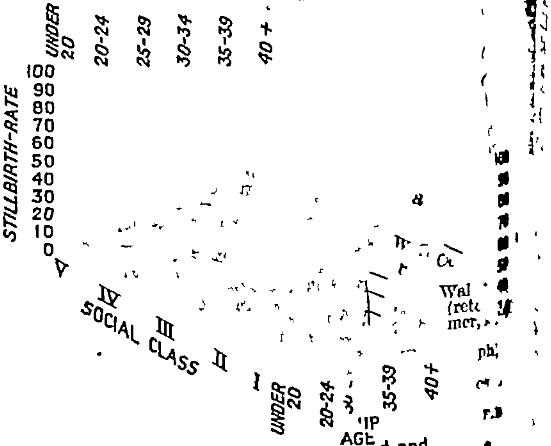

Fig. 3—Stillbirth-rate in second pregnancies in E 1939, analysed by age-group and social class.

relatively high mortality from cerebral birth trauma in full-time infants is a reflection of the higher incidence of contracted pelvis in group B1. The mortality from infection, even in full-time infants, is three times higher in group B1 than in group A1, a result probably of lower resistance to infection and of the greater risk resulting from the higher incidence of difficult labour.

Table VI shows that in group B1 nearly half the neonatal deaths occur in premature infants. These figures agree with national statistics, and though prematurity is not necessarily a cause of death it is a very important predisposing factor. The death-rate per 1000 live births attributed to prematurity in social class V is twice that of social class I, and table V shows that in group B1 there were 54 deaths of premature infants out of 3174 live births (17 per 1000), whereas in group A1 there were 8 deaths in premature infants out of 1605 live births (5 per 1000).

CONCLUSION FROM ABOVE ANALYSES

Evidently the main reason why fœtal mortality is higher in group B1 than in group A1 is the greater incidence of prematurity and of deaths from "unknown" causes. There is a higher death-rate in group B1 from birth trauma, toxæmia, and infection. Since the standard of obstetric care in both groups is high, the contrast must be due to the great differences in physique, health, and diet of the mothers.

TABLE V—CAUSES OF STILLBIRTHS IN FIRST BIRTHS IN TWO GROUPS OF WOMEN UNDER THE CARE OF SPECIALISTS

Group A1 corresponds to social classes I and II, and group B1 corresponds to social classes III, IV, and V

Cause of death	Group B1 (3296 cases)				Group A1 (1633 cases)			
	Full-time	Pre-mature	Total	Still-births per 1000	Full-time	Pre-mature	Total	Still-births per 1000
Gross fœtal deformity	5	11	16	4·9	5	1	6	3·7
Cause unexplained	21	23	44	13·3	5	1	6	3·7
Toxæmia ..	8	16	24	7·3	5	1	6	3·7
Birth trauma	18	1	19	5·8	3	—	3	1·8
Cord complications	1	—	1	0·3	2	—	2	1·2
Accidental hæmorrhage	5	6	11	3·3	—	2	2	1·2
Miscellaneous	2	5	7	2·1	3	—	3	1·8
Total ..	60	62	122	37·0	23	5	28	17·1

"Cause unexplained" in full-time stillbirths refers to those cases where intra-uterine deaths occurred during "normal" pregnancy or labour. In the premature group it means that the cause of the onset of the premature labour was unknown. Under accidental hæmorrhage are included only those where there was no maternal toxæmia.

Group B1 in the present investigation is equivalent to social classes III, IV, and V; and since these classes constitute about 90% of our population the most effective method of lowering the national stillbirth-rate and neonatal mortality would be to raise the living conditions and diet of this 90% to the standard of the other 10%. This would lead to less prematurity and a fall in the numbers of unexplained stillbirths. A long-term effect would be to lower the death-rate from cerebral birth trauma by decreasing the incidence of contracted pelvis.

WAR-TIME EXPERIENCES

Observations in animals have emphasised the importance of a good diet—particularly in the second half of pregnancy—in securing offspring of good vitality and a low stillbirth-rate. Large-scale experiments on the human subject are difficult to carry out, but the experience of Britain during the war years sheds a good deal of light on the influence of diet on stillbirth-rate and neonatal mortality.

TABLE VI—CAUSES OF NEONATAL DEATH IN PRIMIPARÆ GROUPS A1 AND B1

Cause of death	Group B1 (3174 cases)				Group A1 (1605 cases)			
	Full-time	Pre-mature	Total	Still-births per 1000	Full-time	Pre-mature	Total	Still-births per 1000
Deformity..	14	3	17	5·3	2	—	2	1·2
Cause unexplained	7	18	25	7·8	1	5	6	3·7
Toxæmia ..	1	6	7	2·2	—	1	1	0·6
Cerebral hæmorrhage and asphyxia	24	3	27	8·5	5	—	5	3·1
Infection ..	12	7	19	5·9	3	—	3	1·[illegible]
Miscellaneous	3	17	20	6·3	2	2	4	[illegible]
Total ..	61	54	115	36·0	13	8	21	13·[illegible]

In England and Wales, for many years before the war, there was little change in the stillbirth-rate; but between 1939 and 1945 it fell in England and Wales from 38 to 28, and in Scotland from 42 to 33. The improvement affected every age-group and every parity almost equally. A fall in that part of the neonatal mortality ascribed to prematurity and to "congenital debility" also occurred. The Registrar-General for Scotland has analysed the causes of stillbirths for each year from 1939 to 1944, and his analyses for 1939 and 1944 are seen in table VII.

In 1939 the biggest group (32·6% of the total) was called "ill-defined and unknown causes." Deaths due to injury constituted 23·9% of the total. In 1944 the biggest fall in mortality is seen in the "ill-defined and unknown causes" group, which now constitutes 16·6% of the total, and the death-rate from this cause has fallen to nearly a third of what it was. Other causes of stillbirth which have fallen are toxæmia and accidental hæmorrhage; the death-rate from fœtal abnormality has risen. The fall in the number of deaths ascribed to "unknown causes" may be explained to some extent by more accurate certification since 1939, when registration of

TABLE VII—ANALYSIS OF CAUSES OF STILLBIRTH IN SCOTLAND, 1939–44

Cause of stillbirth	1939 (total births 90,731)		1944 (total births 99,162)	
	No. of stillbirths	Still-birth-rate per 1000 (42·2)	No. of stillbirths	Still-birth-rate per 1000 (32·5)
Diseases not specially associated with pregnancy	77 (*2·0%*)	0·84	101 (*3·1%*)	1·01
Diseases specially associated with pregnancy	864 (*22·5%*)	*9·53*	710 (*22·04%*)	7·16
Anomalies of fœtus, placenta, or cord	712 (*18·5%*)	7·84	852 (*26·4%*)	8·59
Death of the fœtus by injury	916 (*23·9%*)	10·09	1017 (*31·5%*)	10·25
Ill-defined and unknown causes	1263 (*32·9%*)	13·92	541 (*16·7%*)	5·45
Total ..	3832		3221	

perienced symptoms of this sort before operation; they d started about six months after it and were now gradually reasing in severity.

As his symptoms suggested hypoglycæmia, a standard T.C. was carried out and gave the following result:

Fasting ..	0·104 g. per 100 c.cm.
$^1/_2$ hr. ..	0·198 g. „ „
1 hr. ..	0·078 g. „ „
2 hr. ..	0·047 g. „ „
$2^1/_2$ hr. ..	0·061 g. „ „

Two hours after drinking the glucose he experienced a pical attack of hypoglycæmia, with sweating, pallor, chycardia, and dilated pupils. These symptoms continued til the end of the test and were then relieved with $^1/_2$ oz. glucose taken by mouth.

He was told to take sugar whenever he felt an attack eloping, and he found that this always relieved his ptoms; but he often forgot his sugar, and the attacks inued to be troublesome.

igations

e following investigations were carried out on this man outpatient. Throughout the tests he took a full normal except where the contrary is stated, and whenever he to hospital he rested on a bed in the ward for an hour fore any test was started.

A second G.T.C. gave the following result:

Fasting ..	0·077 g. per 100 c.cm.
$^1/_2$ hr. ..	0·213 g. „ „
1 hr. ..	0·116 g. „ „
$1^1/_2$ hr. ..	0·052 g. „ „
$1^3/_4$ hr. ..	0·065 g. „ „
2 hr. ..	0·077 g. with 1 % glycosuria at $1^1/_2$ hr.

Oral galactose-tolerance curve (40 g. galactose) (fig. 1):

Fasting ..	Nil
$^1/_4$ hr. ..	0·059 g. per 100 c.cm.
$^1/_2$ hr. ..	0·084 g. „ „
$^3/_4$ hr. ..	0·035 g. „ „
1 hr. ..	Nil

naline-sensitivity rve (see fig. 2, Strandell 1934): naline 1 mg. was en intramuscularly to the fasting patient, d blood-sugar was imated at 10-min. ervals. The results per 100 c.cm.) were: ting 0·092; 0·140; 162; 0·170; 0·185; 145.

Insulin-sensitivity test e fig. 3, and Fraser al. 1941): soluble ulin 3 units, equivalent to 0·05 unit per kg. body-weight, was ected intravenously to the fasting patient, d blood-sugar was timated at 4-min. ervals. The results re:

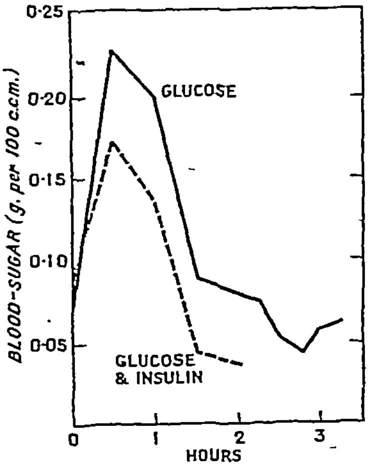

Fig. 4—Glucose-tolerance and insulin-glucose-tolerance curves in case 2.

Fasting	0·073 g. per 100 c.cm.
4 min. after insulin ..	0·080 g. „ „
8 „ „ „ ..	0·056 g. „ „
12 „ „ „ ..	0·061 g. „ „
16 „ „ „ ..	0·040 g. „ „
20 „ „ „ ..	0·033 g. „ „
24 „ „ „ ..	0·042 g. „ „

Symptoms of hypoglycæmia were present 20 min. after the ection.

Radioscopy showed that the patient's stomach emptied com- tely 15 min. after the ingestion of $^1/_2$ pint of barium meal.

The patient was put on a relatively high-fat diet composed about 250 g. of carbohydrate, 165 g. of fat, and 95 g. protein, and this he took readily. His symptoms gradually proved, but war work took him from the district and he is not seen again until Jan. 6, 1944, when the G.T.C. showed eat improvement:

Fasting ..	0·081 g. per 100 c.cm.
$^1/_2$ hr. ..	0·194 g. „ „
1 hr. ..	0·101 g. „ „
$1^1/_2$ hr. ..	0·067 g. „ „
2 hr. ..	0·070 g. „ „
$2^1/_2$ hr. ..	0·075 g. „ „

In December, 1944, while still on this diet, he reported that his attacks had practically ceased, and on June 21, 1945, another G.T.C. showed:

Fasting ..	0·081 g. per 100 c.cm.
1 hr. ..	0·123 g. „ „
2 hr. ..	0·079 g. „ „
$2^1/_2$ hr. ..	0·089 g. „ „

In February, 1946, he returned to normal diet, but a further test on April 17, 1946, showed:

Fasting ..	0·064 g. per 100 c.cm.
$^1/_2$ hr. ..	0·235 g. „ „
1 hr. ..	0·186 g. „ „
$1^1/_2$ hr. ..	0·066 g. „ „
2 hr. ..	0·056 g. „ „

with glycosuria at half an hour, and he was again experiencing slight symptoms. He therefore returned to his high-fat diet and has continued well ever since.

While he was on this diet, the insulin-sensitivity test was repeated on May 7, 1946, and gave the following result (fig. 3):

Fasting	0·092 g. per 100 c.cm.
4 min. after insulin ..	0·105 g. „ „
8 „ „ „ ..	0·075 g. „ „
12 „ „ „ ..	0·078 g. „ „
16 „ „ „ ..	0·054 g. „ „
20 „ „ „ ..	0·054 g. „ „
24 „ „ „ ..	0·060 g. „ „

Case 2.—A labourer, aged 42, had had recurrent exacerbations of a prepyloric ulcer since 1938. He was admitted to Hillingdon Hospital in May, 1943, with a further recrudescence; and, because of his lack of response to medical treatment, and his high gastric acidity, operation was advised.

Partial gastrectomy (Polya) was done by Mr. Gordon Duncan on May 27, 1943; convalescence was uneventful.

Patient reported to the follow-up clinic in August, 1943, complaining of such severe bouts of physical exhaustion and vertigo two or three hours after his meals that he could not stand up. These attacks were accompanied by trembling, emotional instability, and paræsthesiæ of the feet. Sweating was not mentioned spontaneously, but was admitted on direct questioning. He had noted that these symptoms were particularly likely to come on if he took exercise after a meal.

A standard G.T.C. on Aug. 25, 1943, gave the following figures:

Fasting ..	0·100 g. per 100 c.cm.
$^1/_2$ hr. ..	0·260 g. „ „
1 hr. ..	0·120 g. „ „
2 hr. ..	0·047 g. „ „
3 hr. ..	0·065 g. „ „

There was glycosuria in the half-hour specimen, and patient was shaky and uneasy two hours after the test began.

Investigations

Patient was admitted to hospital, and the following investigations were carried out while he was on the full ward diet.

Glucose-tolerance curve, Oct. 21, 1943 (52 g. of glucose, equivalent to 30 g. per sq. m. of body surface; see fig. 4):

Fasting ..	0·074 g. per 100 c.cm.
$^1/_2$ hr. ..	0·228 g. „ „
1 hr. ..	0·198 g. „ „
$1^1/_2$ hr. ..	0·089 g. „ „
2 hr. ..	0·080 g. „ „
$2^1/_4$ hr. ..	0·074 g. „ „
$2^1/_2$ hr. ..	0·052 g. „ „
$2^3/_4$ hr. ..	0·044 g. „ „
3 hr. ..	0·075 g. „ „

There was glycosuria at 1 hr. and symptoms of hypoglycæmia at $2^1/_2$ hr.

Insulin-glucose curve, Oct. 23, 1943 (see fig. 4 and Himsworth 1939b): while patient drank 52 g. of glucose, soluble insulin 5 units was injected intravenously. Had Himsworth's technique been exactly followed, $8^1/_2$ units would have been injected, but it was felt that this dose might cause excessive hypoglycæmia in this patient. The following results were obtained:

Fasting ..	0·089 g. per 100 c.cm.
$^1/_2$ hr. ..	0·173 g. „ „
1 hr. ..	0·136 g. „ „
$1^1/_2$ hr. ..	0·043 g. „ „
2 hr. ..	0·037 g. „ „

At 2 hr. hypoglycæmia was so severe that the test was stopped.

Adrenaline-sensitivity curve (see fig. 2 and Strandell 1934): 1 mg. of adrenaline was injected intramuscularly into the fasting patient, and the blood-sugar estimated at 10-min. intervals, with the following results (g. per 100 c.cm.): fasting 0·061; 0·103; 0·118; 0·132; 0·141; 0·127; 0·132.

HYPOGLYCÆMIA FOLLOWING PARTIAL GASTRECTOMY

REPORT OF THREE CASES

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AFTER patients have undergone partial gastrectomy for peptic ulcer their blood-sugar level may fluctuate remarkably for some months. Sometimes the blood-sugar abruptly increases after a meal so much that the renal threshold is far exceeded and glycosuria results; and then, within an hour or two, it decreases so rapidly or to so low a level that symptoms of hypoglycæmia develop.

Such attacks of hypoglycæmia have aroused little interest in this country, and most of them probably pass undiagnosed. There are, however, several German references to this subject, and Evensen (1942) has published his detailed work on alimentary hypoglycæmia and reviewed the literature. Three cases are reported here in which hypoglycæmia of great severity followed partial gastrectomy for peptic ulcer.

In the standard glucose-tolerance curve (G.T.C.) three distinct phases can be recognised: (1) increasing glycæmia during which the rate of absorption of glucose exceeds that of its storage in the liver and muscles, the blood-sugar level reaching a peak 30–60 min. after ingestion of the glucose; (2) decreasing glycæmia, when the storage of sugar under the influence of insulin outpaces its absorption, the blood-sugar level returning to the fasting level, *or somewhat lower*, 90–120 min. after the start of the test; and (3) the blood-sugar increases again slowly to the fasting level, as glucose is liberated from the liver by adrenaline secreted in response to the falling blood-sugar level of the second stage. Even in a few normal persons the blood-sugar level falls so sharply during the second phase of the curve that mild symptoms of hypoglycæmia are produced; Evensen recorded such symptoms in 3 of his 50 normal subjects during a standard G.T.C.

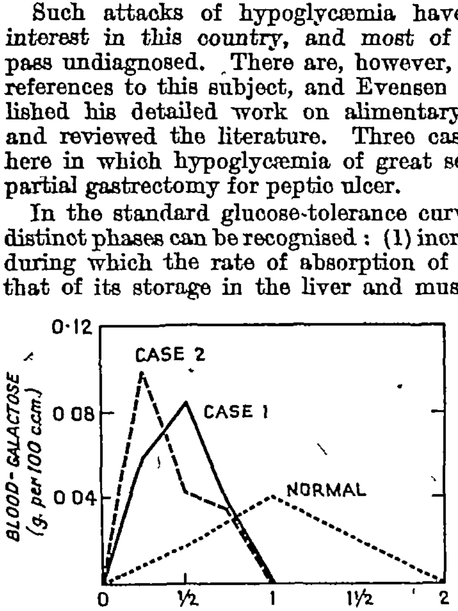


Fig. 1—Oral galactose-tolerance tests in cases 1 and 2.

Maclean (1932) first drew attention to an unusual type of G.T.C., which he named the "lag curve." In this the first stage is abnormally abrupt, the blood-sugar level reaching a peak above the renal threshold within 30 min., causing transient glycosuria. An unusually rapid fall of blood-sugar level marks the second phase, often bringing the blood-sugar 0·030 g. or more per 100 c.cm. below the fasting level an hour after the start of the test. It was pointed out by Lawrence (1936) that such curves were common in patients who had undergone gastro-enterostomy or had duodenal ulcer, and he associated curves of this shape with rapid emptying of the stomach, preferring the name "oxyhyperglycæmic" curve to that of lag curve. The fact that similar curves have been recorded in normal people when the glucose is introduced through a tube directly into the duodenum (Wöhrle 1936, Evensen 1942) is in accordance with this view, but it is important to note that Evensen's figures show clearly that the hypoglycæmic phase is not well marked in such experiments, and to this point Wöhrle drew particular attention. Evensen demonstrated that in 7 out of 50 patients with peptic ulcer, and 17 out 37 cases of gastro-enterostomy, the blood-sugar rose to a peak of 0·210 g. per 100 c.cm. or higher d a standard G.T.C. and fell to 0·065 g. per 100 c.cm. or lower during the second phase. Mild symptoms of hypoglycæmia developed during the test in 4 of the patients with ulcer and 14 of those with gastro-enterostomy. It is not common for symptoms to develop *in such patients after a normal meal*, for glucose is then absorbed more slowly and for a longer time as the polysaccharides of the meal are gradually digested.

After certain types of partial gastrectomy for peptic ulcer the stomach empties with great rapidity and an oxyhyperglycæmic type of G.T.C. is found. Even after ordinary meals slight glycosuria develops, and this may be followed from one to three hours later by symptoms of hypoglycæmia. These symptoms are particularly apt to develop if hard physical work is being done while the blood-sugar level is falling, and it is well recognised that physical exertion may produce a considerable fall in blood-sugar level even in normal people (Strandell 1934). It is a remarkable feature of these *cases that symptoms of hypoglycæmia start not immediately* after the operation but only after a lapse of weeks or months; any theory to explain the mechanism of these hypoglycæmic attacks must take this fact into account. Evensen (1942) found mild symptoms of hypoglycæmia during a G.T.C. with a blood-sugar level of 0·065 g. per 100 c.cm. or less in 12 of his 95 cases of partial gastrectomy.

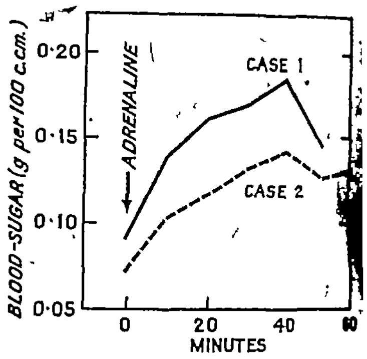


Fig. 2—Adrenaline-sensitivity curves in cases 1 and 2.

The following case-records show that events in these patients follow a characteristic course, with the result that diagnosis is not difficult, and that on occasion the symptoms may be so severe that the patient is incapacitated.

Case 1.—A male clerk, aged 28, had had a severe hæmatemesis *in 1936 and since that time had experienced* several attacks of epigastric pain.

He was admitted to Hillingdon Hospital *on Sept. 30*, 1941, with another hæmatemesis, from which he recovered. Radiography then showed a duodenal ulcer with early stenosis, and a test-meal revealed great hyperchlorhydria.

Partial gastrectomy (Polya) was done by Mr. Gordon Duncan on Nov. 6, 1941, and recovery was uneventful, patient being discharged on Dec. 13, 1941.

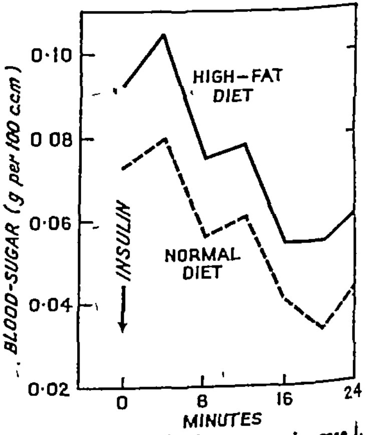


Fig. 3—Insulin-sensitivity curves in case I.

On May 18, 1943, he attended the follow-up clinic, complaining of attacks of intense exhaustion and muscular weakness, accompanied by mental irritability and a feeling of great anxiety. At such times his hands trembled violently and he sweated profusely. Attacks came on two or three hours after food, and seemed to him to be precipitated by physical exertion, such as digging in his garden. He had never

Galactose-tolerance curve (40 g. galactose by mouth, see fig. 1):

Fasting	..	Nil
¼ hr.	..	0·098 g. per 100 c.cm.
½ hr.	..	0·041 g. ,, ,,
¾ hr.	..	0·036 g. ,, ,,
1 hr.	..	Nil

Emptying-rate of stomach.—After a half-pint barium meal, radioscopy showed that the stomach had emptied completely within 15 min.

Patient was discharged and seen regularly in the out-*patient department. He refused to take a high-fat diet, and* his attacks continued, being relieved by sugar and bread. A G.T.C. on Dec. 5, 1944, showed:

Fasting	..	0·061 g. per 100 c.cm.
1 hr.	..	0·130 g. ,, ,,
2 hr.	..	0·043 g. ,, ,,
2¼ hr.	..	0·044 g. ,, ,,
2½ hr.	..	0·040 g. ,, ,,
2¾ hr.	..	0·045 g. ,, ,,

Gradually his symptoms became less and less troublesome, and when the patient was last seen in June, 1946, he reported that they had practically ceased.

Case 3.—A male, aged 46, had undergone partial gastrectomy (Polya) in December, 1942, for duodenal ulcer. In April, 1944, he began to complain of headaches, giddiness, lack of concentration, and "feeling blank," usually about 4 P.M. These symptoms became disabling and their indefinite nature led his doctor to send him to a psychiatrist, but he was subsequently transferred to Dr. M. M. Deane at the West Middlesex Hospital, who diagnosed hypoglycæmia.

A G.T.C. then showed:

Fasting	..	0·100 g. per 100 c.cm.
½ hr.	..	0·240 g. ,, ,,
1½ hr.	..	0·044 g. ,, ,,
2 hr.	..	0·044 g. ,, ,,
3 hr.	..	0·090 g. ,, ,,

A half-pint barium meal was given, and the radiologist reported: "The stomach empties very rapidly and retains barium meal for no more than 5 or 6 minutes. The stoma is apparently dilated."

The symptoms *improved spontaneously, and a G.T.C. in* January, 1945, showed:

Fasting	..	0·104 g. per 100 c.cm.
½ hr.	..	0·170 g. ,, ,,
1 hr.	..	0·142 g. ,, ,,
1½ hr.	..	0·110 g. ,, ,,
2 hr.	..	0·090 g. ,, ,,
2½ hr.	..	0·092 g. ,, ,,
3 hr.	..	0·078 g. ,, ,,
3½ hr.	..	0·088 g. ,, ,,

Since then patient has been free from symptoms.

NOTE ON OPERATIVE TECHNIQUE IN CASES 1 AND 2

(G. W. Duncan, M.B. Lond., F.R.C.S.E.)

Case 1 had a large duodenal ulcer fixed to the pancreas. The stomach was divided proximal to the pylorus, and the mucosa of the pyloric antrum was removed after the method of Finsterer. Three-quarters of the stomach was removed, and a retrocolic Polya anastomosis was performed, the whole length of the cut stomach being used for the anastomosis. The stoma was 4 in. long.

In case 2 a chronic duodenal ulcer was found. Resection comprised over three-quarters of the stomach and the first part of the duodenum, including the ulcer. A retrocolic Polya anastomosis was performed, utilising the whole length of the cut stomach as in case 1.

In each case a large stoma was made, and both these patients had a retrocolic anastomosis. Since a modified *Hofmeister type of anastomosis, with a much smaller stoma,* has been used, no case exhibiting symptoms of hyperglycæmia after operation has been found in over 100 cases.

Methods.—In cases 1 and 2 blood-glucose was estimated titrimetrically on capillary blood by Harding's modification of the Schaffer-Hartmann technique (see King 1946a). Blood-galactose was estimated by the method described by King (1946b) on capillary blood.

DISCUSSION

A characteristic clinical picture emerges from these case-records identical with that described by Evensen (1942). A patient undergoes partial gastrectomy by a technique which leaves a large stoma through which stomach empties with great rapidity. He keeps well some weeks or months after leaving hospital, and begins to develop, about two hours after his particularly if he is doing manual work then, mu weakness, sweating, trembling, palpitations, and tional instability. These symptoms may be p by glycosuria, are accompanied by pallor, tachyc and dilated pupils, and are quickly relieved by f *In mild cases the patient may be thought* psychone and the true diagnosis not considered, but in severe c the picture is unmistakable. The diagnosis is confir by a G.T.C., which shows an oxyhyperglycæmic c with a sharp drop of blood-sugar level to hypogly levels two or three hours after the start of the test, w the patient may declare that one of his attacks is dev ing. Symptoms depend as much on the rate of the blood-sugar level as on its ultimate level. sugar estimations should be made every quarter hour for two and a half or three hours, otherwise lowest point in the curve may be missed.

There can be no doubt that these three patients attacks of hypoglycæmia, for their symptoms w identical with those of hypoglycæmia from other ca they were relieved within a few minutes by ingestion glucose, and in the G.T.C. they coincided with a rap *decrease of blood-sugar from a high level to a* value 0·050 g. per 100 c.cm. or less. None of them had experienced such symptoms before operation.

The results of investigations carried out on cases 1 a suggest a mechanism by which the abnormal curves hypoglycæmia are brought about. In each case first phase of the G.T.C. is abnormal, the blood-sugar rising steeply to a higher value than normal, prod glycosuria. This is probably due to such rapid absorp *of sugar that hyperglycæmic levels are reached* be the storage action of insulin becomes effective. confirmation, radioscopy shows that the stomach emp very quickly through the large stoma of the Polya op tion. It is possible, however, that the hyperglycæ might result from the patient's inability to store absorbed glucose as glycogen in the liver or muscles, eit from some disease of the liver or from some failure in production of insulin, the operation having interf with the blood-supply or nervous connexions of pancreas. But there has been no clinical evidence of hepatic disorder in either patient in the three years du which they have been under observation, and the rap removal of the galactose from the blood-stream in galactose-tolerance tests argues strongly against disease of the liver. The high peaks in both the galacto curve and the glucose-tolerance curve show clear that the hyperglycæmia cannot be due to deficie production of insulin, for the metabolism of galacto is independent of insulin action (Roe and Schwartzma 1932). The close similarity between the two curv also demonstrates that the hyperglycæmia cannot caused by excessive hepatic glycogenolysis dur absorption, as was maintained by Hetényi and Pog (1928), for galactose is not re-formed from liver glycog (Harding et al. 1934). The first phase of the blood sugar curves in these patients is therefore adequat explained on the grounds of unusually rapid absorpti of sugar from the intestine.

Three mechanisms might explain the sharp fall blood-sugar level during the second stage of the curv In the first place, the body might react to the high blood sugar level of the first stage by the secretion of unusually large amount of insulin, the maximal e of which might coincide with the completion of gluc absorption and so lead to hypoglycæmia. Such mechanism is not easy to confirm or disprove, for the is no means of determining the amount of insulin blood or tissues at any moment.

ain β-halogenated alkylamines. Their profound ressant effect on leucopoiesis occurred much earlier n any effects on the red-cell series, and it was usually owed by a rapid improvement if the patient was pletely and promptly removed from exposure to these e agents. This led to a consideration of the possible apeutic effects of these substances. For this purpose, following two substances were chosen for trial as t of our experience on the large scale had been with n: methyl-bis(β-chlorethyl)amine hydrochloride and (β-chlorethyl)amine hydrochloride.

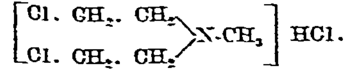
n the first place these substances were tried in 1942 patients with chronic lymphatic and chronic myeloid emia, who were specially selected as having very high al white-cell counts, so that a considerable depression he leucocytes could be observed without risk. With erience we extended our investigations to all types and rees of acute and chronic leukæmia, polycythæmia, Hodgkin's disease. The whole of the original work done during the war, when the substances used were ject to severe restrictions of secrecy, and it is only r that we can report briefly our results with these nal cases and some additional ones. Meanwhile ilar investigations have been reported from America several groups of workers (Gilman and Philips 1946, lman et al. 1946, Jacobson et al. 1946, Rhoads 1946) n these agents in leukæmia, Hodgkin's disease, and phosarcoma.

rom the small series of cases described in this report do not attempt to assess the ultimate prognosis in e cases but are primarily concerned with observa- on the immediate effects of therapy, though several the investigations have been carried on for several rs. The exact mechanism of the action of these stances remains to be discovered.

DOSAGES AND TECHNIQUE

he two amines were used in the form of their hydro-rides and have been variously termed nitrogen tards, halogenated alkylamines, &c.:

) Methyl-bis(β-chlorethyl)amine hydrochloride

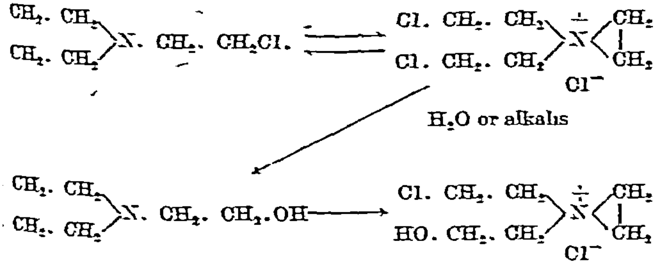


$$\left[\begin{matrix}\mathrm{Cl.\,CH_2.\,CH_2}\\ \mathrm{Cl.\,CH_2.\,CH_2}\end{matrix}\!>\mathrm{N\cdot CH_3}\right]\mathrm{HCl.}$$

) Tris(β-chlorethyl)amine hydrochloride

$$[(\mathrm{Cl.\,CH_2.\,CH_2})_3 \equiv \mathrm{N}]\ \mathrm{HCl.}$$

oth hydrochlorides are easily soluble in water, in ch they tend rapidly to undergo a reversible chemical rangement with the formation, first, of very reactive e ethylene-imonium derivatives, and finally, especi- in the presence of weak alkalis, of relatively inactive ohydrins and the chlorine-free hydroxyamines:



and so on.

as obviously important that these solutions should made up freshly immediately before clinical use.

hese ethylene-imonium derivatives have very potent iotoxic and cytotoxic effects, especially on mitosis the more rapidly proliferating cells and in enzyme tems; consequently the hæmopoietic and gastro-estinal systems are specially affected, even by sub-lethal doses. On standing in water or in the presence of dilute alkali, further hydrolysis forms the chlorohydrin and then complete removal of all the chlorine atoms, and dimerisation may also take place, these substances having little leucopenic activity.

Owing to their highly vesicant properties these two substances were given intravenously in dilute solution, care being taken to prevent leakage into the subcutaneous tissues; we have no record of having any trouble in this connexion. Of the two substances, there was a greater tendency on the part of the bis compound to cause local thrombosis at the site of the injection, but there was very little tendency on the part of the tris compound to do this in the doses we used.

The calculated required doses of these salts were weighed accurately in sterile dry tubes and then dissolved in 30 ml. of sterile isotonic saline and administered intravenously immediately to reduce to the minimum any tendency to hydrolysis.

The usual initial doses were about 0·1–0·2 mg. per kg. of body-weight, administered on consecutive or alternate days until about 3–6 doses had been given; but these were varied according to the blood-count, particularly the number of leucocytes, and to the responses to the previous doses. These results were controlled by daily total white-cell counts and bi-weekly full blood-counts. Various other hæmatological and biochemical examinations not described here were also done. From observations of the effects of the initial doses we were able to adjust subsequent doses to appropriate levels until the required hæmatological effects were produced.

The patients were usually admitted to hospital for the first series of injections, but later injections have been

RESULTS IN CHRONIC MYELOID LEUKÆMIA

Case no.	Age (yr.)	Sex	Duration of disease before treatment (months)	Courses of treatment*	Total dose of alkylamine (mg.)	White cells (thousand)		Comments
						Before treatment	After treatment	
1	37	M	4–6	23	267·0	490	123	Definite improvement with remission of 8 months; anæmia improved with decrease of spleen; refractory stage reached after 14 months
2	63	F	2	3	26·6	210	122	Poor response; no improvement in anæmia
3	60	F	24	8	45·6	87	6	Temporary remission for 2 months; subjective improvement with correction of anæmia and decrease of spleen
4	43	F	6–8	5	127·7	378	159	Remission of 4 months, but not maintained; anæmia and splenomegaly returned and refractory stage reached after 6 months
5	56	F	20	2	18·0	236	49	Moderate improvement maintained
6	40	M	24	6	36·0	391	60	Well-marked improvement with decrease in gross enlargement of spleen; anæmia controlled
7	39	M	6–9	3	24·0	297	89	Well-marked improvement; remission of 4 months continues
8	52	M	6	3	30·0	810	59	Well-marked improvement

*A course usually consisted of 3–6 injections, each of 0·1–0·2 mg. per kg. of body-weight.

TUBERCULOUS RHEUMATISM

REPORT OF A CASE

R. J. T. WOODLAND
M.B. Camb.
LATE SURGEON LIEUTENANT, R.N.V.R.

IN view of the apparent rarity of tuberculous rheumatism,[1] the following case, which presented some unusual features, is worthy of record.

A trainee for the Royal Navy, aged 16, with no relevant personal or family medical history, had been taken ill with sore throat in November, 1944. Tonsillitis had been diagnosed and the boy put to bed.

Progress had been satisfactory for four days, but he had then developed pleuritic pain to the right of the mid-sternum. This had increased rapidly in severity and had been accompanied by a dry cough and a feeling of extreme illness. A mild sore throat had persisted.

A full course of sulphathiazole had been given without apparent effect, and anorexia and toxæmia had begun to cause wasting.

Nov. 28, 1944 (on admission to sick quarters): temperature swinging to 102°F each evening, pulse-rate 110, respirations 23 per min., weight 125 lb.

The patient was pale, thin, and ill-looking, but lay comfortably in bed. He complained of pain in right chest on swallowing, movement, deep respiration, and coughing. Slight sore throat. Thick yellow sputum. Throat injected, but tonsils contained no obvious pus. Tonsillar glands palpable and a little tender. No other glands enlarged. No clubbing. Trachea central. Only abnormality detected in chest was some diminution in movement on right side. D'Espine's sign negative. Heart normal apart from tachycardia. Blood-pressure 120/70 mm. Hg. Abdomen normal. Spleen not palpable. Central nervous system normal. Hb 74%, leucocytes 7600 per c.mm. (neutrophils 64%, lymphocytes 35%, monocytes 2%).

Nov. 30: moderate quantity of bloodstained sputum, containing fibrous plugs.

Dec. 1: pain now more across front of chest and of an aching character. Radiography showed: right chest flattened; right hilar shadows suggesting enlarged mediastinal glands; in the right upper lung field, above the horizontal sulcus, reticulations producing a triangular opacity with the apex toward the mediastinum.

Dec. 11: gradual improvement; pain absent except on swallowing; temperature settled; pulse-rate 90, respirations 20 per min.; erythrocyte-sedimentation rate (E.S.R.) 73 mm. in first hour. Six daily specimens of sputum negative for tubercle bacilli.

Jan. 8, 1945: patient looked and felt much better. Weight 133 lb. Hb 90%; E.S.R. 33 mm. in first hour. Six further specimens of sputum negative for tubercle bacilli.

Radiography showed some diminution in density of opacity in right upper lung field; otherwise no change.

Jan. 21: some return of pain in right anterior chest. Slight coryza, but no sore throat. Tonsils and tonsillar glands in statu quo. E.S.R. 70 mm. in first hour. Radiography of chest showed no appreciable change.

Feb. 2: patient obviously ill again; pale and sweating. Temperature swinging to 101°F in the evening. Pulse-rate 115 per min. Moderately severe pain in both shoulder-joints. No other joints affected. Also severe continuous retrosternal pain, apart from the original pain.

Apex-beat $1^1/_2$ in. outside midclavicular line. Cardiac rhythm tic-tac. Pericardial friction sound clearly audible over lower sternum. Blood-pressure 100/60 mm. Hg. Leucocytes 5500 per c.mm.

Feb. 3: patient still very ill, retrosternal pain persisted, and pleuritic pain in right lower chest appeared. Loud pericardial friction sound continued, and pleural friction sound now heard in right lower anterior axilla. Blood-pressure 95/60 mm. Hg.

Feb. 9: definite improvement; heart sounds more normal; no friction sounds; apex-beat still at least 1 in. out. Radiography showed transverse diameter of heart much increased, suggesting dilatation.

Feb. 14: improvement continued. Pain in shoulders gone (not treated with salicylates). Mantoux 1 : 10,000 positive.

Feb. 20: apex-beat in normal position; cardiac r normal; cardiac shadow normal on radiography.

Feb. 25: patient had had rheumatic pains in neck several days.

March 29: had made gradual steady progress; loo and felt very well; E.S.R. 7 mm. in the first hour; weig 139 lb.

April 16: tonsillectomy performed as a prophylac measure, since it seemed conceivable that the whole illne might be due to streptococcal acute rheumatism and might n be tuberculous. Microscopy of tonsillar sections show tuberculous infiltration.

May 9: recurrence of pain in right anterior chest; so diminution of air entry at right base posteriorly.

May 29: the patient was acutely ill, with pleuritic pain right middle and lower zones posteriorly. Dullness, dimini air entry, and numerous râles at right base. Radiograph appearances suggested a right pleural effusion and area consolidation in right lower zone. On aspiration of right a clear straw-coloured fluid was withdrawn. Leucocyte- (peripheral blood): 6700 per c.mm.

After his transfer to another hospital the pati subsequent progress was satisfactory.

DISCUSSION

Despite the initial acute sore throat, it seems unlik that this case was one of streptococcal rheumatis The long delay in the onset of the allergic manifestatio and the presence of pericarditis and myocarditis witho accompanying endocarditis, suggest that it was a ca of allergy to the tubercle bacillus.

If the tonsillar condition was primary, it see probable that bacilli were inhaled into the right upp lobe, causing partial infiltration of this lobe and sub quent enlargement of hilar glands. This was follow by *the various somewhat unusual allergic manifestatio*

Of possible significance is the contrast between t initial pleurisy, presumably allergic, without effusio and the final pleurisy, presumably due to invasion b bacilli, with effusion.

I am indebted to the Medical Director-General of the Nav and to Surgeon Captain J. H. Burdett, R.N., for hi permission to publish this case.

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[1] Sheldon, W. *Lancet*, 1946, i, 119.

EFFECT OF β-CHLORETHYLAMINE HYDROCHLORIDES

IN LEUKÆMIA, HODGKIN'S DISEASE, AND POLYCYTHÆMIA VERA

REPORT ON EIGHTEEN CASES

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SINCE the 1914–18 war a good deal of knowledge ha been acquired in relation to the general systemic and hæmatological effects of chemical-warfare agents, partic larly the vesicants, such as ββ-dichlordiethylsulphide and similar substances. The main effects on the hæmo poietic system in man and animals have been primarily on the leucocytes, causing neutropenia and agranulo cytosis, with sometimes the later development of aplastic anæmia, thrombocytopenic purpura, or hæmolyti anæmia; early signs may be an inversion of the poly morph-lymphocyte ratio, an unusual eosinophilia, o more rarely a slight basophilia (greater than 1·5%) and often Türk or plasma cells may be seen in the peri pheral blood. These features are almost identical with those produced by X rays.

During the late war, particularly from 1942 onwards the interest of one of us (J. F. W.) led to the observati of almost identical results in man after exposure

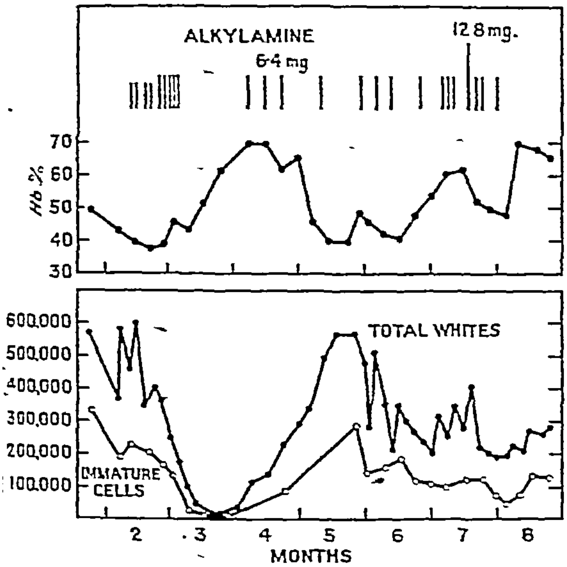

Fig. 3—Chronic myeloid leukæmia (case 4).

ere occasional short remissions of six to fourteen eeks.

odgkin's Disease

In a group of 4 patients with Hodgkin's disease, eated in a similar manner to the leukæmic patients, ere was a striking reduction in the sizes of enlarged mph-nodes, liver, and spleen, with a disappearance f pyrexia (in 1 case within a week of the start of erapy).

In 1 case there was a rapid deterioration in spite of this eatment, and 3 have remained in satisfactory remission p to seventeen weeks without further treatment. The tient who responded poorly was in the terminal stage the disease when admitted to hospital. The 3 other tients experienced dramatic improvement in appetite d weight, with an increased feeling of well-being and ility to exert themselves without undue lassitude. one of these patients had previously had X-ray or her therapy.

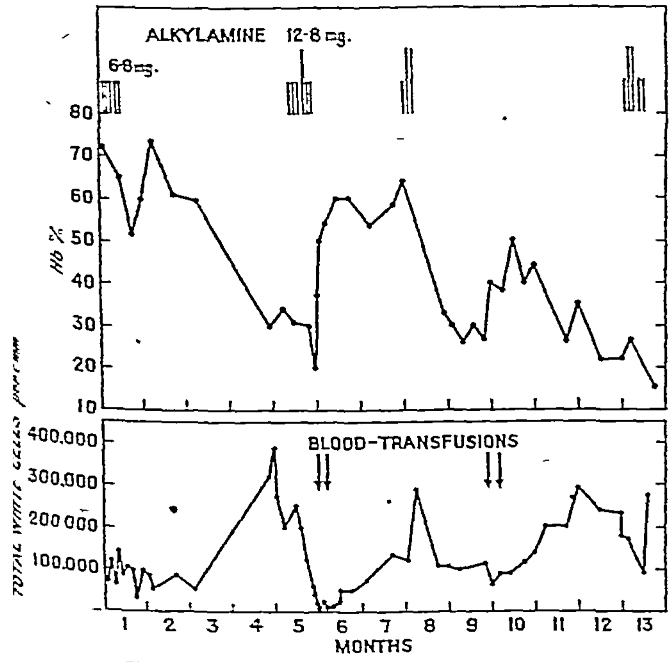

Fig. 4—Chronic lymphatic leukæmia (case 9).

Clinical photographs of 1 case are shown to demonstrate the decrease in the cervical, mediastinal, and hilar lymph-node masses after treatment (figs. 6 and 7).

Polycythæmia Vera

Of 3 cases of polycythæmia treated, only 1 showed any significant subjective and objective improvement with a fall in the total red-cell count and Hb percentage to normal levels. This remission was associated with a complete disappearance of headache, vertigo, and lassitude for nine weeks. In the 2 cases which did not show a satisfactory hæmatological remission there was some tendency for the symptoms to improve transiently. Splenomegaly, present in all cases, was not significantly affected up to two months after the start of treatment.

The blood-counts of the case which responded to treatment are shown graphically in fig. 8, which shows an early depression of the total white-cell count, with a more delayed but increasing fall in the total red-cell count and Hb percentage.

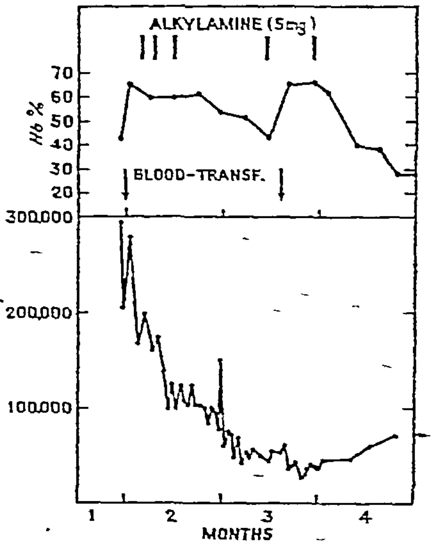

Fig. 5—Chronic lymphatic leukæmia (case 10).

COMMENTS

It was ultimately decided to use the tris(β-chlorethyl) amine hydrochloride almost exclusively for the treatment of the cases in this series, since no serious general or local side-effects were encountered at any time, whereas the bis compound was found by us to produce local tenderness and thrombosis of the veins at the sites of injection.

When the tris compound was given, transient mild toxic effects developed in about half the cases. These effects were for the most part subjective and included headache, nausea, anorexia, and vertigo. Vomiting, with or without relation to food, occurred in 20% of the group and generally appeared about one to five hours after the injection and recurred at intervals of two or three hours until finally passing away after twelve to twenty-four hours. In general these side-effects became less pronounced as treatment proceeded, and in no instance was it necessary to abandon the therapy because of them, though we did interrupt a second course of injections in 2 cases of chronic myeloid leukæmia (cases 4 and 6) for four days when the vomiting was associated with a temporary attack of diarrhœa.

The depressant effect on the total white-cell count appeared as a rule from about the third to the fifth day after the first injection of the tris compound, reaching a maximum from about the tenth to the sixteenth day after the initial course of treatment, which usually consisted of 3–6 injections of 0·1–0·2 mg. per kg. of body-weight.

We have already emphasised that it is essential to control very carefully the whole of the treat-given without difficulty in our outpatient clinics—this is only done when the patient can attend fairly easily and regularly for proper follow-up and hæmatological control of the treatment. This is extremely important, since the potency of these substances and their profound leucopenic effects make it essential to have complete control of the patient during the treatment, with full hæmatological examinations.

CLINICAL RESULTS

Our first series of cases, which included 8 patients with chronic myeloid leukæmia, 3 with chronic lymphatic leukæmia, 4 with Hodgkin's lymphadenoma, and 3 with polycythæmia vera, were treated with these two β-chloroalkylamines and are described here. The ages of the patients ranged from 20 to 68 years. The patients were not specially selected with regard to severity or duration of the disease, and all had been under observation for a control period of not less than four weeks before the institution of treatment and had not received any other form of treatment. They were all admitted to hospital during the initial stages of the investigation, but those showing satisfactory responses were later discharged and kept under close observation in the clinic, where treatment was also given when indicated.

Detailed histories were obtained from each patient, a complete clinical examination was carried out, and the sizes of any palpable masses, such as an enlarged liver, spleen, and lymph-nodes, were carefully determined and photographed for the purposes of comparison before and after treatment. Full peripheral blood-counts were performed usually twice weekly during the hospital period, and a daily total white-cell count was made as routine. Smears of the sternal marrow obtained by aspiration were examined before treatment began and at intervals throughout the subsequent treatments.

Chronic Myeloid Leukæmia

All 8 patients (see table) received the tris compound intravenously; case 4 (fig. 3) was given several courses of the bis compound at one stage, but this was discontinued because of its tendency to produce venous thrombosis at the site of injection. Rhoads (1946) apparently observed this tendency more often with the tris compound, but our experience was to the contrary.

The initial fall in the total white-cell count was satisfactory in 7 out of 8 cases, and in 5 of these 7 cases there was a coincident rise in the red-cell count and percentage. Cases 3 and 5, who did not show improvement in the anæmia, had coincident pernicious anæmia and had responded satisfactorily to treatment with liver and desiccated hog's stomach for some years before the onset of the leukæmia. Case 2 did not appear to respond to the halogenated-alkylamine therapy significantly and had probably received an insufficient dosage.

The size of the enlarged spleens decreased appreciably in 6 cases during the first one or two months' treatment but increased again later, even though the administration of the alkylamine was continued and the total white-cell counts were maintained at satisfactory levels of 20,000–60,000 per c.mm.

In cases 1 and 4 receiving prolonged therapy (four and six months respectively) the response of the di to treatment appeared to become less pronounced and there was a tendency for the total white-cell count to rise in spite of increased doses until finally a refractory stage was reached (figs. 1 and 3).

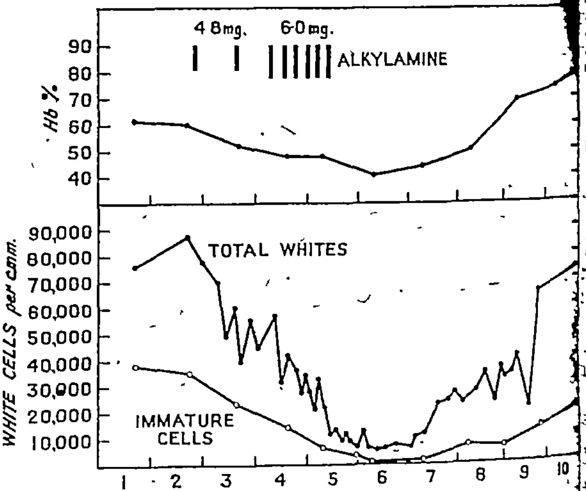

Fig. 2—Chronic myeloid leukæmia (case 3).

There did not appear to be any considerable increase in the expectation of life in 4 of these 8 cases, but case 1 returned to work and lived a fairly normal life for about eight months. When admitted to hospital at the start of treatment he had been bedridden for three months and had been unable to work for a year.

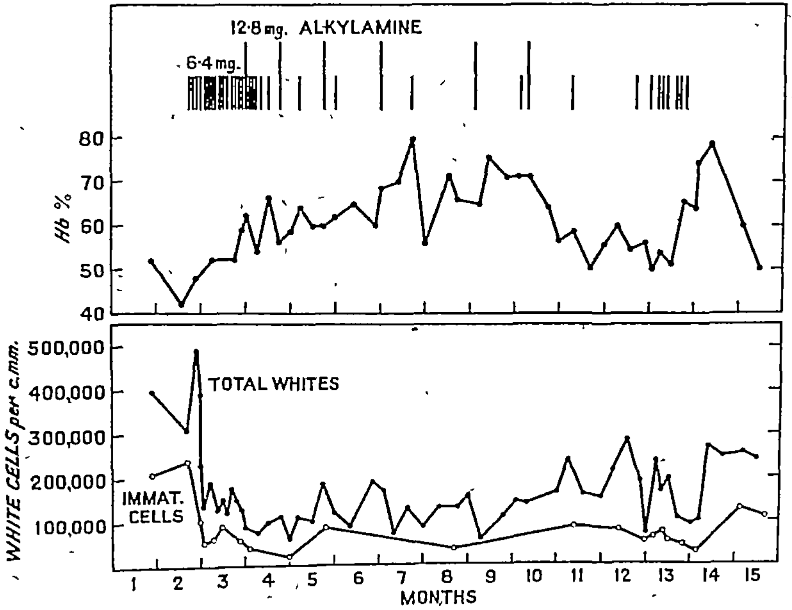

Fig. 1—Chronic myeloid leukæmia (case 1).

Chronic Lymphatic Leukæmia

Three patients (cases 9, 10, and 11) with chronic lymphatic leukæmia were treated with intravenous injections of tris(β-chlorethyl)amine hydrochloride in a similar manner to the cases of chronic myeloid leukæmia. A moderate shrinkage in the enlarged cervical, mediastinal, axillary, and inguinal lymph-nodes took place, and initial satisfactory depressions of the total white-cell counts were observed (figs. 4 and 5), though the treatment produced no significant improvement in the red-cell counts or Hb percentage such as had been seen in the chronic myeloid group. Blood-transfusions had to be given to 2 patients several times throughout the investigation, but none showed much clinical improvement ultimately on this form of treatment, though there

There was considerable variation in the response to treatment in individual cases in all groups but the least satisfactory results were obtained in chronic lymphatic leukæmia.

A dosage of 0·1–0·2 mg. per kg. of body-weight was adopted, and tris(β-chlorethyl)amine hydrochloride was the compound of choice.

Very careful control of every case by frequent examination of the bone-marrow and of the peripheral blood is essential in view of the nucleotoxic and cytotoxic actions of the halogenated alkylamines.

The toxic effects include (1) pain, inflammatory reaction, or even thrombosis at the site of. and immediately after, injection, and systemic effects, lasting up to 4 hours, such as anorexia, nausea, vomiting, diarrhœa, headache, and vertigo; and (2) more serious delayed effects, comprising leucopenia, granulopenia, thrombopenia, or even a severe anæmia associated with aplasia of the bone-marrow. These undesirable toxic effects are avoided by careful hæmatological control of the cases and the adoption of a safe technique of administration.

The two alkylamines do not appear to cure leukæmia or the other conditions mentioned. but in some cases they give relief by reducing the total white-cell count, with a resultant improvement in the anæmia. In other cases embarrassing enlargements of the lymph-nodes, liver, and spleen disappear, leading to an increased feeling of well-being. Improvement is rarely maintained, and the patient's response to this treatment appears to diminish after repeated injections. In Hodgkin's disease the lymphatic enlargement is most dramatically reduced, but the ultimate prognosis is still sub judice.

Investigations are proceeding on new methods of administration and control of this form of therapy. It may be an advantage to use some form of combined therapy or to give different preparations of varying activity on the hæmopoietic organs at certain stages of the disease.

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THE RHESUS ANTIGEN C^w

CAUSING HÆMOLYTIC DISEASE OF THE NEWBORN

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A RARE Rh antigen, C^w, was described by Callender and Race (1946). A patient at the Radcliffe Infirmary, Oxford, with lupus erythematosus diffusus responded to blood-transfusions by making a succession of "new" antibodies. One of these antibodies was called anti-C^w. The Rh group of the patient was CDe/CDe, and two of the donors were eventually recognised as being C^wDe/CDe. C^w is a form of antigen alternative to C or c; it occurs in the bloods of about 2·5% of English people.

We here report the finding of a second example of anti-C^w, formed this time as a result of immunisation by pregnancy. The mother has never been transfused. The history of her pregnancies is as follows:

April, 1940, infant jaundiced for a month, but recovered.
August, 1941, infant died on third day from icterus gravis neonatorum.
October, 1942, stillborn macerated fœtus.
November, 1943, miscarriage at fourth month.
December, 1944, infant died on third day from icterus gravis neonatorum.
June, 1947, infant died of erythroblastosis fœtalis.

REACTIONS OF THE MOTHER'S SERUM WITH RED CELLS OF DIFFERENT GROUPS (REACTION AT 37°C)

					In saline	*In albumin*
O	MN	pp	R_1r	Cde/cde	—	—
O	N	P	rr	cde/cde	—	—
O	..	..	$R_1^wR_2$	C^wDe/cDE	w	+++
O	..	..	R_1R_2	CDe/cDE	—	—
O	..	..	$R_1^wR_1$	C^wDe/CDe	w	+++
O	..	..	R_1R_1	CDe/CDe	—	—
O	MN	P	R_1R_2	CDe/cDE	—	—
O	M	P	R_1R_2	CDe/cDE	—	—
O	MN	P	R_1R_1	CDe/CDe	—	—
O	M	P	R_1R_1	CDe/CDe	—	—
O	MN	..	R_1^wr	C^wDe/cde	w	+++
O	MN	..	R_1^wr	C^wDe/cde	w	+++
O	MN	..	$R''r$	cdE/cde	—	—
O	M	P	R_1R_1	CDe/CDe	—	—
O	N	P	R_2r	cDE/cde	—	—
O	N	P	R_1r	CDe/cde	—	—
O	MN	P	rr	cde/cde	—	—
O	MN	..	R_1R_1	CDe/CDe	—	—
					Serum absorbed with A_1 B CDe/CDe cells	
A_1	M	P	$R'r$	Cde/cde	—	—
A_1	MN	pp	$R_1^wR_1$	C^wDe/CDe	w	+++

—, no agglutination; w, weak microscopic agglutination; +++, strong agglutination visible to naked eye.

The mother's serum, taken after the birth of the latest child, agglutinated the cells of both father and baby. When the cells were suspended in saline the agglutination was weak, but with albumin suspensions the agglutination was powerful. Of 205 samples of Dutch blood, suspended in albumin, 10 were agglutinated by the serum. The blood-groups of the family at first appeared to be compatible in all respects: mother CDe/cde : O : MN, father CDe/cde : O : MN, child CDe/CDe : O : MN. Nevertheless the presence of the antibody and the history, which was typical of hæmolytic disease, strongly suggested that Rh incompatibility must be present.

The samples of blood from both mother and father were then tested against the serum of the Oxford patient containing the original anti-C^w agglutinin. The antigen C^w was found in the father's blood but not in the mother's; thus a Rh antigen incompatibility was disclosed.

The antibody in the mother's serum was then proved to be anti-C^w by testing its reactions with a panel of cells of laboratory workers previously tested with the Oxford serum. The results are given in the accompanying table.

DISCUSSION

The probability that the agglutination of the 5 C^w bloods out of the 20 is only a chance association is 1 in 15,500, as calculated by Fisher's exact method for 2×2 tables. The Rh groups of the family therefore are:

Mother	..	..	CDe/cde
Father	..	..	C^wDe/cde
Child	..	..	C^wDe/CDe

This case shows some interesting features. Since the father is heterozygous for C^w, the family has been ment by means of daily total white-cell counts, frequent differential counts (particularly the granulocyte percentage), and accurate assessment of the clinical condition and response of the patient.

Microscopical examinations of smears of the bone-marrow obtained by sternal aspiration were of considerable value in assessing the extent of the initial treatment required and in determining the degree of the leucocytic depressant activity at different stages of the investigation. The routine performance of this examination at short intervals decreases the possible dangers of overdosage by the halogenated alkylamines leading to aplastic anæmia, agranulocytosis, or thrombocytopenic purpura.

The earliest manifestation of the toxic effects of the tris compound on the hæmopoietic tissue was usually a lymphopenia of the peripheral blood, followed later by a neutropenia. In 2 cases there was a transient depression of the total platelet-count during the early stages of treatment, but this returned to normal as the anæmia improved. Though the increased hæmorrhagic tendency could be clearly demonstrated by brachial constriction (Hess test), no spontaneous hæmorrhage developed in the skin or from the mucosæ of these patients at any time.

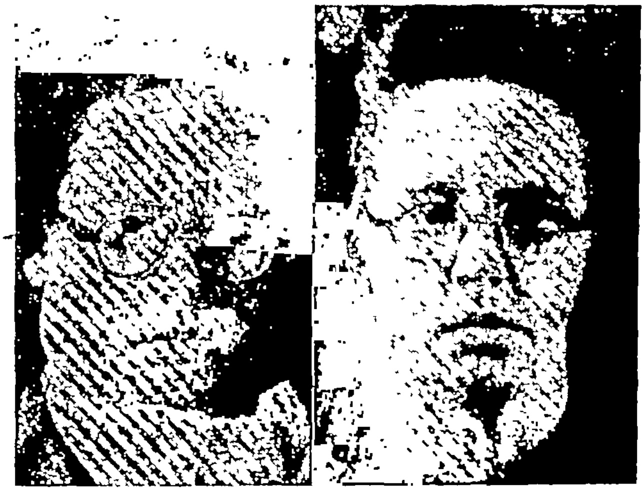
(a) (b)

Fig. 6—Enlarged cervical lymph-nodes in Hodgkin's disease: (a) before treatment; (b) 9 weeks after start of treatment.

The leukopenia persisted for two or three weeks. It was interesting to note that no signs of bacterial infection arose in 2 cases in which the total number of white cells fell below 2000 per c.mm. for periods of one to three weeks. The typical agranulocytic syndrome was not seen in any of the present cases.

Figs. 1–3 showed that there was a sharp fall in the total number of circulating immature white cells in the myeloid leukæmic cases which was coincident with the fall in the total white-cell count as treatment proceeded. Similar hæmatological effects were observed in Hodgkin's disease, and a severe leucopenia developed in 1 case while the clinical improvement and subjective sense of well-being were becoming most manifest. No ill effects arose as a result of the leucopenia, and the total white-cell count returned to normal after four weeks.

During the early stages of treatment the most prominent effect on the appearance of the bone-marrow was a reduction of the mitotic activity of the young proliferating cells, especially the leucopoietic series at first and all elements later, until a final appearance approaching almost complete aplasia was obtained.

Detailed macroscopical and microscopical examinations were carried out on the organs of patients coming at later dates to necropsy, and photographic records were made for comparative purposes. The [illegible] appearances of cross-sections of the bone-marrow [illegible] spleen from 2 cases of chronic myeloid leukæmia [illegible] striking. The usual greyish infiltration of these tissues characteristically seen in the untreated case was not present, the marrow appearing deep red throughout and the spleen normal. It was impossible to make any diagnosis on the macroscopical findings alone, and the microscopical examination of various organs often did not reveal the typical pathological picture of the leukæmic proce These necropsy findings tended to vary according the time which had elapsed after the cessation treatment. When the alkylamine therapy had be continued up to the time of death and had been associat with a satisfactory depression of the total white-c count, *the only signs of leukæmia* found were a fe scattered primitive blood-cells in the liver, spleen, an bone-marrow. The more typical lesion of myeloid o lymphatic leukæmia was observed when treatment ha not been given for several weeks, though the appearance of certain of the immature cells was such that their exact nature could not be determined. These cells may possibly represent a recovery reaction of the hæmocytoblasts from the depressive effect of the alkylamine.

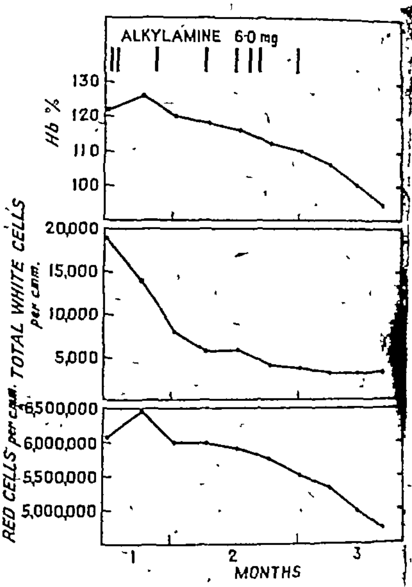

Fig. 8—Polycythæmia vera.

SUMMARY

The results of treatment with intravenous halogenated alkylamine (nitrogen mustard) in 18 cases of chronic myeloid and lymphatic leukæmia, Hodgkin's disease, and polycythæmia vera are described. Diagnosis was confirmed by biopsy of lymph-nodes or of sternal marrow.

The most beneficial effects were observed in chronic myeloid leukæmia, though dramatic improvement also occurred in Hodgkin's disease.

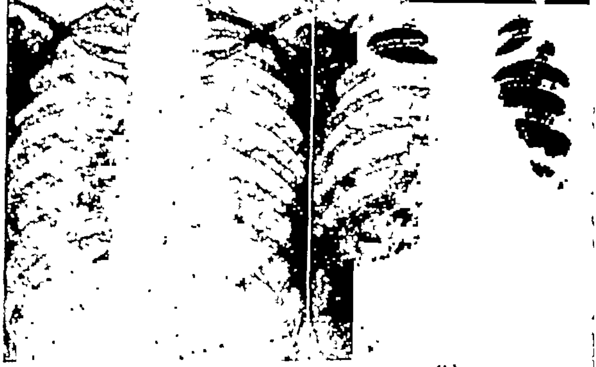
(a) (b)

Fig. 7—Radiograms showing densities of right hilar and mediastinal shadows in Hodgkin's disease: (a) before treatment; (b) 9 weeks after start of treatment.

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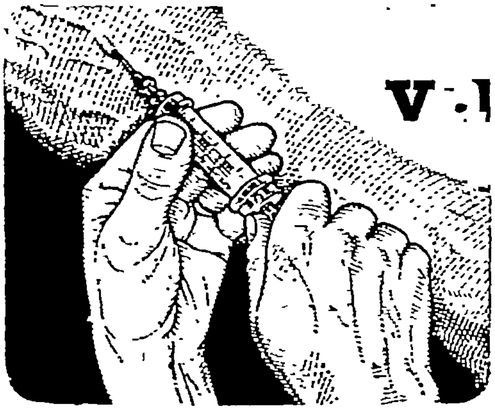

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GLAXO LABORATORIES LTD., GREENFORD, MIDDLESEX. BYRon 3434 unfortunate not to produce either cde/cde or CDe/cde children who would have escaped the disease. If it had not been possible to test the bloods with the original anti-C^w serum, the Rh incompatibility and therefore the cause of the hæmolytic disease would not have been revealed. It would probably have been concluded that the disease was due to some hitherto undescribed blood-cell antigen-antibody reaction, since the ABO and MN groups are in this case compatible.

The antibody is in the incomplete or hyperimmune form, the reactions in saline being weak, but with albumin suspensions the agglutination is visible, and the serum also gives a positive indirect Coombs's test after incubation with C^w cells. This is interesting in view of the period of time during which the woman has been immunised, as shown by the history. Diamond (1947) expressed the view that the antibodies which produce agglutination with saline suspensions are the first to be formed, and that, if immunisation continues, hyperimmune antibodies, reactive in albumin, are produced.

The frequency of the antigen C^w in Holland reported here (10 in 205 samples of blood, or 4·9%) is higher than the English frequency, which is 2·5%. Though the difference is not quite significant statistically, in a larger sample it would probably be so, for tests on bl samples from Norway (Hartmann et al. 1947) and from several other European countries (unpublished records M.R.C. Blood Group Research Unit) show that the frequency of the antigen C^w on the mainland of Europe is significantly in excess of that in England.

SUMMARY

An example of the rare Rh antibody, anti-C^w, resulting from immunisation by pregnancy and causing hæmolytic disease of the newborn is described.

This is the second anti-C^w serum which has been found. The first was formed as a result of immunisation by blood-transfusion.

The antigen C^w was found in 10 out of 205 samples of Dutch blood.

We are indebted to Dr. J. M. Soeters, of Breda, Holland, the pædiatrician who was consulted in this case, for having sent us samples of blood and for permission to publish the history of the pregnancies.

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Reviews of Books

Nutritional Disorders of the Nervous System

John D. Spillane, B.Sc., M.D., M.R.C.P., assistant physician and neurologist, Cardiff Royal Infirmary. Foreword by George Riddoch, M.D., F.R.C.P. Edinburgh: E. & S. Livingstone. 1947. Pp. 280. 20*s*.

Dr. Spillane was adviser in neurology to the Middle East Forces, and in this capacity he made a detailed clinical study of the disorders of behaviour which were seen in prisoners-of-war. He followed up this work later, and the present volume, which is based on his personal investigations, includes accounts of disorders seen in Europe and in the Far East, as well as in his own theatre of war.

The main importance to many of us of these unnecessary diseases is that they have affinities to other naturally occurring disorders, of which the primary optic atrophies, polyneuritis, and some disorders of behaviour may be examples. In this monograph are found in their most complete forms disorders which are seen as fragmentary syndromes and consequently not necessarily recognised under less rigorous conditions. Dr. Spillane has given a full survey of the present knowledge of the chemistry and pharmacology of the vitamin-B complex and has then devoted a chapter to a descriptive account of the major deficiency disorders. In consequence the first eight chapters of the monograph are in effect critical reviews of the published work, each ending with an extensive bibliography. His personal experiences make up the second half of the book and his case-reports are wisely confined to an appendix. He has documented this section with charts, tables, and photographs of patients and histological preparations. In the evaluation of his data he has shown conservative respect for our ignorance of the physiological action of the vitamin-B complex in the peripheral and central nervous systems. Those who associate this subject with confusion and jargon will find that Dr. Spillane always makes a clear statement in the most pleasing of phrases.

Management of Common Cardiac Conditions

Editor: W. G. Leaman, jun., M.D., F.A.C.P., professor of medicine, Women's Medical College of Pennsylvania. London: J. B. Lippincott. 1946. Pp. 306. 24*s*.

This book is a reprint of articles on the cardiovascular system which appeared in *Clinics* in June, 1946. The 24 American contributors give concise accounts of recent developments in the diagnosis and treatment of cardiac and vascular disease which the practitioner should know. In a review of surgery of the heart the topical subjects of ligature of the ductus arteriosus, the Taussig-Blalock operation for Fallot's tetralogy, and the surgical treatment of coarctation of the aorta are briefly described, among other procedures. A sound article is contributed by L. N. Katz and L. G. Kaplan on the meaning of the electrocardiogram and its value to the general practitioner, in which both the field of usefulness of this method and its limitations are indicated. Cardiac pain is very shortly considered in a section on the treatment of acute cardiac infarction and at greater length in comments on chronic coronary disease. A chapter on the medical treatment of hypertension is of theoretical interest, but the reader will probably conclude that the outlook for hypertensives has not been much altered by the new methods of treatment. There are one or two statements which will need to be reconsidered—for example, that intravenous ouabain may be given if digitalis has not been given during the previous 48 hours; and that the pulmonary arterial pressure is not yet measurable (this, of course, has now been accomplished by means of the intracardiac catheter). Nevertheless, the practitioner will find this book well worth consulting for information on recent developments in the treatment of cardiovascular diseases and their underlying principles.

Hey Groves's Synopsis of Surgery (13th ed. Bristol: J. Wright. 1947. Pp. 637. 25*s*.).—For this latest edition Sir Cecil Wakeley has added a chapter on penicillin and the sulpha drugs; and he has made space for a record of the rapid progress in the various specialist branches of surgery. For revision and reference students and practitioners can still turn with confidence to this compact work.

The Earth's Green Carpet (London: Faber and Faber. 1947. Pp. 219. 8*s*. 6*d*.).—If anyone should be heard for much speaking it should be the School of Organic Farming and Gardening; for despite paper shortage and other troubles, book after book appears on the importance of composting vegetable and animal dejecta (including human) by the Indore process. The authors quote each other; and in this book Lady Howard follows the tradition, implying that most diseases that afflict plants, and some which afflict men, would be wiped out if agriculturists would prefer compost to artificial manures; caterpillars would not devastate the cabbages and currant bushes, and people and animals fed on compost-manured vegetables and cereals would achieve sound teeth and bones, and reap abundant health. There is, of course, much to be said for the Indore process. But from this and similar books one would hardly gather that the science of composting vegetable refuse was put on a firm foundation at Rothamsted before 1921; nor that the value of humus in the soil was appreciated, the amount of nitrogen and phosphorus lost from the soil by turning sewage into the sea was deplored, and soil erosion was studied by others before the followers of this school.

THE LANCET

LONDON: SATURDAY, OCT. 11, 1947

Social Pathology of Stillbirth

Few would have been surprised if the domestic stresses and deprivations of a total war had been reflected in a rising tide of infant mortality ; that such a movement was both avoided and reversed was one of the medical triumphs of the war. The fall achieved in the death-rates among infants was accompanied by an acceleration in the pre-war downward trend in the stillbirth-rate This trend was observed in both male and female births, legitimate and illegitimate, born to mothers of all ages and at all parities; and the universality of the improvement suggests that general social or environmental factors were operating to effect it. A closer analysis reveals, however, that the social correlations seen in infant mortality do not appear so clearly in the fœtal or neonatal death-rates. The gradient between the social classes in infant mortality is roughly twice as steep as the same gradient in the stillbirth and neonatal death-rates, while the stillbirth-rate before the war was lower in the poorer crowded districts of London than in the more affluent boroughs.[1]

Some at least of the discrepancies in the relations between social conditions and infant and fœtal mortality are explained by the biological factors of age and parity. Stillbirths are more frequent in older mothers, particularly with their first-born, and at all ages the stillbirth-rate, after falling to a minimum at the second birth, rises steeply with succeeding pregnancies. People in social classes I and II—the professional, higher commercial, and managerial section of the community—tend to marry and procreate rather later in life than those in the artisan and labouring classes (III, IV, and V). The advantages to the former group which accrue from their better environment are thus in part countered by the handicap of bearing children when the first bloom of youth is past. This biological masking of the social differences thus merely accentuates the need for studying the economic background of fœtal mortality. One line of approach has been almost entirely statistical, and **Sutherland**[2] has shown by multiple regression technique that the stillbirth-rate is related, in the county boroughs, to the degree of unemployment and to the proportion of poorly paid workers, but not to overcrowding; in the administrative counties, on the other hand, unemployment alone seems to be correlated with the stillbirth-rate. By similar means, **Woolf**[3] has demonstrated an association between the stillbirth-rate and indices of economic stringency. As **Sutherland** points out, such correlations do not account for more than part of the total variability in the stillbirth-rate between different parts of the country, and the effects of antenatal care and obstetric skill should not be neglected because they cannot be readily measured.

The results of statistical studies of this type are, as their authors are well aware, not easy to interpret because of the difficulty of determining whether poverty exerts its influence directly by the restricted diet it entails or whether some of the inter-class differences are due to factors such as intelligence, which in a competitive society is correlated with economic status. In a previous paper on the closely related subject of infant mortality **Baird**[4] suggested that poverty is important not only in imposing a poor diet during pregnancy but in acting throughout life to stunt and deform by prolonged malnutrition the frames of the mothers of the working-classes, so that labour is often premature, long, and difficult. Even when the standards of obstetric care are similar, and even when, as in these days of rationing, dietetic standards converge, the aftermath of a life of insufficient feeding may be reflected in the raised infantile and maternal mortality-rates in the poorer classes. On another page **Baird** complements his previous work by a study of the social background of fœtal mortality in groups of nursing-home and hospital patients under specialised supervision. He shows again that the biological factors of age and parity do mask the social gradients in neonatal and prenatal death-rates. These gradients could not be explained by grossly different standards of specialised supervision, and it was significant that the main disparity between the two social groups lay in the relative frequency of stillbirths associated with toxæmia or without apparent cause, and in the neonatal mortality among the unduly high proportion of prematurely born infants in the poorer classes. Indeed, as is shown in the distribution of deaths by cause given by the Registrar-General for Scotland, where a diagnostic label is required on certification, the fall in stillbirths from 1939 to 1944 was most pronounced among the group of "ill-defined and/or unknown" causes. There is some experimental evidence to support the contention that this group of causes is influenced by diet, and **Baird**'s work has an advantage over purely statistical studies in that, by clinical assessment, he established that there were differences in stature and physique between the contrasted social groups. These differences, presumably dietetic in origin, determined the better reproductive performance, despite the handicap of age and parity, of women from the higher social classes. Further, it was noted that even during the war the diet consumed by the women of social classes I and II was appreciably better than that of their poorer sisters. **Baird** also stresses the importance of specialist attention by contrasting the stillbirth-rate of 17 per 1000 among primiparæ belonging to social classes I and II and treated privately by consultant obstetricians (a sample likely to be biased in favour of the potentially complicated case) with the national

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[1] Cheeseman, E. A. *Hum. Biol.* 1938, 10, 537.
[2] Sutherland, I. *Lancet*, 1946, ii, 953.
[3] Woolf, B. *Brit. J. soc. Med.* 1947, 1, 73.
[4] Baird, D. *J. Obstet. Gynæc.* 1945, 52, 217, 339.

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f riboflavine, biotin, pyridoxine, pantothenic acid, nd nicotinic acid. In the great majority of cases the hibition is reversed by the presence of the vitamin n appropriate concentration. Competitive analogues f this kind should find uses in the treatment of on-infective disease. For example α-tocopherol-uinone, an analogue of vitamin E, interrupts regnancy in mice, and analogues of thyroxine might e useful in hyperthyroidism.

So far the chief aim of work with analogues has een to obtain efficient antibiotics—analogues which ock essential metabolic processes in parasites without affecting the hosts are required. Of two analogues f nicotinic acid (pyridine-3-carboxylic acid), pyridine-ulphonic acid which inhibits the growth of bacteria t does not affect mice is more promising than cetylpyridine which has no effect on bacteria t causes a vitamin deficiency in animals. Similarly enylpantothenone is inhibitory in micro-organisms t not in animals. It has a curative action in bird alaria,[5] for which it was tried after it had been served that pantothenic acid is essential for the rvival of the malaria parasite in vitro. Before at, McIlwain and Hawking[6] had protected mice ainst streptococcal infection by blocking panto-enic acid with pantoyltaurine. Many analogues of ino-acids and purines essential for the growth f bacteria have been prepared, and some of them are wth-inhibitors. The antagonism between naturally rring amino-acids, such as arginine and lysine, e examples of competitive inhibition.

Competitive analogues should prove a valuable tool biochemical research, for their power to interfere ecifically with one process in a complex metabolic ain should help to elucidate the reactions. A cent illustration of the wide influence of these ideas ses from the discovery that chicken red cells have carbohydrate reactor to which influenza virus taches itself in causing hæmagglutination. Pectin, esumably a structural analogue of the carbohydrate, as found to prevent the hæmagglutination, and rthermore to prevent the multiplication of the rus in chicken embryos.[7] The theory of biological mpetition provides a rational explanation for some der observations. Thus it has been shown that the x of certain algæ is determined by the ratio of - and *trans*-dimethylcrocetin they contain. This is esumably a case of competition for sex-determining ntres. It may be that sex phenomena in higher imals are based on similar competition between strogens and androgens, which are structural ana-gues and occur together in every individual. The asis of the theory is the power of an analogue to splace its metabolite from an active surface, but ly a few definite examples of this are known. hysostigmine, which antagonises acetylcholine, can isplace it from combination with choline esterase. otin sulphone is able to free biotin from combina-on with avidin. If carbon monoxide is considered s a structural analogue of oxygen its action in dis-lacing the latter from hæmoglobin is another example.

Up to now the concept of competitive inhibition as been disappointing in its practical results. No portant antibiotic has emerged from the hundreds of structural analogues so far produced (sulphanilamide was not a result of the theory, but vice versa). However, the theory is young, and it may yet produce another sulphanilamide or penicillin. It has captured the imagination of scientists, and has resulted in an immense amount of work being done on the production of structural analogues. It has directed biochemical thought to a rational explanation of drug action, and it has lifted chemotherapy from its state of hit or miss. There are signs generally that biophysicists, chemists, and medical men are combining to tackle those vital problems of the cell on which further progress in chemotherapy, including that of cancer, depends.

Hypoglycæmia after Partial Gastrectomy

PARTIAL (or subtotal) gastrectomy as a remedy for peptic ulcer is an unphysiological procedure. The relief it brings to most patients may well justify its use as a palliative measure: but there is a tendency for the enthusiastic surgeon, and, on occasion, physician, to forget that such radical removal of an essential part of the digestive system must carry some disadvantages and risks. American reports[1,2] show that, among 579 cases of gastrectomy, 89, or 15%, had postoperative disturbances; and the commonest disturbance was hypoglycæmia.

That carbohydrate metabolism may be deranged after gastro-enterostomy, and also in cases of duodenal ulcer, has been known for some time.[3,4] The disturbance consists primarily of a temporary hyperglycæmia, resulting in glycosuria; and LAWRENCE[3] was able to reproduce the condition in healthy students by intubation and introduction of glucose into the duodenum. Sometimes hyperglycæmia was followed by temporary hypoglycæmia; for this state LAWRENCE prefers the name "oxyhyperglycæmia" to the original one of "lag-storage curve" proposed by MACLEAN. It is usually ascribed to abnormally rapid emptying of the stomach with a correspondingly rapid absorption of glucose. Three questions, however, remain unanswered. In the first place, why should such a hyperglycæmia be followed by hypoglycæmia? Secondly, what is the relationship between the hypoglycæmia and the symptoms of which some partially gastrectomised patients complain? And finally, what is the incidence of hypoglycæmic reactions in such patients? As Dr. BARNES points out elsewhere in this issue (p. 536), the possible answers to the first of these questions are: (1) the patient may respond to the hyperglycæmia by secreting an unusually large amount of insulin; (2) he may become abnormally sensitive to his own insulin; or (3) there may be failure of adrenaline secretion in response to the rapid fall in blood-sugar after the hyperglycæmia. On the basis of insulin-glucose curves and adrenaline-sensitivity tests, BARNES suggests that increased sensitivity to insulin from the recurrent hyperglycæmia is the main factor. This may well be so; but one of his arguments against increased secretion of insulin is of doubtful validity: it is that after the introduction of glucose into the duodenum of normal

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5. See *Lancet*, 1947, i, 642.
6. McIlwain, H., Hawking, F. *Ibid*, 1943, i, 449.
7. Green, R. H., Woolley, D. W. *J. exp. Med.* 1947, 86, 55.

1. Jordan, S. M. *J. Amer. med. Ass.* 1941, 116, 586. Miller, G. G. *Surgery*, 1942, 12, 383. Custer, M. D., et al. quoted by Berkman, J. M., Heck, F. J. *Gastroenterology*, 1945, 5, 85.
2. Gilbert, J. A. L., Dunlop, D. M. *Brit. med. J.* Aug. 30, 1947, p. 330.
3. Lawrence, R. D. *Ibid*, 1936, i, 526.
4. Evensen, O. K. *Acta med. scand.* 1942, suppl. 126.

figure of 37 for these classes. The same results do not appear, however, in similar comparisons between the rates for patients of the remaining social classes treated by specialists in hospital (37), and the national average for the same social classes (39·7).

These comparisons may not be strictly between like and like, but they indicate the complexity of the problem. Both the inadequate diet which poverty entails and the lack of skilled attention or the failure to make full use of specialist advice appears to be involved in the causation of stillbirths. No doubt raising the standard of living among workers would, if it improved the diet, bring about both short-term and long-term reductions in fœtal mortality, but as yet the argument in favour of an entirely economic or nutritional explanation of its causation is indirect, and only a properly controlled field study of the environmental circumstances of stillbirth can carry conviction. To attain balance and accuracy in the final assessment of their relative contributions to the background of fœtal mortality such a study must include, as **Baird** has shown, not only the economic factors, such as work during pregnancy and the proportion of the family income spent on food, but also the personal characteristic of physique and intelligence and the use made by the mother of specialised services and advice.

Biological Competition

A CONCEPT has grown up in the last few years which is as striking as **Ehrlich**'s lock-and-key theory of immunity of a generation ago and of even wider application—that of biological competition. This idea, whose importance and universality were first emphasised by **Fildes**[1] and **Woods**[2] in 1940, arises from the present-day picture of an enzyme. The enzyme is regarded as possessing an active centre whose groups are arranged in a definite configuration which determines its specificity. It can adsorb, activate, and then metabolise only a substance which fits this active centre exactly—that is, only its specific substrate. There are however substances called analogues, usually derived from the natural substrate by a slight change in constitution, which are similar enough in shape to the substrate to be loosely held by the enzyme but do not fit well enough to react further. These compete with the natural substrate for the enzyme surface, and according to their concentration and affinity for the surface may occupy part or all of it, so slowing down enzyme action or stopping it altogether. In such a system enzyme action can be hastened by adding substrate (metabolite), or further slowed by adding more analogue (inhibitor). In other words, the inhibitory effect is reversible; it is proportional to the ratio between the activities of the two substances rather than to the concentration of the inhibitor, and this is characteristic of biological competition. The inhibition ratio is usually constant for each pair of antagonists, and, since the natural metabolite has the greater affinity for the enzyme, many molecules of inhibitor are needed to antagonise one molecule of metabolite.

As early as 1910 it was shown that the action of amylase on starch was inhibited by other carbohydrates, and in 1927 **Quastel** and **Wooldridge**[3] founded the modern theory with their study of the inhibitory effect of fumaric acid on succinoxidase. **Clark**,[4] in 1937, suggested that the action of drugs was the result of their competition with similar natural substances. But it was **Fildes** and **Woods** who, in their theory of sulphanilamide action, stated the concept clearly and captured the imagination of scientists with that most striking example of biological competition. They postulated that *p*-aminobenzoic acid was essential for the metabolism of micro-organisms (an "essential metabolite"), and that sulphanilamide owing to its structural similarity competed with it for an enzyme surface. The prediction that *p*-aminobenzoic acid is an essential metabolite has been confirmed, and recent work suggests that sulphanilamide acts by interfering with the synthesis of folic acid from *p*-aminobenzoic acid. All living things, it seems, require certain dietary factors besides actual foods in order to live, and there is a close correspondence between the essential metabolites of bacteria and the vitamins of higher organisms. The effect of a small change in the structure of one of these essential factors cannot yet be predicted; the analogue may have a weak vitamin potency, be inert, or act as an antagonist. If metabolic activity persists after a small change, a greater change may produce an antagonist. Thus, substitution of an ethyl group for the methyl group of thiamine gives a substance with a weak thiamine potency, whereas substitution by a butyl group produces an antagonist. Two methods which are usually successful in yielding antagonists are the conversion of a carboxylic acid to a sulphonic acid or to a ketone, and the substitution of oxygen, nitrogen, carbon, or sulphur atoms for each other in a ring system. Some analogues—for example, *p*-aminobenzamide—inhibit or stimulate according to the conditions present. Desoxypyridoxine competes with pyridoxine in the chick, has no action in the rat, and has a vitamin action in lactobacilli. These anomalies may arise from the power of some organisms to break down or change an inhibitory analogue. A metabolite may have several functions, and different structural analogues may interfere with different processes. By choosing the appropriate analogue it may be possible to obtain the required properties.

Inhibitory analogues produce symptoms of deprivation of the metabolite, and, since these are most striking in the case of vitamins in animals and of essential metabolites in micro-organisms, these types have been most investigated. Inhibitor analogues to practically all the vitamins are known There are many thiamine analogues, the best known of which is **Woolley**'s pyrithiamine, in which the thiazole ring is replaced by a pyridine ring. This causes thiamine deficiency in animals and inhibits the growth of moulds, yeasts, and bacteria which require an external supply of the vitamin. Gluco-ascorbic acid antagonises vitamin C and causes scurvy in guineapigs Many naphthaquinone derivatives are inhibitory analogues of vitamin K. There are several inhibitory analogues

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1. Fildes, P. *Lancet*, 1940, i, 955.
2. Woods, D. D. *Brit. J. exp. Path.* 1940, 21, 74.
3. Quastel, J. H., Wooldridge, W. R. *Biochem. J.* 1927, 21, 1224
4. Clark, A. J. *Proc. roy. Soc. B*, 1937, 121, 580. Handbuch der experimentellen Pharmakologie, 1937, vol. iv, p. 190.

readily reinfected by the virus used on the first asion, as well as by different material. Other experi- ntal work of this kind by Toomey [6] indicates however t sublethal infection with certain virulent strains of us will protect monkeys against subsequent attempts infect them with other presumably less virulent ins. Among the puzzling results of human sero- ical investigations in poliomyelitis are the not uncom- n failure to find protective antibodies in the serum convalescents, and the frequent observation of such ibodies in the sera of older persons who have not l an obvious clinical attack. Some of these findings y be explained by antigenic differences between ious strains of the virus. It seems probable that re is a poliomyelitis group of viruses within which re are immunological variations, not unlike those nd in the group which cause human influenza. The ution in the laboratory or elsewhere of these problems uld contribute a great deal towards a better under- nding of the epidemiology of the human disease.

CHOLERA IN EGYPT

HE cholera which has broken out in Egypt during last few weeks concerns all nations engaged in ritime trade to the west of the Suez canal. The report the UNRRA Health Division [7] on the cholera situation ring the summer of 1946 deplored the paucity of ormation about the prevalence of the disease through- t the Far East, but remarked that "there has been case of cholera west of India since 1931, apart from Afghanistan-Iran outbreak of 1938–39." The well- n tendency of cholera to spread along trade and rim routes was largely checked for many years, t during the late war its incidence in the Eastern cupied countries rose sharply, and there were con- erable outbreaks in areas previously free for many ars. In 1946 there was one of the most extensive tbreaks ever recorded in China and the Far East.

Cholera's home is India, more particularly in the eas of Bengal, Madras, and Bombay. Epidemics further eld, such as those in the larger seaports of this country ortly after the middle of the last century, have been oided as a result of efficient quarantine and control. important factor in Indian epidemics has been the ass movement of pilgrims to the innumerable fairs and igious festivals. Under suitable climatic conditions ere is grave danger of outbreaks in pilgrim camps; t, still worse, the movements of pilgrims are responsible the carriage of infection to fresh communities, some- nes overseas. The migration of large numbers of fugees, such as that taking place in India at present, s almost invariably been associated with devastating idemics of cholera, and these are aggravated by alnutrition and physical hardship. The pilgrim traffic om the Mohammedan countries to Mecca, possibly more an any other agency, has disseminated the disease om its natural home, and it is possible that the infection s been conveyed by this means to Egypt. Although e Egyptian epidemic has received much publicity— e are informed that about 100 new cases are found daily -it cannot be compared in magnitude to the great tbreaks which, unfortunately, are commonplace in dia and in China. With the bottle-neck of the Suez nal between the eastern and western worlds, however, e strategic importance of Egypt in public health is vious. The climate at certain times, and the dense pulation living under insanitary conditions in the Nile sin must render the appearance of cholera there a urce of constant apprehension. It is indeed somewhat rprising to find that the last important epidemic curred some sixty years ago; the successful blocking of the westward spread of cholera from the highly endemic foci of India and China westwards has been no mean achievement in public health. What course the present epidemic may take remains to be seen. The concentration of the resources of the Western world in combating the outbreak is likely to ensure its early limitation and ultimate elimination, more particularly since the infection really flourishes only in more tropical climates; in temperate and subtropical countries it tends to be self-limiting.

Treatment is still unsatisfactory, for there is no specific cure for the established infection; repair of the gross fluid and mineral loss, on a physiological basis, remains the foundation of hopes for recovery in severe cases. The sulphonamide drugs, either those feebly absorbed, such as succinyl, sulphathiazole, or sulphaguanidine, or of those freely absorbed, such as sulphadiazine or sulphamezathine, are not curative as they are, for example, in the bacillary dysenteries. Nevertheless, in substantial dosage they appear to shorten the course of cholera and possibly modify its severity. Prophylactic immunisation with cholera vaccine is a contributory means of personal prophylaxis; but the duration of what protection it affords is brief, and so it must be given at frequent intervals throughout the period of risk. The control of an epidemic rests fundamentally on prompt and efficient segregation of all suspected cases and contacts, and on efficient sterilisation of their highly infected discharges. The rigid protection of all water and food-supplies from possible contamination with infected fæcal material—the ultimate source of infection in every epidemic—is obviously of major importance. From Cairo comes news that the city and its suburbs are being sprayed with D.D.T. in an attempt to reduce the number of flies.

CONGENITAL AORTIC COARCTATION

ON Sept. 26 Prof. Alfred Blalock, of Baltimore, delivered a Moynihan lecture at the Royal College of Surgeons to an audience of well over a thousand. For those who could not find a place in the lecture-hall he gave a further demonstration immediately afterwards. The address was on congenital cardiovascular defects, but was mainly concerned with aortic coarctation.

Before Dr. Blalock began operating for coarctation of the aorta a considerable amount of experimental work had to be done to see how the stricture in the aorta could be by-passed and an adequate blood-flow provided to the descending aorta below the narrowing. It was found in dogs that if the aorta was divided the left subclavian artery could be turned downwards and joined to the distal segment in such a way that a normal circulation was maintained. An alternative method of dealing with the coarctation was introduced by Crafoord, who actually resected the stenosed area and performed an end-to-end anastomosis between the divided ends of the aorta. This is the method which Dr. Blalock has followed on 11 occasions. He showed a cinematograph film of the operation which also demonstrated the essential clinical features of the condition.

The patient was a young woman in whom the raised blood-pressure in the arms and reduced tension in the legs was clearly illustrated, as also the enlarged superficial collateral vessels. Radiographically the notching of ribs due to pressure erosion from tortuous and dilated intercostal arteries was well marked. The approach was made through a left posterolateral thorectomy with resection of a length of the 5th and back ends of the 4th and 6th ribs. As might be expected from the presence of collateral channels, there was considerable bleeding during incision through the chest wall. The lung was then displaced and the aorta identified. The coarctation was well defined not only by a narrowing but by an area where the violent pulsation of the aortic arch and

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Toomey, J. A. *J. Immunol.* 1938, 35, 1.

Stowman, K. Cholera Situation, Summer, 1946. UNRRA *Epid. Inf. Bull.* 1946, 2, no. 16.

subjects no comparable hypoglycæmia is observed. The blood-sugar of patients with a normal blood-sugar curve may fall as low as 55 mg. per 100 ml. $1^1/_2$–2 hours after glucose, without symptoms.[5] It should not be forgotten that the actual blood-sugar level is only one of the factors determining the onset of hypoglycæmic symptoms; the rate of fall and extent of fall are among the other factors.

The data on which to base the answer to the second problem are still conflicting. BARNES has established a fairly direct time-relationship between the hypoglycæmia and the occurrence of symptoms in his patients, but in GILBERT and DUNLOP's[2] series the time-relationship is not so clear; in both the cases they record in detail symptoms coincided with the period of hyperglycæmia and not with that of hypoglycæmia. On the basis of their findings in 14 cases, ADLERSBERG and HAMMERSCHLAG[6] subdivide the "postgastrectomy syndrome," as they call it, into early and late postprandial types. The early type, which is relieved, partially at least, by rest in the horizontal position and small frequent meals (and which presumably corresponds to the "dumping" syndrome of some writers), they attribute to mechanical factors: these are the small stomach, the rapid emptying of the stump, the rapid filling and emptying of the jejunum, and the subsequent mesenteric irritation. The late type, which is relieved by the ingestion of food, they attribute to hypoglycæmia. This classification is not accepted by GILBERT and DUNLOP, who argue that hypoglycæmia explains the whole syndrome. Yet another hypothesis is that of GLAESSNER,[7] who attributes the early postprandial symptoms to hyperglycæmia; but there is little evidence that hyperglycæmia per se can produce the characteristic upper abdominal discomfort and occasional vomiting.

Much further work is clearly required to elucidate the cause of this syndrome. It should also be possible to establish exactly how often the complication arises and how it is best avoided. No systematic study of this sort has yet been recorded, but observation of the syndrome after 17 out of 45 consecutive gastrectomies[2] suggests that the incidence is by no means negligible. On the question of prophylaxis, opinion is divided. Thus in BARNES's series, when the retrocolic Polya anastomosis was abandoned in favour of a modified Hofmeister type of anastomosis, no further case was noted after over a hundred operations. GILBERT and DUNLOP, on the other hand, concluded that there was nothing to choose between these two procedures. On the treatment of the established syndrome there is greater unanimity. The usual procedure is to give a high-fat, low-carbohydrate diet, or alternatively to give 1 oz. of olive oil before meals. GILBERT and DUNLOP recommend also six small meals daily instead of three larger ones, and they have found that ephedrine gr. $^1/_2$ half an hour before the three main meals is of value. Sometimes the condition tends to improve as time goes on. Whether, as ADLERSBERG and HAMMERSCHLAG suggest, there is a psychoneurotic element in the condition is one of the many unsolved riddles in this intriguing complication of modern gastric surgery.

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5. Lawrence, R. D. *Brit. med. J.* Sept. 20, 1947, p. 470.
6. Adlersberg, D., Hammerschlag, E. *Surgery*, 1947, 21, 720.
7. Glaessner, C. L. *Rev. Gastroenterol.* 1940, 7, 528.

Annotations

CONVALESCENT HOMES IN THE NATIONAL HEALTH SERVICE

THE position of convalescent homes in the National Health Service has been in doubt—will they be taken over by the Ministry of Health, like hospitals, or left outside. The Ministry's policy seems to be to indicate which homes could legally be included in the service, and to leave the regional boards to make the final The Ministry has now sent each board a list of homes divided into those "apparently liable" to be transferred to the service, and those whose fate is still under investigation. The former homes may, if they choose, apply to be disclaimed.

It is not obvious from the list what principle is being followed in making this distinction. Some of "apparently liable" homes give no treatment, and the precedent of the homes owned by the Birmingham Hospitals Saturday Fund,[1] would not be liable. The Ministry is at a disadvantage in not being able to visit all the homes, and about many of them only sketchy information is available. The regional boards have nine months to decide which homes to disclaim, and it is to be hoped that no decision will be made without a visit.

It is noticeable that the homes which came under the Ministry of Education by the Education Act of 194 are left alone, except for the few which are long-term children's hospitals in all but name. There is a risk that merely because they have school-teachers on their staff these homes, which are primarily for convalescents, will be excluded from medical supervision, since the of Education inspectors, on their rather infrequent are concerned only with the educational aspect.

SECOND ATTACKS OF POLIOMYELITIS

IT is commonly assumed that an attack of poliomyelitis with paralysis confers a life-long immunity. In 1930 Still[2] noted that what appeared to be second attacks of the acute disease were occasionally reported, but he regarded many of them, occurring within four months of the initial illness, as recrudescences of the original infection to be distinguished from true second attacks due to reinfection, which were distinctly rare. Still found that between *four months* and two years after the first attack there was an interval during which *second attacks had never been recorded*, and he therefore postulated about two years as the probable *maximum duration of the immunity* resulting from an acute attack. Of the 2 cases recorded by *Colonel Lipscomb in his letter* in this issue, in one the second illness occurred about four months after the initial attack and may possibly have been a recrudescence; in the other the second attack was separated from the first by nine years and reinfection is probable. In 1938 Fischer and Stillerman[3] collected 13 authentic instances of second attacks arising two to twenty-four years after the first. They added a further 4 examples observed during the 1935 outbreak in New York. After making a statistical study of this outbreak and considering the available data they concluded that the admittedly very low rate of incidence of second attacks was not evidence that any immunity was necessarily conferred by an attack of poliomyelitis. In 1936 Wildtgrube[4] made the interesting observation that in only 1 of 13 cases recorded as having two separate attacks did the second paralyse muscles which had been affected in the first.

Monkeys which had recovered from one experimental infection with poliomyelitis were *shown by Flexner*[5] to

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1. See *Lancet*, Sept. 20, p. 431.
2. Still, G. F. *Arch. Dis. Childh.* 1930, 5, 295.
3. Fischer, A. E., Stillerman, M. *J. Amer. med. Ass.* 1938, 110, 569
4. Wildtgrube, F. *Mschr. Kinderheilk.* 1936, 66, 205.
5. Flexner, S. *J. exp. Med.* 1937, 65, 497.

Special Articles

THE METRIC SYSTEM IN MEDICINE

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HERE seems to be a decided tendency to adopt the ric system in the prescribing and administration of licines, especially those recently introduced. But if metric system is to displace the well-established erial and apothecaries' systems, which are fairly sfactory, it must be simple enough to be readily lerstood by doctors, nurses, and pharmacists. The ent metric system contains some elements that mar intrinsic simplicity and may be the cause of much fusion and some accidents.

e are concerned here only with weights and volumes. *British Pharmacopœia* took an important step in its issue when it confined itself to a few units of weight volume, discarding many that were formerly in vogue, h as decigrammes and centigrammes. The official ghts and measures are now as follows:

Weight	*Volume*
Kilogram	Litre
Gramme	Millilitre or mil
Milligram	Microl (a millionth of a litre)
Microgram (a millionth of a gramme)	

This table shows first of all the effect of the divergent of the prefixes: kilo- (1000), milli- (one-thousandth), micro- (one-millionth). Since these are used to ify non-corresponding units, they result at once in a k of uniformity; for if 1000 grammes are expressed a kilogram, then the volume corresponding to that uld receive the same prefix. Similarly, if a gramme taken as the unit of weight there should be a responding volume, not with the prefix milli-, which icates that it is a thousandth part of some other it.

The difficulty can be overcome very easily. The ume formerly expressed as a cubic centimetre has been laced in the *British Pharmacopœia* by the more urate term millilitre, and for this the term "mil" been adopted for doses; we thus have already at nd a simple term that expresses accurately the volume responding to 1 gramme and for which measures are eady in use. From this we can derive a new term for thousandth part of it, the "millimil," which will resent the volume corresponding to 1 milligram. e millimil would supplant both the cubic millimetre mm.), sometimes used in scientific papers, and the rol or microlitre, a millionth part of a litre. The ger of confusion between microl and microgram uld thus be avoided. The table of weights and asures and their abbreviations would then be:

Weight	*Volume*
Kilogram (kg.)	Kilomil (kml.)
Gramme (g.)	Mil (ml.)
Milligram (mg.)	Millimil (mml. or mlm.)
Microgram (µg.)	Micromil (µml.)

For practical purposes the gramme and milligram l the mil and millimil are alone required for doses, d the restriction to two units which differ a thousandl from each other would be a valuable safeguard inst their confusion. There is a slight discordance the use of the abbreviation mlm. for millimil. By alogy with mg. for milligram mml. might be pretable, but when mml. is written it might be confused ith mil or ml. However, since the mlm. or mml. is ly a thousandth part of a mil there need be no anxiety out their doses being confused.

RULES FOR PRESCRIBING

In prescribing in the metric system two simple rules should be observed:

(1) All preparations for internal administration should be written for the single dose, whether for pills, tablets, mixtures, or linctuses, the number of doses then being stated. (This is nearly always done now.)

(2) Preparations for external use should be prescribed in 10 mil or 10 gramme units in the case of eye-ointments, &c., which are required in very small quantities; but in all other cases the units should be 100 grammes or mils. (This is to reduce the chance of arithmetical error.)

Liquid preparations for internal administration should be adjusted in volume to correspond to the domestic measures still used for administering them. These are:

Teaspoon,	corresponding to	4 mils
Dessertspoon,	,,	8 mils
Tablespoon,	,,	16 mils

These volumes are approximate only, but it is merely the volume of the vehicle that is affected.

An important requirement is that a ten-dose system should be adopted in prescribing bottles of medicine. Twenty doses would represent a week's supply, and fifteen doses for five days would be admissible. There is no point in using the metric system if we retain the present sixteen-dose bottle.

Before the suggested simplified metric system was fully adopted, there might be a stage when it would be desirable to be able to think in the two systems. To convert imperial into metric weights the simple factors provided for prescribers by the *British Pharmacopœia* could then be used:

$$\text{To convert}\left\{\begin{matrix}\text{grains}\\ \text{or}\\ \text{minims}\end{matrix}\right\}\text{ to }\left\{\begin{matrix}\text{grammes}\\ \text{or}\\ \text{mils}\end{matrix}\right\}\text{ divide by 15}$$

$$\text{To convert}\left\{\begin{matrix}\text{grains}\\ \text{or}\\ \text{minims}\end{matrix}\right\}\text{ to }\left\{\begin{matrix}\text{milligrams}\\ \text{or}\\ \text{millimils}\end{matrix}\right\}\text{ multiply by 60}$$

Two formulæ will make this clear:

Diamorphine hydrochloride ..	gr.	$^1/_{12}$	×	60	=	5 mg.
Tincture of belladonna ..	min.	5	×	60	=	300 mml.
Oxymel of squill	min.	30	÷	15	=	2 mils
Spirit of chloroform	min.	3	×	60	=	180 mml.
Water to	min.	60	÷	15	=	4 mils

The linctus, send 10 doses. One teaspoonful at bedtime.

Sodium bicarbonate	gr.	10	×	60	=	600 mg.
Oil of peppermint	min.	$^1/_2$	×	60	=	30 mml.
Spirit of chloroform	min.	5	×	60	=	300 mml.
Comp. infusion of gentian to	min.	240	÷	15	=	16 mils

The mixture, send 10 doses. One tablespoonful for a dose.

If quantities less than 1 gramme or 1 mil are written in milligrams and millimils there is the added advantage that decimal points are not used.

Bottles of suitable size for these liquids to be dispensed would soon be provided when required.

SUPERANNUATION IN THE NATIONAL HEALTH SERVICE

THE regulations affecting pensions for practitioners under the National Health Service have now been issued in a booklet of 88 pages,[1] with an explanatory circular (148/47). It is impossible in a short article to give anything like a complete synopsis of the regulations, but the broad principles of the scheme are as follows:

The scheme is designed to provide benefits comparable with those of an established civil servant under the Superannuation Acts, 1918–46. The main benefits are threefold: (*a*) a pension on retirement; (*b*) a retiring allowance on retirement; and (*c*) a widow's pension if left subclavian artery gave place to an almost inert descending aorta. This latter was not unduly diminished in size as it is if a hypoplastic condition is encountered. Division of the mediastinal pleura simplified the recognition of the structures, but before adequate mobilisation could be obtained the upper two intercostal arteries on the left and one on the right had to be divided between ligatures. A bronchial artery and the ligamentum arteriosum at the level of the coarctation were also severed. Once the whole area had been suitably freed occluding clamps were placed on the aorta above and well below the coarctation and also on the subclavian artery. The stricture was then excised and the open ends of the aorta brought together. Restoration of continuity was established by using a fine continuous silk suture which was very accurately placed so that eversion of the ends was obtained. In this respect the junction differs from that practised by Crafoord, who aims to avoid puncturing the intima. Before releasing the clamps the patient's head was well lowered and blood-transfusion (using two veins) hastened. The chest was closed in the usual way in layers with aspiration of all air to ensure expansion of the lung. In less than three weeks the patient was shown again with the records of the blood-pressure in the upper and lower limbs approximating to normal.

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[1] National Health Service (Superannuation) Regulations. S.R. & O. 1947, no. 1755. H.M. Stationery Office. Pp. 88. 1s. 10*d*.

The pioneer work on congenital anomalies of the heart done by Dr. Blalock and his colleagues should not be allowed to overshadow his other contributions to surgery. The treatment of myasthenia gravis and constrictive pericarditis owe much to his original work and publications, and his observations on shock are probably even more important.

PATENTS FOR MEDICINE OR FOOD

MEDICINE and food take up very few paragraphs in the final report of the Swan Committee set up by the Board of Trade to suggest improvements in the Patents and Designs Acts.[1] Patent law is notoriously technical and the committee had naturally to consider many other aspects both of practice and of general policy—such, for instance, as the alleged unfairness to an employee inventor, who, when he has successfully exercised his inventive skill, is said to see all the profit pocketed by his employer.

The main concern of medicine is with section 38A of the principal Act. This section begins by barring the right to claim protection for substances "produced by chemical processes or intended for food or medicine." Claims are allowable only when limited to particular processes of manufacture—a restriction which was inserted in our law in 1919 at a time when this country had become aware that the previous law had been dangerously tolerant towards the monopolistic ingenuity of the German dyestuffs industry. Food and medicine, being thus linked almost accidentally with "chemical processes" for better or for worse, continue (as the committee's final report shows) to be treated in the light of that association rather than upon their own merits. The words "chemical processes" are, to begin with, awkward to define. The law forbids claims on behalf of substances (other than food and medicine) only when they are made by "chemical processes"; if made by physical processes, they are patentable. The committee were pressed with arguments that this limitation on claims for new substances was not in accord with modern scientific development in an age of nuclear physics and chemistry. The real invention lies in the discovery of something which has novel and useful properties; the process of manufacture may involve little novelty in itself. These arguments prevailed. The committee recommend that the limitation be repealed. They consider too that the claim for a new substance should always be deemed to exclude the same substance when found in nature.

Having definitely favoured the removal of the existing *limitation on claims for new substances produced by* "chemical processes," the committee go on to observe that the arguments for removal do not apply with the same force to substances intended for food or medicine. They confess that, in so far as the section deals with food and medicine, they would have been inclined to leave the law as it stands. But they were pressed with the fact that a new chemical substance may be capable of use both for industrial purposes and for food or medicine. Were such substances to claim protection without limitation in regard to manufacturing process, [illegible] were they to be regarded as food or medicine only to be protected in relation to a particular process of manufacture ? In other words, was the existing limitation [illegible] be retained on claims for chemical substances as well [illegible] on claims for substances used for medicine or food, [illegible] was the limitation to be cancelled alike for all [illegible] chemical substances whether used for industrial purposes or for food or medicine ? The committee ended the dilemma by deciding in favour of equality: they propose to cancel the limitation in both classes of case.

Under subsection (2) of the existing section 38A the Comptroller of Patents must, unless he sees good reason to the contrary, grant any applicant a licence limited to the use of the invention for the purposes of the preparation or production of food or medicine but not otherwise. In its second interim report[2] the committee wanted to see this subsection repealed. In view of their recent conclusions set out above, they now want the subsection retained after all. One other recommendation concerns substances intended for medicine or food. The present law contains a proviso which prevents claims for the protection of "admixtures" of such substances. The committee think this proviso should be extended to prevent claims on behalf of mere admixtures resulting only in the aggregation of the known properties of the ingredients of the substance.

Readers primarily interested in medical research and discovery will hope that, if the committee's proposals take shape in a Bill brought before Parliament, the drafting of these complicated matters will be as simple as possible. Is it too much to hope that the provisions respecting substances intended for use as medicine will be dealt with in a separate clause and on their own merits ?

AN ANEURYSMAL RECORD

THE average duration of life from the onset of symptoms in 482 cases of saccular aneurysm of the thoracic aorta in men was nineteen months, according to [illegible] follow-up by Colt.[3] But in clinical medicine averages may be misleading. In a case of aneurysm of the thoracic aorta recorded by Kauntze[4] the man was first seen *at the age of 36, in 1921, on account* of dysphagia and hæmoptysis. Radiograms showed the presence of [illegible] saccular aneurysm of the thoracic aorta. There was also a history of pain in the back of the head and in the left side of the neck. In 1933 the patient was successfully operated on for acute appendicitis; in 1934 he had jaundice; in 1941 there was a recurrence of the hæmoptysis; and in 1944 he suddenly became aphasic. In 1946 he was complaining of weakness of the right arm, but his general condition was "reasonably good," there was no dysphagia, and his occipital and neck pain had disappeared. No antisyphilitic treatment was given after 1940 when the blood Wassermann reaction was negative and the Kahn reaction positive. Before that, treatment had consisted mainly of bismuth injections and mercury by mouth at intervals. If the patient's original symptoms can be attributed to the aneurysm, as seems highly likely, it has already existed for at least 27 years.

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[1] Cmd. 7206. H.M. Stationery Office. Pp. 84. 1s. 6d.

[2] Cmd. 6789. See *Lancet*, 1946, ii, 331.

[3] Colt, G. H. *Quart. J. Med.* 1926-27, 20, 331.

[4] Kauntze, R. *Brit. Heart J.* 1947, 9, 96.

Public Health

CHILDHOOD ADVISORY CLINICS IN CAMBERWELL

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EDICAL OFFICER, TODDLER'S CLINICS, BOROUGH OF CAMBERWELL

NICS for the advisory care of children aged 2–5 were instituted in Camberwell, shortly before the bridging the gap between the infant-welfare and l medical services. The war closed all these clinics, ildren were dispersed, and in 1946 it was necessary gin again from scratch.

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METHOD

e clinics were held, with one weekly session each. public health authority possesses, through its health- r service, a fairly complete list of the child popula- supplemented by the infant-welfare records.

invitation signed by the M.O.H. was sent to the ts of every child in the age-group, initially to a m comprising older children returned from evacua- who had not been supervised by the infant-welfare es in the borough, and later, when a weekly attend- was being secured, to each parent on the child's day, the dates being selected monthly to cover the e eligible child population. This method led to an dance which varied from district to district, seldom ding 50%. The invitations were followed by nal calls from health visitors, who gave explanations discussed individual problems. The percentage idance depended most on this follow-up in the omically poorer zones, and results in general d a good deal with the personality of the health or and the previous success of infant-welfare clinics, he most important single factor in securing coöpera- from parents was undoubtedly the propaganda ucted by the mothers who had attended and ved advice.

History

proved simplest, both from the statistical and the medical point, to base the examination on a set questionnaire. child at its first visit was weighed and measured, and ory was taken to cover the following points:

Personal and family health record.

Immunisation and vaccination.

Natal data: labour and neonatal, birth-weight, breast- g and artificial feeding.

Ear, nose, and throat: colds, snoring, mouth-breathing, , earache, otorrhœa, cough.

Eyesight, headache, strabismus.

Appetite and bowel habit.

Landmarks: walking, talking; left-handedness.

Sleep, pavor nocturnus, enuresis

Dental: teething time and dental status.

he same questions were put to each parent in about the form and order, concluding with "Any pains anywhere?" "Any worries about the child?"—two blunderbuss tions which evoked the greatest number of missed points. individual history had to be condensed into a routine ry about acute infections and "any other illnesses or ations." Such relevant points as attacks of nephritis e often volunteered only after pressure, and we soon t to repeat the question, once from the health visitor at the reception desk and once from the doctor examining. Family history was covered (not always adequately) by asking "Has anyone on either side of the family had rheumatism, fits, tuberculosis, asthma, or hay-fever?"—another wide net, which was reached empirically and modified in the asking to the apparent intelligence of the attending parent.

This crude method of history-taking justified itself in dealing with large numbers of predominantly healthy children. Most parents who forgot important facts at the first asking produced them later in the examination.

Physical examination

Besides being weighed and measured, every child was examined for pediculi, postural defects, adenitis, and dental caries. Heart and chest were auscultated; tonsils, teeth, and prepuce were examined; and ears were scrutinised externally, otoscopy being kept, on a basis of experience, for those who had any obscure complaint or a history of recent whooping-cough, tonsillitis, or earache.

Here again the examination was stereotyped at a level of completeness which seemed to us sufficient for the purposes of the clinics, and supplemented on the history. In view of our terms of reference, extra time was better spent on advice and discussion with the parent and in giving health instruction than on physical examination in detail.

One of the chief problems for doctors with little experience in pædiatrics, the class most likely to find themselves doing this work, is to strike a balance between examination and advice in the time available. The routine described here covered all the data required in deciding what to do next. The function of the clinic as a clearing-house, not a thera- peutic centre competing in the normal treatment facilities, had to be kept constantly in mind.

Vollmer tests

Beside this examination, every child was patch-tested for tuberculin-sensitivity by the Vollmer-Goldberg test, and the routine ward tests of urine were noted on the card.

The limitations of this test were fully recognised, but it is not feasible to undertake Mantoux tests involving injection in clinics such as these. The weight of immunisation, vaccina- tion, cod-liver oil, orange-juice, and minor surgery lies heavy upon the attending parent. The test was refused by less than six patients in a year.

In our clinics acetone was used as a cleaning agent, and the patch affixed on the back, where the child could not get at it, with the set formula: "This is a tuberculin test. Don't be scared if it is positive—it doesn't mean that your child will be ill. The test tells us when he first meets tubercle germs, so that we can see that they do not hurt him. Do not get it wet. Take it off the day after tomorrow and bring the child, not the patch, today week." The content of this admonition is an important factor both in the success of the test and in the repute of the clinic in the neighbourhood. When the purpose behind it is explained, with the comment that it is not a form of immunisation, many uninvited parents request a patch-test for the whole family.

We were, and remain, in doubt about the prognostic attitude to take in explaining positive Vollmer tests to the parent. In interpreting negative results we found that the manu- facturers' date-limit was not reliable under our conditions of storage, as exemplified by the falling off of positive readings toward the end of each box. The effective life of a box of patches was finally taken to be about two months. With improved storage this might well be lengthened, but the retention of boxes in stock for a longer time proved too risky.

The age-group at risk was that in which tonsillar and dental defects, rickets, infantile tuberculosis, mild and hence missed mental defect, congenital heart malforma- tions, and acute infections might be expected; so special precautions were directed to all these. The state of wait- ing-lists in nearby hospitals exerted a beneficial influence in sharpening the criteria for advising tonsillectomy and other forms of surgical treatment. No medicines other than supplements and occasionally oxyuricides were given at the clinics; detected defects were always referred elsewhere.

Disposal of Cases

All Vollmer-positives were referred direct to the tuberculosis officer at a special session designed to prevent contact with known cases. The poor prognosis in some

the doctor's wife survives him. If a male doctor is unmarried he will receive a retiring allowance three times the value of that granted in the case of a married practitioner. The scheme is a contributory one, and a practitioner will have to pay in 6% of his or her remuneration, the executive council contributing 8% of his remuneration. The rate of remuneration is, of course, not yet calculable as the conditions have not yet been agreed with the profession. For the purpose of this note, however, "remuneration" means all payments made to *the practitioner in respect of general medical services* provided by him, less a sum for practice expenses, in accordance with a formula laid down by the Minister, and less the remuneration approved by the Minister of any assistant practitioner in his employment. If the practitioner is a partner, and particulars of the partnership agreement are disclosed to the executive council, then his share of the total remuneration of the partnership is equivalent to his share of the partnership profits.

Pensions

The pension to be paid to a practitioner will be on the following scale: (*a*) in respect of each year of contributing service as a practitioner, $1\frac{1}{2}$% of his remuneration for that year; (*b*) in respect of each year of contributing service otherwise than as a practitioner 1/80th of his average remuneration at the date on which he last ceased to be employed in such other capacity; and (*c*) in respect of each year of non-contributing service 1/160th of his average remuneration at the date on which he last ceased to be employed in such other capacity. If the contributing service of a practitioner exceeds forty years and he has no service in any other capacity the pension will be calculated by reference to the last forty years of such contributing service.

Retiring Allowance

The retiring allowance to be paid to a practitioner will be the aggregate of the following amounts: (*a*) in respect of each year of contributing service as a practitioner $4\frac{1}{2}$% of his remuneration for that year; (*b*) in respect of each year of contributing service otherwise than as a practitioner 3/80ths, and in respect of each year of non-contributing service 3/160ths, in both cases of his average remuneration at the date on which he last ceased to be employed in such other capacity; but in the case of a married male practitioner in respect of whose service a widow's pension may become payable the amount of the retiring allowance will be reduced to 1/3rd.

Widow's Pension

The widow's pension is equivalent to a third of the pension payable to the practitioner or of the amount of pension to which he would have been entitled had he retired on the day preceding his death. It must also be noted, however, that her pension will be reduced or raised according to whether her age was less or greater than that of her husband. It will cease if she remarries.

Qualification for Pension

A doctor will be entitled to his annual pension if he (i) has completed ten years' service and is incapable of discharging his duties through ill health; (ii) has attained the age of sixty and completed ten years' service. He will be entitled to the retiring allowance if he satisfies the conditions in (i) above, or has attained the age of sixty and has completed five years' service.

Death Gratuity

If a practitioner (*a*) dies and at the date of his death had completed five years' service; or (*b*) ceases to be a practitioner after completing five years' service and dies within twelve months after so ceasing, without having received a return of contributions or become entitled to any other benefit under the regulations, and without having again become entitled to participate in superannuation benefits, or (*c*) if he dies after having become entitled to a pension or retiring or injury allowance or short-service gratuity, then the Minister will, subject to certain exceptions, pay a death gratuity of a sum equal to (i) $4\frac{1}{2}$% of his remuneration for each year of contributing service as a practitioner or, widow's pension is payable, $1\frac{1}{2}$% thereof; (ii) in of each year of contributing service otherwise th a practitioner 3/80ths of his average remunerati there is a widow 1/80th) at the date on which he ceased to be employed otherwise than as a practitioner; and (iii) subject to the same conditions 3/160ths of average remuneration in respect of each year of no contributing service.

Short-service Gratuity

A practitioner who has completed more than five less than ten years' service, and who ceases to through incapacity to discharge efficiently the his employment by reason of permanent ill infirmity of mind or body, shall, unless he is to a retiring allowance, be entitled to a short gratuity equal to the amount of his average remuneration. There is also provision for an allowance. A practitioner is permitted to of his or her pension or injury allowance to a or dependant. This will permit women doctors to provision if necessary for their husbands.

Return of Contributions

Contributions with interest may be returned in cert cases, as when a practitioner ceasing to be employ is not entitled to a pension or retiring or injury allowa or a short-service gratuity. In case of death, if death gratuity is payable, the legal personal represen tives will be entitled to receive the amount of doctor's contributions with compound interest at $2\frac{1}{2}$ per annum with half-yearly rests.

Life-assurance Policies

Any doctor holding a life-assurance policy may tract out of the scheme by applying to the council within three months after the appointed He will then receive 8% of his remuneration contribution towards his premiums.

Reduction of Pension

The Minister may, subject to medical eviden require a person on incapacity pension or injury allowa to return to employment in the scheme—possibly o part-time employment with a consequent reduction suspension of the allowance. There is also provision a reduction of a pension on the lines of the local gove ment superannuation scheme where a pensioner ta on further employment remunerated from public fun

Service with the Forces, &c.

Provision is made for continuation in the sche during service with the Armed Forces, but this seems be prospective, not retrospective.

Service in various forms of employment will be coun towards superannuation benefits. Contributing serv covers service in respect of which the practitioner h made the contributions required by the regulations p previous employment if falling within certain definitio It does not appear, however, that service as a Natio Health Insurance practitioner can be aggregated. No contributory service is defined in the regulations follows: There shall be reckonable as non-contributor service in relation to the employment of an officer b an employing authority any service which is not reck able as contributing service and which is not reckona solely for the purpose of determining whether benefit is payable under the regulations. This somewh involved section will doubtless be clarified later.

The scheme will be administered by a Health Ser Superannuation Division of the Ministry of Health, 28, Princes Gate, London, S.W.7. It will be by contributions from the participants in its benefits by contributions from the Exchequer. It will not funded but will be subjected to actuarial invest periodically at seven-year intervals.

Prof. G. Grey Turner has been elected president of next International Surgical Congress, which is to be held New Orleans in October, 1949.

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Pensions

The pension to be paid to a practitioner will be on the following scale: (*a*) in respect of each year of contributing service as a practitioner, $1^1/_2$ % of his remuneration for that year; (*b*) in respect of each year of contributing service otherwise than as a practitioner 1/80th of his average remuneration at the date on which he last ceased to be employed in such other capacity; and (*c*) in respect of each year of non-contributing service 1/160th of his average remuneration at the date on which he last ceased to be employed in such other capacity. If the contributing service of a practitioner *exceeds forty years and he has no service in any other* capacity the pension will be calculated by reference to the last forty years of such contributing service.

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The widow's pension is equivalent to a third of the pension payable to the practitioner or of the amount of pension to which he would have been entitled had he retired on the day preceding his death. It must also be noted, however, that her pension will be reduced or raised according to whether her age was less or greater than that of her husband. It will cease if she remarries.

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Death Gratuity

If a practitioner (*a*) dies and at the date of his death had completed five years' service; or (*b*) ceases to be a practitioner after completing five years' service and dies within twelve months after so ceasing, without having received a return of contributions or become entitled to any other benefit under the regulations, and without having again become entitled to participate in superannuation benefits, or (*c*) if he dies after having become entitled to a pension or retiring or injury allowance or short-service gratuity, then the Minister will, subject to certain exceptions, pay a death gratuity of a sum equal to (i) $4^1/_2$ % of his remuneration for each year of contributing service as a practitioner or, if widow's pension is payable, $1^1/_2$ % thereof; (ii) in re of each year of contributing service otherwise than a practitioner 3/80ths of his average remuneratio there is a widow 1/80th) at the date on which he ha *ceased to be employed otherwise* than as a practitioner and (iii) subject to the same conditions 3/160ths of h average remuneration in respect of each year of no contributing service.

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published series of hospital cases is in part the product of non-notification, designed to avoid the "stigma" of tuberculosis, which leads to non-detection of contacts and to the return of the sensitised child to an infected milieu. The most serious obstacle to the work of both the clinics and the tuberculosis officers seemed to be the slowness with which patients could be placed in sanatoria; so patients with plainly active tuberculosis were sometimes referred by us directly to general hospitals.

The disposal of patients with other diseases raised unanticipated problems of professional conduct. Most of the patients already attended private practitioners, and, where possible, defects were referred to them; but the impossibility of securing a follow-up, combined with the attitude of certain patients who did not let us know that they were already under treatment, complicated the issue. There was a strong tendency for patients to use the clinics to check their own doctor's treatment and to get to hospital in spite of his advice; we did our best, when we detected this, to discourage it. The full coöperation of most local doctors did not always save us from invidious decisions, and we ended by referring directly to voluntary hospitals most cases requiring treatment. This was defensible, in our view, only because of the peculiar position which such clinics, publicly financed and publicly canvassed, must needs occupy, and we make no claim to have solved fully or satisfactorily the problems of coöperation with the general medical services outside the borough scheme—the blame, if any, rests not on the practitioners but on the inherent difficulties of any dual system.

We never advised tonsillectomy or other surgical treatment directly; we referred all cases which might require it for a surgical opinion. Dental treatment and eye refractions were undertaken through the L.C.C. minor-ailments scheme. All cases of ankle-weakness and knock-knee severe enough to need treatment and all cases of speech defect were referred to a voluntary hospital. The clinics accordingly functioned as a clearing-house and advisory centre, especially the latter.

Distribution of Drugs and Supplements

The clinics also acted as distributing centres for Ministry of Food supplements and dietetic extras provided through the borough. Complaints of poor tolerance were investigated and, where reasonable, capsules and concentrates substituted for Government oil, and other sources of vitamin C for orange-juice. The acceptance of these by the public was uniformly good, though the higher income-groups preferred dear proprietaries of low antirachitic value to free or cheap cod-liver oil.

The cases showing active or recent rickets were few. Our criteria (not usually confirmed by radiography) were those given by Hamilton et al.[1] (delayed dentition, hypotonia, head-sweating, and delayed walking), since our purpose was prevention rather than investigation. The remark about injection at clinics applies to the investigation of vitamin-C deficiencies; in a private series of similar range it would have been possible to use Slobody's intradermal tests on a mass scale, but this would have destroyed the other and more valuable work of the clinics.

Scope of Work

We found limitation of the effective scope of work undertaken in the clinic to be one of the prime conditions of success. In planning this scope we estimated that a maximum of 15 cases would be seen in a session of two hours, allowing for the shorter time occupied in dealing with return visits. To derive the greatest value from the time at our disposal, we needed to adopt a very different approach from that of the diagnostician in or out of hospital, who conducts the treatment but ceases to supervise the case as normality is restored. We had to deal with and prevention, particularly with the forest conditions likely to need surgery; and, though data were collected, we did not pursue data for own sake: we did not, for instance, control all of suspected rickets by X rays or chemistry—not indiscriminate dosing with supplements has any cation, but because of the importance of deficiency on one hand and sparing the parent on other. So long as hospital attendance involves a which in many cases exceeded six hours from the lished time of the clinic (cases where patients at 9 A.M. for a short consultation or investigation not seen until late afternoon were common, hospitals of national standing in pædiatrics), the control of supplements must wait until there are facilities for investigation in the health-centre. We relied chiefly on hospitals which had insti appointment system. Apart from this fact, we a principle to devote time rather to advising the of normal children on general and minor problems to giving special advice where patients were fo be clinically ill.

The system of fixed "skeleton" case-taking dir at the commonest undetected or symptomless ab malities, with immediate reference back of cases, as as provisionally diagnosed, for treatment and inves tion elsewhere, suited the function for which the c were designed. In all cases the reports of other in tions were filed in our records and we resumed superv of the case at the point where it was discharged specialist care.

FINDINGS

Higher wages, evacuation, and the bombing of Government supplements to diet, and improved education have borne remarkable fruit in the phy state of London children. At the same time conscrip the universal cheapening of human responsibility, small family, gross housing deficiencies (especially attempt to rear children in flats), and the fraying parental nerves through shortages and enforced deprivation have contributed a psychological balance.

Rickets.—Out of some 2500 children examined not than 24 were on clinical findings grossly rachitic, th perhaps 100 needed greatly improved nutrition, and a centage showing clear evidence of neglect hinted at existence of other neglected children whose parents unlikely to bring them voluntarily to attend at clinics.

Tuberculosis, where Vollmer reversal took place under eyes, was generally traceable to a close home contact or visit to the country. Our results were another proof of value of routine child tests in detecting adult disease.

Weights and heights compared favourably with figures. The most salient deficiencies were all minor; extreme disorganisation of war made this a very vaccinated population (less than 50%), though reached 90% in some clinic zones and refusals in the group were uncommon. We have deliberately ex tables, since the voluntary character of the attendance it important that our figures should not be taken as an sample.

Scabies was very rare; *pediculosis* moderately common.

Dental caries tended to appear in 30% of cases about third year, and predominantly affected the incisors. C were divided into those where defective enamel-form led to incisor caries at gum-level, those showing symm first-molar cavities, and those showing both. *Parents* perhaps least coöperative in accepting conservative on deciduous teeth, even when dentists had declined extract and explained the reasons for the decision. instances of striking neglect were found in otherwise inte families, one child having five active and palpable ab

Phimosis.—The many cases of avoidable phimosis children who had not attended infant-welfare clinics

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1. Hamilton, A. G., Mills, G. C., Waller, H. K., Warwick, J. M. *Lancet*, 1945, ii, 758.

trongly that better instruction by maternity hospitals ily practitioners would save the children from needless

Routine examination of the genitalia should be f every pædiatric examination of boys, and mothers e specifically instructed in their care. It would be ng to know how phimosis terminates if left to itself— primitive peoples who do not practise circumcision. experience every prepuce which is not regularly l to becomes adherent.

l Coöperation

standard of parental coöperation was high, even he voluntary attendance is taken into considera- he mothers with whom we had to deal had been ed to various external and internal stresses: but, er deterioration has taken place in the environ- f the family, some of the fruit of pre-war psycho- and hygienic instruction is fairly obvious in our nce. Sanity of attitude toward enuresis, mastur- jealousies in the family, and the conception of ne is largely an outcome of such past teaching. , we found evidence to support the view put for- y Halliday that future effort in advisory clinics needed to counteract over-enthusiastic ideas of a rather than to instil new ones.

ssional patterns in mothers thwarted over the habit or appetite of their children are certainly nest in the intelligent and the hygienically l. We often conducted propaganda for rather more y dirt, constipation, and anorexia. "I've kept his pot for two hours, he's that stubborn," is a ark in the deformation of a personality, though in ses the child generally won. We shall have to see he decay of a coercive morality does not leave for the growth of an equally coercive and irrational f the time-table in childhood. The danger is sed in circumstances where pre-school children t flats in ones or two's, without safe facilities for unal play. The higher physical standard of housing se flats is more than offset by the consequences e child.

y Planning

encountered much spontaneous comment on the rate problem in reply to the question "How many en?" The reasons adduced for limiting the family strikingly uniform, war coming first, fear of renewed econd, and the consequences of war, particularly ng, third, followed by economic considerations. hey want us to have children, they can stop our eaking"; "It's no world for children, we think"; d time" and health reasons were not common, and h proportion of women with a rheumatic heart three or more children by choice in the face of appreciation of the physical result.

ptoms Complained of

orexia in only children probably heads the list of plaints; and here we made much use of the leaflet d by the National Council for Health Education. istent cough, dating from measles or an infection, e second, the cases falling fairly definitely into a illar group, an allergic group, and a "mixed bag," ng the severer members of which we searched ematically for latent bronchiectasis, and of these suspect cases passed out of our hands for broncho- phy and other investigation.

he third major group was psychological: enuresis, which parental reactions seem to be much improved; or; minor disorders of behaviour; and "nervous- s." There was no great incidence of unmanageability age-group was not suitable for conclusions on "delin- nt" reactions, and the period of exposure to parental rosis had been from birth to early childhood, not n early childhood to prepuberty). Nervousness and chogenic troubles were almost uniformly attributed parents to prenatal trauma by bombs, and equally uniformly traceable to parental neurosis, of which obsessional manifestations did, on the whole, most damage and anxiety states made up the major part. In two cases we sent the children for "guidance"—in all the others requiring treatment we referred the parents directly to the psychiatrist.

Parental neurosis proved to be our most contagious disease, and one to which children possessed no resistance whatever. Its incidence is by far the highest in the better educated family group. Some of the happiest and healthiest of our children were adopted, chiefly in working homes. Of the causes of parental trouble, conscription and its effects came first and lack of sexual and contraceptive knowledge second, followed closely by housing deficiencies. Economic fears were not significantly represented. The clinics spent as much time on minor psychiatry as on all the other activities put together. Even in the children who remained in London, bombing, as an experience, did far less damage than tonsillectomy or brusque treatment in hospital, a point which must be borne in mind when surgery is being considered.

Ignorance and Error

Parental education varied, and health knowledge (and superstition) with it. It is of more social than medical interest, perhaps, that over three-quarters of mothers "touched wood" when asked for details of past infection. This xylolatry, as it might be called, was general among unbelievers in immunisation.

Two of our chief enemies were proprietary infant powders and camphorated-oil rubs, the first as a cause of obstinate bowel atony, and the second as a source of macules, papules, and pustules.

The campaign for vitamins has produced more zeal than instruction, and a good many mothers are ready to substitute for the official concentrates not only fortified infant foods and "body-builders" but also unfortified iron tonics, irrespective of whether vitamins are being received from other sources.

Most cases of intolerance to cod-liver oil were due to management, but a few were genuine fat-intolerance, and there was a definite incidence of allergic responses to orange-juice.

Castor oil still figures occasionally as a weekly dose for young children, and as a specific for bellyache, and the prevalence of enemas for oxyuriasis continues, with some professional backing. It had usually caused more trouble in our cases than the parasites, and parental good sense terminated treatment in most cases.

So many superstitions have been attacked by hygiene teaching that the relation between stammer and left-handedness needed to be reasserted in a good many instances, where parents regarded it as another unlikely story.

Complaints about National bread as a cause of childhood troubles bore a definite political distribution, and complaints about housing, with more foundation, were adduced in most cases of respiratory trouble.

The clinics were used largely as a source of health teaching, by posters, films, and admonition; and clothing, foods, pamphlets, and demonstrations were shown by the health visitors, generally with good result.

WEAKNESSES

Our main weakness was probably our fragmentary attitude to the family. Since it is not practicable to see at such a clinic more than the mother and one or perhaps two children of about the same age, treatment of the kind we could give lacks a proper diagnostic basis. The family is an ecological unit. If we could have supervised the entire group on Peckham lines, or enjoyed the same facilities as the family doctor, we could have done more. In most cases, throughout all income groups, we found that the practitioner or, more often, practitioners, were used more as one employs a plumber than as family consultants. War and migration had so largely destroyed the family unit of practice that we were constantly called to integrate treatment where mother, children, and father were attended severally (and, it appeared, in strict secrecy) by separate doctors and by two or three hospitals, and our clinics were added to the collection of opinions

whenever we failed to forestall it. The patient who goes to Dr. X with her feet and Dr. Y with her head, and takes the medicine, often identical, of both is a force to be reckoned with. One child was receiving three separate supplies of phenobarbital for her non-epileptic seizures. Coupled with this are the "welfare mentality" and the perpetual "scrounging" for certificates that goes with it.

Another limitation on our work was the extreme load placed on health visitors by the combination of statutory and supererogatory obligations, which they met with much good will, but which restricted the amount of following-up which we felt justified in ordering.

CONCLUSIONS

Voluntary attendance for treatment must be the basis of all ethical practice in any medical service, and zeal for public health should not lead to any further over-persuasion, "snooping," or invasion of privacy. In the present sociological conditions we are powerless to reach, by the system of welfare described, the "bad" cases; but evidence suggests forcibly that coercion, particularly imprisonment for neglect, without re-education is equally impotent.

The chief lesson brought home to us by these clinics is the need for an increasing autonomy of such services in the hands of the attending public, the substitution of coöperation for supervision. A second is the unproductivity of palliative activities in the context of what Mumford termed *megalopolitanism*.

From the more immediate angle of administration, closer liaison with the local practitioners, hindered now by their lack of time for anything but their growing burden of work, and with such agencies as marriage-guidance and psychiatric clinics and care committees comes first among our immediate suggestions.

The numerous limiting-factors which affect our findings make them hard to compare with existing and known findings in America, under the partial State scheme in Sweden, and in pre-war England. For this reason we have not produced numerical statistics.

My thanks are due to Dr. H. W. Barnes, medical officer of health for Camberwell, for his kind permission to publish these comments, and for his unflagging interest and guidance in the affairs of the clinics; the health visitors of the borough for their predominant share in the work done; and the parents for their consistently intelligent coöperation. The opinions expressed in this article are the sole responsibility of the writer and are not necessarily endorsed or shared by the public-health committee, the medical officer of health, or any other officer or officers of the Camberwell Borough Council.

The June Quarter

According to the Registrar-General's return [1] 235,037 births were registered in England and Wales during the quarter ended June 30, representing a birth-rate of 22·0 per 1000 population. This is the largest number of births recorded for any June quarter since 1920. For the March quarter of this year, however, the figure was 241,421 with a rate of 22·8; and the June quarter is the first since that of March, 1946, to show a drop on the previous three months. Illegitimate births accounted for 5·4% of the total births, compared with 7·3% in the same period of 1946.

A Social Survey report accompanying the return shows that, of those interviewed, 69·6% had an illness or injury during the three months January, February, and March, 1947. There was an average monthly loss of 1·6 days for all persons interviewed, and an average of 32 consultations for every hundred illnesses recorded.

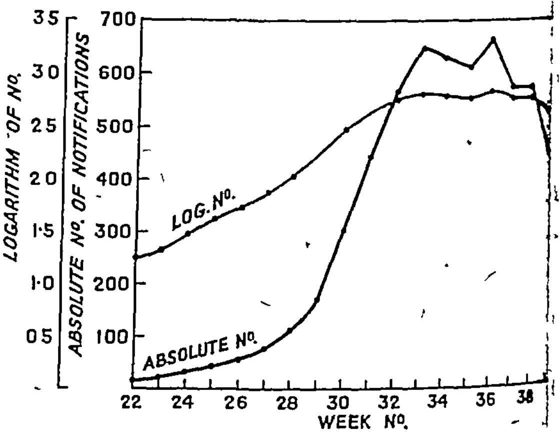
Domestic Drainage

The report of a study [2] undertaken by a committee of the Building Research Board for the Ministry of Works is to be recommended to medical officers of health well as to builders and surveyors; for domestic dr are the source of many public-health nuisances.

The common defects in domestic drainage, listed the first part of the report, range from general de pipe sizes and gradients to the materials used and absence of record plans for the location of pipes. T recommendations made in part II to meet these def are illustrated by a specimen lay-out, and the third p deals with materials and construction. Here the to experiment with new materials is stressed, and spe mention is made of a bituminised-fibre drain and pipe which has been used with success in Canada America. By means of driven tapered collars these p can be jointed as fast as they are lowered in to the tre

Poliomyelitis

The number of notifications of poliomyelitis in En and Wales in the week ended Sept. 27 was 441 and of polioencephalitis 32 (23). The figures fo previous week are shown in parentheses. Thus was a fall of 130 *in notifications of poliomyelitis*— greatest fall since the epidemic began. Both in 1 and in 1926, when there was a high prevalence, fa incidence occurred in September but were followed increases in early October. It is therefore too early assume that the curve of incidence is permanently the down-grade, though the fact that the high incide



started early may be some justification for hoping th the decline may come early also.

The decline in London continued, with 30 cases co *pared* with the previous week's 53, but figures admissions to London hospitals since Sept. 27 sugg that the fall may not be so great when the next wee figures become available. Most of the counties sho a fall, the principal exceptions being Bedford 6 Cheshire 15 (11), Lincs (Lindsey) 16 (8), and Carmart 6 (2). The general picture is one of some decli perhaps a little more noticeable in the south than in th north.

Infectious Disease in England and Wales

WEEK ENDED SEPT. 27

Notifications.—Smallpox, 0; scarlet fever, 58 whooping-cough, 1105; diphtheria, 184; paratyph 10; typhoid, 22; measles (excluding rubella), 11 pneumonia (primary or influenzal), 257; cerebrospi fever, 30; poliomyelitis, 441; polioencephalitis, 3 encephalitis lethargica, 2; dysentery, 87; puerpe pyrexia, 104; ophthalmia neonatorum, 44. No ca of cholera, plague, or typhus was notified during th week.

Deaths.—In 126 great towns there was 1 (0) dea from enteric fever, 1 (0) from scarlet fever, 1 (0) fro measles, 3 (0) from diphtheria, 6 (0) from whooping cough, 87 (5) from diarrhœa and enteritis under t years, and 2 (0) from influenza. The figures in parenthe are those for London itself.

The number of stillbirths notified during the wee was 222 (corresponding to a rate of 25 per thousa total births), including 30 in London.

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[1] Registrar-General's Quarterly Return of Births, Deaths, and Marriages for the June Quarter, 1947. H.M. Stationery Office. 6*d*.

[2] Post-War Building Studies, no. 26: Domestic Drainage. H.M. Stationery Office. 6*d*.

In England Now

Running Commentary by Peripatetic Correspondents

HERE in Lhasa I am again encountering the autumn of P.U.O. Last year it became sufficiently prevalent attract official Tibetan notice and this year for sons which will be explained later some of the large ial families are agreeing to T.A.B. inoculation.

n Tibet P.U.O. comprises three diseases—enteric, hus, and relapsing fevers. My excellent microscope kes the diagnosis of the last an easy matter; but hout facilities for bacterial culture or serum agglutation the differentiation on clinical grounds of the t two is difficult, if not impossible. Thanks to the dness of the Calcutta School of Tropical Medicine I e had a number of representative sera agglutinated; bias is in favour of enteric. On clinical and public-lth grounds too, enteric seems the more likely. What total figures in Lhasa are and how many households affected I have no means of ascertaining. But the l must be high.

betan medicine, sponsored by the government, tly consists of the administration of mixtures of bal and religious powders based on the writings of ents some 600 years old. It is quite static. The y semblance of a health service lies in the fact that government sends one of their own monk doctors h important officials posted out in the blue. But of these whom I tried to train was incapable of ng a syringe and seemed much more interested in pressing us with his quack knowledge than in soiling hands doing simple dressings. Anyway I suppose official derives a certain mental comfort from ing a "doctor" capable of administering useless ders.

hen a Tibetan falls ill he seeks the advice of an arnate lama. The lama, who often does not even the patient, may advise intensive religious ceremonies considerable gain to his fraternity); he may say a etan doctor can cure the patient: or he may suggest ing the "British doctor." But prejudice and ignonce die hard (hardest in Tibet) and it is only the more ightened lamas or those known to me personally o dare direct patients to me with any frequency. result is a hard core of untreated disease, a vast ount of preventable suffering, and a staggering fantile mortality.

For some months past an uncomfortable number of nks have been dying in the largest monastery in the rld. Drepung, with its 7700 monks, seven miles from asa, is far too reactionary to welcome the attentions investigations of the British doctor. What the idemic is I can only guess from what is happening ewhere. The present interest of this lies in the fact at it is in Drepung that the young Dalai Lama, now years of age, will shortly stay for a month surrounded the entire Tibetan hierarchy. And these officials are ared of the epidemic. They turn to me for advice. o use confessing to them one's indecision about the ture of the disease. No; much better to get them otected against the disease prevailing elsewhere and n into their heads some of the rudiments of its prevenon. And perhaps the appropriate star having duly ppeared in the heavens and permitted the start of the ficial bathing season, the louse population will be duced and the relative percentage of enteric thereby creased.

* * *

I have been chastened, though I am glad to say I did ot have to beat my breast and cry "*Mea culpa!*" t a party lately an official from a N.H.I. pricing bureau, earning that I was a physician, opened on me with such weight of armament that I gulped a cocktail more than had intended. While most of our profession were eers among men, did I realise (he asked) that there were .B.'s and even M.D.'s whose prescriptions were a hissing nd a reproach through the whole of the pharmaceutical rofession? No? Well, for a start there was the doctor ho commonly signs his name in the middle of his rescription forms. One puzzled pharmacist interpreted is signature as "Catheter lubricant ℥ iv" and supplied this along with the barbiturate which was prescribed. Whether the patient took the oil nocte s.o.s. is not recorded.

There were too many occasions when illegible writing drove frenzied pharmacists to a calming snifter of bromide. But the pharmacist did his best, and doctors disliked telephoned requests to decipher their scripts. So "EMCLO," a doctor's own graphalog for extract of malt and cod-liver oil, was turned into tinct. codeinæ ("Goodness," I murmured, "what about the dose?" but the attack swept on). One order intended for "Tab. multivite 48" was translated as Ung. zinci ℥ iv *and another was read as* phenobarbitone; the prescription "Ung. hydrarg. ℥ vi" Sig. ℥ i t.i.d., p.c. was undoubtedly a slip corrected by telephone. And why did some medicos still insist on using the old *National Formulary* or even the one before that? The third edition of the *N(W)F* was now issued to every practitioner and there was no excuse for using any other.

The pharmacist paused for breath, so I announced firmly, "I am now going to do some prescribing myself. *Recipe: Spiritus juniperi, syrupi limonis, aquæ glacialis, quantum sufficiat. Misce secundum artem. Phiala prius agitata repetatur.*" We parted on amiable terms.

* * *

The everyday feats of Indian classical dancers would baffle the anatomists. Many of their dances start with a series of lateral movements of the head, without rotation in any plane. This seems to be an arthrological impossibility. Then, with arms outstretched, a rippling wave starts at the finger-tips of one hand, passes up the forearm and arm, across the shoulders, and down the arm and forearm to the finger-tips of the other hand. Try these two movements in front of your bedroom mirror, and you will not be surprised to learn that the training of an Indian dancer takes twelve years.

These reflections were prompted by the demonstration of his superb art by Ram Gopal at the reopening ceremony of the Indian Section of the Victoria and Albert Museum. An Indian classical dancer has to learn many thousands of traditional stylised movements, each one of which has a particular meaning. Every limb has its own catalogue of movements; the number of facial expressions runs into thousands and there are five thousand separate gestures of the hands. These are all learned early in the dancer's training, and later they are blended into dances. A dance is thus full of meaning; every gesture and expression, however slight, has a definite significance and is as much an organic part of the whole as is every phrase uttered by every instrument in an orchestral piece.

It follows that Indian classical dancing is a most difficult and exacting discipline. Every movement is precisely regulated; an extraneous gesture, an inaccurate facial expression, an unintentional flourish may alter the whole meaning of a dance. And yet, Ram Gopal and his pupils appear to be free and spontaneous in their movements. Dancing to simple rhythms, they blend their gestures into a flowing and profoundly beautiful work of art.

* * *

I think I'll give up psychosomatic diagnosis for a bit. When my oldest, and recently married, friend began to complain of listlessness, depression, and nausea I questioned him on personal and private matters with the guile of a serpent. When it was revealed that his mother-in-law was resident and helping her daughter to settle in, things seemed to be getting warm. When he confided to me that his sickness always came on just before having to confront her at the breakfast table, I felt myself to be probing with the skill of a Freud and Harvey Cushing combined. Beaming, I condescendingly explained the interrelations of psyche and soma, prescribed a little tonic and rather more alcohol, and urged the rapid removal of ma-in-law. Three days later, when I was on holiday in the wilds of Essex, my friend put through a trunk call to tell me that jaundice had set in and what should he do now please? He may have turned yellow but, as our American friends say so aptly, was my face red?

Letters to the Editor

GASTRIC HYPERSECRETION WITH DUODENAL ULCERATION

SIR,—There appears to be no generally accepted explanation of the gastric hypersecretion which is frequently associated with duodenal ulcer. On simple theoretical grounds it seems that three hypotheses must be considered: (1) that the humoral stimulating mechanism is hyperactive; (2) that the nervous stimulating mechanism is hyperactive; and (3) that the glands of the stomach are hyperresponsive.

The last two hypotheses are susceptible to test. If the gastric hypersecretion associated with duodenal ulcers were due to a hyperreactive stomach, it might be expected that in such cases histamine, which excites the secretory mechanism even in the absence of the extrinsic, nerve supply, would give rise to an exaggerated secretory response as compared with that of normal subjects. On the other hand, if the cephalic centre were hypersensitive, it might be expected that the gastric secretory response to a fall in blood-sugar after the intravenous injection of insulin would be greater in patients with duodenal ulcers than in normal subjects.

TABLE I—SECRETION OF CL$^-$ IN THE HUMAN STOMACH AFTER STIMULATION WITH HISTAMINE AND INSULIN

Group of subjects	No. of subjects	Mean secretion (Cl$^-$/hr. milli-equiv.)		$\frac{I}{H}$
		After histamine (H)	After insulin (I)	
Normal ..	24	16·11(±1·25)	21·62(±1·54)	1·34(±0·14)
Duodenal ulcers..	19	24·81(±2·00)	27·92(±2·27)	1·12(±0·14)
Gastric ulcers..	20	14·75(±1·97)	20 19(±2·58)	1·37(±0·25)

Standard errors are shown in parentheses.

The published figures of Ihre,[1] who performed successive histamine and insulin tests on normal subjects and patients with gastric and duodenal ulcers, allow these two hypotheses to be tested without further experimental work. For details of the criteria adopted in the selection of his normal and pathological material, Ihre's admirable treatise should be consulted. I have made a statistical analysis of the total amounts of chloride and pepsin secreted in one hour by his subjects. This has allowed a clearer appreciation of the differences between groups than can be obtained from the graphical presentation adopted by Ihre.

TABLE II—SECRETION OF PEPSIN IN THE HUMAN STOMACH AFTER STIMULATION WITH HISTAMINE AND INSULIN

Group of subjects	No. of subjects	Mean secretion pepsin (units/hr.)		$\frac{I}{H}$
		After histamine (H)	After insulin (I)	
Normal ..	24	3453(±309)	7639(±730)	2·21(±0·29)
Duodenal ulcers..	19	5372(±401)	13090(±1460)	2·43(±0·40)
Gastric ulcers..	20	3372(±487)	8790(±1115)	2 61(±0·50)

From table I it may be seen that the secretion of chloride in response to histamine stimulation was of the same order in normal subjects and patients with gastric ulcers. The patients with duodenal ulcers secreted a mean of 54% (standard error of mean 15%) more than the normal group. This difference is significant since it is more than three times its own standard error.

It may be seen from table II that similar differences exist between the groups for the secretion of pepsin in response to histamine. The cases of duodenal ulcer secreted a mean of 56% (standard error of mea more pepsin than the normal group. Thus the to histamine is about 55% more than normal chloride and pepsin are considered together assessment is of value in interpreting the results o with insulin.

The magnitude of the gastric secretory respon lowered blood-sugar depends on at least two f the response of the cephalic centre and the ability stomach to reflect vagal activity by its secreti the stomach is incapable of secretory activity the test can give no indication of the reaction of the centre; on the other hand, if the peripheral se mechanism of the stomach is hyperreactive, re weak stimulation from the vagal centre may g to hypersecretion. However, the response to h may be used to assess the state of the peripheral s mechanism. The ratios in the last column deemed to represent the activity of the vagal con of the secretory mechanism, the variations in pe sensitivity having been eliminated by divid figures for the response to insulin by the sensitivit peripheral mechanism as assessed by the to histamine. Thus the larger the value of th the more active is the vagal centre. It may from the figures that there is no significant di between the activity of the vagal centres in th groups as revealed by the figures for chloride or

Thus it may be concluded that the peripheral s mechanism is hyperreactive in those cases of d ulcer showing gastric hypersecretion, and that hypersensitivity of the cephalic centre cannot be e by these experiments, there is no evidence to such a hypothesis.

This interpretation of these experiments might as evidence against the value of vagotomy in duodenal ulcer with hypersecretion; but recent have indicated that the secretory response of the to histamine is considerably reduced after va The successful results of vagotomy thus do not against the hypothesis of the peripheral origin gastric hypersecretion associated with duodenal

J. N.

Guy's Hospital, London, S.E.1.

SECOND ATTACKS OF POLIOMYELIT

SIR,—Many practitioners I meet hold the vi one attack of poliomyelitis practically preclu possibility of a second, with the result that when attack does occur the diagnosis is apt to be del missed. Three officers belonging to different un attacked with poliomyelitis at Deolali, India, and May, 1947. One of them gave a clear histo another an almost certain history, of a previous of the disease.

CASE 1.—In 1938 the patient and his brother ha attacks of poliomyelitis during an outbreak at a school. In his case the brunt of the paralysis fel muscle-groups of the legs; recovery was rapid and fu was regained in six months. He served as an office the war.

On May 7 of this year the patient, now aged 27, was with fever and pain in the back and right leg. On weakness developed in the left leg. On the 9th the left girdle became affected and there was transient twitchi left lip. Fever lasted till May 16, by which time p begun to return in the left shoulder and right leg. On there was full power in the left shoulder, moderat power (grade 4) in the right quadriceps and ha weakness (grade 3) in quadriceps, hamstrings, ante posterior tibial groups in the left lower limb, and lo knee- and ankle-jerks. There was no sensory abnorm

CASE 2.—An officer cadet, aged 20, was admitte pital at Bangalore, India, on Dec. 27, 1946, from an training school during an epidemic of poliomyelit He had fever, photophobia, backache, stiffness a rigidity of the neck, and congestion of the fauces was no paralysis but the left biceps-jerk was absen cerebrospinal fluid contained 15 cells per c.mm. pressure was 140 mm. of water. Poliomyelitis was d and he was five weeks in hospital.

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[1] Ihre, B. J. E. *Acta med. scand.* 1938, suppl. 95; Human Gastric Secretion, London, 1939.

[2] Grimson, K. S., Baylin, G. J., Taylor, H. M., Hesse Rundes, R. W. *J. Amer. med. Ass.* 1947, 134, 925.

n May 13, 1947, at Deolali, some 500 miles from Bangalore, egan to be feverish. On the 14th he had headache and ache, and he vomited. On the 15th the eyes were ted, the mouth was twitching, and he was obviously ill. the morning of the 16th his condition rapidly became e. He was cyanosed, cold, and clammy; the pulse was d and feeble; he could not swallow or cough and food was rgitated. Movements of the chest were poor and all s were weak. There were continual twitching move- ts of the face, arms, and legs. The pharyngeal reflexes sluggish, and knee- and ankle-jerks were absent. ation was unimpaired. He died at 10 A.M.

istological examination of the brain showed, in sections the medulla oblongata, extensive diffuse microglial pro- tion with œdema of the affected areas and obvious nerve-damage, intense perivascular cuffing of the blood-vessels lymphocytes, and moderate lymphocytic infiltration in meninges The cerebral cortex was normal and no ological changes, especially no Négri bodies, were ted in the cerebellum. No evidence of old lesions of myelitis was seen in the brain: the spinal cord, which d have been more likely to show them, was, unfortunately, ent for examination.

e third case at Deolali occurred on April 17 of this . It was a typical attack with extensive paralysis e lower limbs.

m indebted to Lieut.-General T. O. Thompson, director dical Services, for permission to send this letter; to -Colonel C. W. Greenway, R.A.M.C., Lieut.-Colonel Walters, late I.M.S., and Capt. J. L. Edmondson, R.A.M.C., otes of the cases: and to Major L. Kramer, R.A.M.C., e histopathological report.

F. M. LIPSCOMB.

eme Commander's Headquarters, New Delhi.

AILURES IN CORTICAL BONE-GRAFTING

R.—I have only now had the opportunity of seeing aluable paper by Ellis, Langston, and Ellis (July 26). his and another orthopædic centre our experience fully borne out the remarks made by these authors. cases were almost entirely of gunshot wounds with e bone loss. The final analysis will show therefore her percentage of operations—probably about 20%. se 6 interested me particularly as we have seen al like it: the graft incorporates well, but the actual ure unites poorly or, it is suspected, not at all. It s that the rigid fixation afforded by the graft elimi- s the important factor of longitudinal compression. over one cannot "slot" the screw holes in the graft out weakening it to the extent of risking a fracture. danger can, however, be overcome with plates. me degree this compressing force was obtained in the wing way.

e femur and tibia pin traction was applied. For the r extremity manual traction was used. After freshening one ends a disk of cancellous bone, cut from the iliac , was laid between them. Traction was released, and the was firmly compressed between the fragments. The onlay then secured in the usual way. Latterly, plate fixation was used where the gap was not extensive. Further llous chips were packed around the site. The amount of visible radiologically after three months, especially in emur, is surprising. Lately the cortical graft has been very infrequently, except where the gap was 2 in. or Reliance has been placed on plate fixation and large massive iliac-crest grafts. In one case this method was for a fracture of the upper third of the tibia. In spite of , admittedly not severe, union took place in eight ths. Penicillin has been in routine use.

was our impression that the problems of nutrition fixation could be best met by the use of massive grafts and plates. I have no doubt that this com- sion method of securing a cortical disk is in use where. A further advantage is that the iliac graft is y cut and shaped, and consent to its removal is e easily obtained than to the removal of bone from sound leg.

hile the use of the living cancellous graft with plate ion seems to answer points (2) to (5) of the paper red to, sepsis remains as the outstanding factor. nique, judgment as to when to operate, and the use of penicillin provide some of the answers to the problem of sepsis. In any event, its occurrence does not seem to be so disastrous when cancellous grafts are used.

Military Hospital, Jalahalli, Bangalore. T. DENNESS.

ACTION OF MEPACRINE ON GASTRIC SECRETION

SIR,—The most promising developments in the treatment of peptic ulcer at the moment are the methods of inhibiting the secretion of that fraction of the gastric juice dependent on vagal stimulation, whose continued production is held to be an important factor in this condition. It has recently been reported[1] that in dogs mepacrine strongly inhibits this secretion. The following observations were made to discover whether a similar effect could be obtained in man.

The patients were males undergoing gastric investigation for various reasons. Vagal secretion was provoked by the intravenous injection of 16 units of insulin, the hypoglycæmia being recorded by simultaneous blood-sugar estimations. All cases showed an adequate fall of blood-sugar level, together with the usual symptoms of restlessness and sweating. Gastric contents were removed by continuous aspiration for 15 min. before the injection and five 15-min. periods afterwards. The procedure was then repeated with 400 mg. of mepacrine injected intravenously at the same time as the insulin.

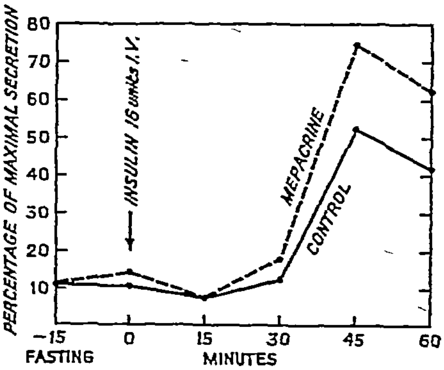

Fig. 1—Graph of secretion of gastric juice after intravenous injection of insulin, showing that simultaneous injection of mepacrine does not inhibit secretion: graphs are average results in four persons with and without mepacrine.

The results in four typical cases are summarised in fig. 1, in which the total acid secretion (volume × acidity) for each period has been expressed as a percentage of the maximum for that patient, and the average of the four percentages recorded. It will be seen that no inhibition is produced. Fig. 2 shows the results in the only case in which an inhibitory effect was obtained, where it was part of a well-marked toxic reaction to mepacrine. This took the form of nausea and abdominal pain for about six hours, followed by vomiting. A test dose of 100 mg. by mouth, as given to each patient, had not given rise to any discomfort.

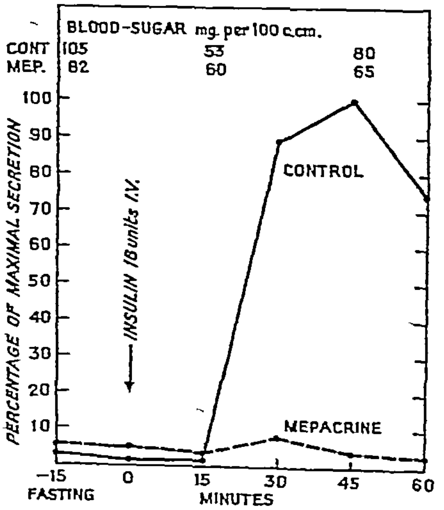

Fig. 2—Graph of secretion of gastric juice showing inhibition of secretion in a patient in whom mepacrine produced a toxic reaction.

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[1] Babkin, B. P., Karp, D. *Canad. med. Ass. J.* 1947, 56, 137.

The failure to produce the inhibitory effect observed in dogs may be due to the fact that the doses used in animal experiments were relatively much greater—i.e., about 10 mg. per kg. of body-weight, or 700 mg. for a 10-st. patient, which is outside the ordinary safe therapeutic range.

My thanks are due to Dr. W. I. Card for his advice in planning this experiment.

Cheam, Surrey. C. P. PETCH.

MORE STONES FOR OUR GLASS HOUSE

SIR,—Dr. Marshall tells us in his letter (Sept. 20) that the *Pocket Oxford Dictionary* defines micturition as "(A morbid frequency in) passing urine." *The Shorter Oxford Dictionary* goes further. Omitting the saving brackets it says: "The desire to make water; a morbid frequency in the voiding of urine." Then, as if to clinch the matter, it adds: "Often erron.: The action of making water." But the last, which is the usual, is also really the correct meaning.

The compilers of the dictionary have evidently been misled by the derivation from micturio. It is true that in classical Latin this verb would have the meaning "I desire to make water," but in actual fact it does not exist in classical Latin at all but is found in the *sermo plebeius*, the speech of the lower orders in Rome, which began to creep into literary Latin during the Silver Age. It was a feature of this speech that the suffix "-urio" had lost its desiderative significance. I can put my finger on an instance in the Satyricon of Petronius, a store-house of plebeian Latin. "Et solebas suavius esse, belle deverbia dicere, melica canturire.": "And you used to be a nice fellow, who would recite charmingly and sing little songs." (Petr. 64.) Here "canturire" is put in the mouth of the newly rich Trimalchio as equivalent in meaning to "cantare." From this sermo plebeius the word "micturire," which is of similar form, made its way into the Satires of Juvenal, last of the classical writers, again as a deliberate vulgarity; and it is in meaning equivalent to "mingere," I make water.

> Noctibus hic ponunt lecticas, micturiunt hic
> effigiemque deæ longis siphonibus implent.
> [VI, 309, 310.]

Gifford renders it cleverly thus:

> Here stop their litters, here they all alight
> And squat together in the Goddess' sight.

"Micturition," then, is a word formed on the verb "micturio," I pass water, with suffix "-ition" denoting action. The meaning is the action of passing water, and current medical usage, including such a phrase as frequency of micturition, is justified. But why did we go to the sermo plebeius for the word? I conjecture that he who coined it was one who knew his Juvenal and liked "micturition" better than "minction," but was not quite alive to the rather gross character of the word he chose.

Orpington. H. ST. H. VERTUE.

BRAIN AND MIND

SIR,—In your leading article of Sept. 6, you say: "When we look for the site of storage of 'memory traces' we are making the assumption that these are states of neurones and therefore to be found somewhere in the brain. They might, however, be psychical, and therefore not in the brain at all."

The traces left after neurone activity are a breakdown of glucophosphate complexes (with a change of adsorbed potassium to the ionic form); a lowering of the tissue pH; and a local redistribution of organic substances (such as acetylcholine, originally confined to the neurone itself) and of inorganic ions. The acidity and ionic changes cause local swelling of the tissue with displacement of the gyri (for which the arachnoid-dura structures are particularly well adapted). This stretches neighbouring vascular networks, causing constriction of some with local ischæmia (thus conserving the lost potassium, &c., for use in repair). Subsidence of the swelling occurs with access of adrenaline, and a reactive hyperæmia sets in to remove metabolites, restore ionic equilibrium, provide oxygen and glucose for restoration of the neurone injury, and increase the pH of the tissue —thus restoring a threshold of stimulation a to renewed activity.

An important permanent effect of this repair universally neglected—namely, the local growth capillaries during the hyperæmic process. This has and cannot be seen directly as a result of activity the brain, but it may be safely inferred from that to occur in other parts of the body in similar processes. The Clarks [1] showed that the capillaries the rabbit's ear grew beneath an observation wind as much as 0·4 μ per min., and something of this or even much less is sufficient to account for a permeable reflex pathway in the central nervous s on all subsequent occasions. In a previous publicati I have shown how the pattern of capillary flow synapses mechanises, and gives an intelligible representation of the mental counterpart o activity. Memory traces are thus to be inter a growth of capillaries amongst the neurones. neurobiotaxis can occur must be conceded from work, but apart from this there is no need to as you do, that memory traces are either st neurones, or incorporeal and not in the brain.

Birmingham. F. A. PICKWORTH

ABUSE OF THE EMERGENCY BED SERVICE

SIR,—I would like to reply to Dr. Kagan's letter Oct. 4, because, my handwriting being admitte illegible, I am probably one of the doctors concerned.

In the early hours of the morning I was called to a young man who told me that he had been seized violent abdominal pain in the middle of the night. was unaccompanied by diarrhœa and he had vomit twice. His temperature was 99·2°F and pulse-rate per min. There was tenderness over McBurney's po and slight guarding. Rectal examination (there was c made) evinced tenderness. There was no doubt in mind that the patient had appendicular colic and shou be removed to a hospital for observation and, if necessa surgery.

I explained the situation to the Emergency B Service, telling them I thought the patient need observation in hospital as he was living a long way fr me and there was no opportunity for me to see h again that day. They kindly arranged for him to sent to the Westminster Hospital. When seen th several hours later there were apparently no physi signs and the patient was duly sent home.

I hope that the E.B.S. will continue to help us in difficulties as they have so valiantly done hitherto, a not be influenced by the finger-wagging of our omn cient juniors. If *occasionally* a case is sent which do not merit immediate attention, it is better thus th that cases should be neglected for fear of criticism fr the resident staff.

London, W.1. E. M. HERBERT.

SIR,—I should like to give a further example of t abuse of the Emergency Bed Service, because in agre ment with Dr. Kagan I feel it is a great pity that unfair advantage should be taken of this excelle service.

The E.B.S. rang up a certain London hospital aski if it could admit a child with bronchopneumonia. T medical officer asked the E.B.S. to ascertain for su whether or not there was an associated gastro-enterit because the ward was full of very young infants a there was no isolation available for a new admissio The E.B.S. rang back to the doctor sending in the chi —a medical officer at another London hospital—a was assured that there was no gastro-enteritis and t doctor "would take full responsibility for the case The child was therefore sent along for admission a arrived with gastro-enteritis, otitis media, and a bronch pneumonia. The doctor's letter which came with t case said: "This child has suffered from diarrhœa f 4 days and vomiting for 3 days, with evidence respiratory infection and cough for 2 days. . . . The dia rhœa has been less for the last 24 hours but the stoo are green and slimy."

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1. Clark, E. R., Clark, E. L. *Amer. J. Anat.* 1939, 64, 251.
2. Pickworth, F. A. *Brit. med. J.* 1938, 1, 265.

is cases such as this which make hospitals some- s unwilling to risk admitting a patient through the S. even when there is an available bed.

don, W.1. **URSULA JAMES.**

DEODORISING REFRIGERATORS

r.—Dr. Raghavachari (Sept. 27) claims that 3–4 oz. activated vegetable charcoal—or twice as much nulated charcoal—nicely spread out and allowed to ain in an enamel saucer on the top shelf removed all r from a domestic refrigerator which held a mixture ruit, milk, and other dairy products. In my experi- ts charcoal was tried in large quantities but failed; possible that the circulation of air is better in a stic refrigerator than in the rooms of a large plant. he "refrigeration" odour seems to me to be due to ge number of different substances and *factors*—eanliness, partial decomposition, fermentation, bac- l and fungal proliferation, "natural" odours, slight ages of the refrigerant, cleansing agents, and paint, ention only a few. In commercial refrigerators fruit, t, vegetables, milk, &c., are not kept in one and the e compartment. Perhaps the most lingering, pene- ng, nauseating, and inescapable of the "refrigera- " flavours is that due to ethylene, for which the amine spray is a complete antidote.

Margaret's Hospital, Epping. **FRANK MARSH.**

INTERNATIONAL SURGICAL CONGRESS

ès Honoré Confrère,—Pendant le récent Congrès de ociété Internationale de Chirurgie qui s'est tenu à dres du 14 au 20 septembre, les chirurgiens britan- es se sont multipliés pour permettre aux quelques congressistes venus des pays les plus lointains de se e compte des progrès réalisés dans les installations talières et dans la technique chirurgicale de votre .

ous vous prions d'être notre interprête auprès des rgiens britanniques pour leur exprimer les plus remerciements de la Société et de tous nos confrères ngers pour l'accueil si aimable qu'ils nous ont réservé.

LEOPOLD MAYER
Président.
L. DEJARDIN
xelles. Secrétaire-Général.

HORMONE TREATMENT BY IMPLANTING PELLETS

e,—May I amplify, or qualify, a few aspects of your able annotation of Sept. 27?

lthough I personally follow the surgical technique sepsis, described in your annotation, there are some kers in this country, and at least one large clinic t I visited in America, where the procedure is carried in outpatients and not in a surgical theatre. In t clinic a sharp-pointed trocar and cannula was d, and the site chosen was the anterolateral aspect the upper thigh. Strong 'Elastoplast' binding rounded the limb afterwards to avoid hæmatomas ich were not infrequent, and which in my experience not occur with the blunt trocar that I and others use. have found the subcutaneous abdominal fat a very sfactory site for implantation. The rectus sheath tainly has no advantage, nor has the rectus muscle; d in those cases I have seen in which this deep site s been employed extrusion is at least as frequent. From ries of several hundred implantations I would say that rogens hardly ever extrude: desoxycortone, testo- rone, and testosterone propionate rarely extrude; d progesterone frequently extrudes. In order to avoid s I am attempting to get made progesterone pellets h a thin coating of testosterone or œstrone so that e track of the cannula and the skin incision will be mpletely healed before the progesterone comes in tact with the tissues. There is certainly considerable d for progesterone therapy by this route if it can be ade effective without complications.

To the comparatively innocuous danger of virilism rough too heavy dosage of testosterone, to which r annotation refers, I would add and emphasise the thal danger of too great a dose of implanted desoxy- rtone. It is now generally recognised that desoxy- rtone should not be implanted until several weeks after the patient is stabilised by injections; and even then the initial implantation should be on the low side. As your annotation points out, it is far easier to insert pellets than to remove them.

As regards flooding from an excessive dose of œstrone, there seems to be considerable individual variation, and unfortunately some patients bleed profusely after an implantation of only 30 mg. œstrone. Your warning, therefore, is well justified.

London, W.1. **S. L. SIMPSON.**

MASTOIDITIS AND GASTRO-ENTERITIS

SIR,—Several letters have recently appeared in your journal (Aug. 23, Sept. 13, 20, and 27) concerning mastoiditis and gastro-enteritis in infants. It is conceivable that vomitus might infect the middle ear via the eustachian tube and thence the mastoid cells, but vomiting is not necessarily a feature of enteritis in which middle-ear inflammation is present. We must not forget that this particular parenteral infection is not always a *complication but is often the cause of gastro-enteritis.*

The administration of intravenous fluid with the appropriate salts is so often a life-saving measure that any doubt cast on its safety is harmful and retrogressive. In expert hands exposure during the short operation of introducing the needle is minimal, and with modern technique there is no likelihood of the needle slipping out of the vein. Infants can and should therefore be fed afterwards on a nurse's lap in the correct position.

The incidence of mastoid complications in gastro-enteritis does not seem to have varied much during the last twenty-five years. At the Hospital for Sick Children, Great Ormond Street, it was frequently sought and found in fatal cases long before the days of intravenous-drip therapy.

Climate seems to play a definite part in the frequency of middle-ear infections in infants; and it is interesting to find that this ætiological factor of gastro-enteritis is common at certain seasons in the British Isles, France, and Belgium but rare in Switzerland and Sweden.

London. **BERNARD SCHLESINGER.**

Obituary

EDWARD FFOLLIOTT CREED

M.A., D.M. OXFD, F.R.C.P.

Edward ffolliott Creed, who was the second son of the late Rev. C. J. Creed, died on Sept. 27 at the age of 54. In 1910 he entered Trinity College, Oxford, as a scholar, and took honours in the final school of natural science (chemistry) in 1914. Passing on to King's College Hospital medical school as a Burney Yeo scholar, he took the B.M. degree in 1916, and served in the R.A.M.C., as a captain, working on malaria at Sierre Leone. His early experience and training in scientific laboratory work led him into the pathological department at King's on his return from war service, and he was appointed bacteriologist. On the retirement of Dr. d'Este Emery in 1921 Creed became director of the pathological department, and director of pathological studies in the medical school. Always keenly interested in the clinical side of pathology, he became M.R.C.P. in 1923, later being elected F.R.C.P. in 1932. He took the degree of D.M. in 1927.

"Creed's disposition," writes T. E., "was rather quiet and retiring, but in matters which concerned him, his work or department, he could always state a case with logic and vigour. His shrewd common sense, precise outlook, and retentive memory made him a capital chairman of committees, so that in hospital affairs his advice was always welcome, and it was safe to rely on his sound judgment and balanced consideration. As a teacher the qualities of lucidity and careful preparation were notable in his lectures. Although a hard worker for long hours, he always had time to explain the technical side of any problem, and to give useful suggestions as to some line of investigation; so that to the clinician a chat about the pathological aspects of some puzzling case was always stimulating and instructive. His knowledge was wide and his memory excellent, and one rarely turned to him in vain for accurate and helpful information. For young workers in his laboratory it was a privilege to enjoy the time he would always gladly spend on demonstrating a section or explaining a technique. Nothing was too much trouble to Creed in these matters; and I remember well the pains he took in revealing to us the then complex mysteries of the Wassermann reaction twenty-five years ago. As an examiner his sane judgment made his conclusions fair to the candidates and helpful to his colleagues.

"Creed was not a voluminous writer; but his small output was of high quality; nothing but the best would satisfy his fastidious standards or reach his level of meticulous accuracy. Here was an excellent example both to the clinician who sought his advice and to the young pathologist learning his trade. Although mainly interested in bacteriology, he was also attracted to hæmatology, and carried out some ingenious researches on acholuric jaundice. His early training in chemistry gave him a good appreciation of biochemistry; a long experience of autopsies for coroners completed his equipment in morbid anatomy, so that one may look on him as an all-round pathologist in a sense that is likely to become rare in the future as specialisation divides the subject still more deeply. His colleagues, who were all his friends, will find him hard to replace; those informal chats in his room, on a hundred and one subjects, always stimulating and instructive, and seasoned by his lively humour, will be sadly missed."

Dr. Creed married in 1923 Miss Stella Parker, and he leaves her with two daughters.

CHARLES MARSH BEADNELL

C.B., M.R.C.S., SURGEON REAR-ADMIRAL RETD.

Surgeon Rear-Admiral C. M. Beadnell, who died at Petersfield on Sept. 27, was born in 1872 in a military camp at Rawalpindi, and in a letter written shortly before his death he referred to his birthplace with affection, saying that its proximity to the Himalayas may have accounted for his love of mountains and of climbing them. The eldest son of Major C. E. Beadnell, R.A., a justice of the peace of Montgomeryshire, he was educated at Cheltenham College and at Guy's Hospital where he qualified in 1895. The following year he entered the Royal Navy.

During the American-Filipino war he volunteered as a surgeon, and he was landed with American troops in the island of Luzon, where he saw much fighting. Here he made his collection of human crania illustrating the mechanical effects of modern bullets, which was later exhibited at Haslar Hospital and at the Royal College of Surgeons. For his services with the Naval Brigade in the Boer war he was mentioned three times in despatches, and was awarded eight years' special accelerated promotion to staff-surgeon.

When the King and Queen of Spain travelled to England on H.M.S. *Renown* in 1907 Charles Beadnell was the medical officer of the ship, and he also served in the flagship on the China Station, H.M.S. *King Alfred*. During the 1914–18 war he served on the *Shannon* in the North Sea and later on the *Vernon*, torpedo school. He was promoted surgeon captain in 1919 and surgeon rear-admiral three years later. In 1922 he served as British representative of Army and Navy medical services at the International Congress of Surgeons at Washington, U.S.A. In 1923 he was appointed to the command of the R.N. Hospital at Chatham, and he held this post and acted as naval member of the Medical Consultative Board of the Admiralty till he retired in 1926. He was appointed C.B. in 1924.

On his retirement Admiral Beadnell became a director of the Rationalist Press Association, and soon after its president. His wide and varied interests are clearly shown by the list of his publications, which ranged from such naval topics as *Small-bore Projectiles*, *Disposal of Wounded in Naval Warfare*, and *Environmental Factors Afloat* to the *Evolution of Speech*, *Picture-book of Evolution*, and *Origin of the Kiss*. He also compiled a workmanlike *Dictionary of Scientific Terms* and an *Encyclopædic Dictionary of Science and War*.

Beadnell's special interest in evolution made him a rationalist early in life; indeed he confesses that before he left Guy's Hospital he was "a devout Agnostic." His views, of course, were not always acceptable to his superior officers, although his sincerity and tolerance usually made it possible for him to speak. Describing one of the lantern lectures he used to to the lower deck, he writes:

> At the eleventh hour—all my slides had been arrang
> a messenger came to say "the Commander-in-Chief wis
> attend, Sir." What could I do? I went on the stage
> my heart in my mouth thinking "My goose is properly co
> this time." The lecture went off well. The slides were exc
> man's tail, his gill-clefts, the relationship of his old s
> bladder to his present-day lungs were all shown. The "
> man" made a very nice and appreciative speech. I "tu
> in" well pleased with the course of events. Next mor
> however, the sentry came to the sick bay to say the Ad
> wanted to see me. I repaired to the "cuddy" with a
> feeling. He was very pleasant, however, and after a while
> "I enjoyed your lecture very much, but on second tho
> Fleet-Surgeon, Adam and Eve are good enough for me!"

Admiral Beadnell married Ellen Louisa, daught
George Bailey, of Gloucester, who survives him.

Appointments

ANDERSON, I. M., M.D. Glasg., M.R.C.P.: asst. physician, W minster Children's Hospital.
BURNETT, W. W., M.B. Manc., D.C.H.: asst. school M.O., Northu land County Council.
HERZOG, E. G., M.B. Lond.: orthopædic registrar, Rothe Hospital, Yorks.
MILLER, C. M., M.D. Lond., M.R.C.P.: asst. physician, Smithd Road Hospital, Liverpool.
TAYLOR, JAMES, M.B. Belf., D.P.H.: deputy county M.O.H., co. Do
WILLIAMS, R. J., M.A., M.B. Camb.: resident M.O., The Ro Cancer Hospital (Free), London.

Kent and Sussex Hospital, Tunbridge Wells:

COOPER, P. T., M.B.E., M.A., M.D. Camb., M.R.C.P.: asst. phys
GOODWIN, G. P., B.A., M.B. Camb., D.A.: anæsthetist.

Liverpool Open-Air Hospital for Children, Leasowe:

HAWE, P. R., CH.M. Lpool, F.R.C.S.: visiting surgeon.
HAY, J. D., M.A., M.B. Camb., M.D. Lpool, M.R.C.P., D.C.H.: v pædiatrician.

Colonial Service:

BUTLER, E. G. R., M.B. Dubl.: M.O., Tanganyika.
ETTMAYER, ANDRZEJ, M.B. Polish School of Medicine: M Windward Islands.
FERGUSON, S. C., L.R.C.P.I.: M.O., Nigeria.
GILLESPIE, J. E. O'N., M.A., M.D. Dubl., M.R.C.P.I., D.P. specialist (physician), Cyprus.
HOWELL, A. T., B.A., M.B. Camb., D.T.M.: deputy director medical services, Northern Rhodesia.
LAING, A. B. G., M.B. Edin.: M.O., Malaya.
MARLEY, N. A. ST. C., L.M.S.S.A.: M.O., Jamaica.
POTTINGER, J. H., M.B. Lpool, D.T.M., D.T.H., D.P.H.: senior M Nigeria.
TAYLOR, H. B., M.B. Edin., D.T.M. & H.: district M.O., Baham

Births, Marriages, and Deaths

BIRTHS

CROFTON.—On Oct. 2, the wife of Dr. John Crofton—a son.
GRAY.—On Sept. 26, at Edinburgh, the wife of Dr. W. D. Gr —a daughter.
HAMBLY.—On Sept. 30, to Dr. Elizabeth Hambly (née Cadbur wife of Mr. Edmund Hambly, F.R.C.S.—a son.
REWELL.—On Oct. 4, in London, the wife of Dr. R. E. Rewell—a daughter.
ROSS.—On Oct. 2, at Edinburgh, the wife of Dr. R. W. Ross—a so
SWAN.—On Sept. 28, to Dr. Elizabeth B. Swan (née White), the wife of Dr. W. D. Swan, of Coxtown, co. Donegal—a son.
WALKER-TAYLOR.—On Oct. 4, in London, the wife of Dr. P. M Walker-Taylor—a son.
ZUCKERMAN.—On Sept. 26, at Birmingham, the wife of Prof. Solly Zuckerman, M.D., F.R.S.—a daughter.

MARRIAGES

HOUGHTON—SWIFT.—On Sept. 27, at Leighton, Salop, Paul Wi chester Houghton, F.R.C.S., to Jean Hallam Swift.
YOUNGMAN—CHRISTOPHERSON.—On Oct. 1, at Reigate, Richard Youngman, M.B., to Nancye Clifford Christopherson.

DEATHS

BEADNELL.—On Sept. 27, at Steep, Hants, Charles Marsh Beadn C.B., M.R.C.S., surgeon rear-admiral, R.N. (retd.).
BURNS.—On Sept. 27, at Bournemouth, William George Burn M.A., M.B. Aberd., aged 52.
CREED.—On Sept. 27, Edward ffolliott Creed, M.A., D.M. Oxf F.R.C.P., D.P.H., aged 54.
EVANS.—On Sept. 20, at Chichester, Nelly Evans, L.R.C.P. aged 77.
GAGE.—On Oct. 4, in London, Harold Courtney Gage, M.R.C.S. F.F.R.
HARKER.—On Oct. 4, at Southport, Thomas Henry Harker, M.B. Lond.
JONES.—On Sept. 28, Ronald Trevelyan Jones, M.R.C.S.
ROBERTS.—On Sept. 27, Wilfred Hugh Roberts, V.D., M.R.C.S.
STOCKER.—On Sept. 28, at Bournemouth, Walter Woodley Stocke M.R.C.S., aged 82.

Notes and News

ROYAL COLLEGE OF OBSTETRICIANS' DINNER

At a dinner given by the Royal College of Obstetricians and Gynæcologists in London on Oct. 3, Mr. Aneurin Bevan, Minister of Health, commended the college for establishing close association with the Empire. He hoped that he would be spared to carry to maturity the great schemes on which the Ministry of Health was launched. There was, he said, a gratifying rise in the birth-rate and fall in the infantile and maternal mortality-rates; this was due not only to specialist skill but to the collective intelligence of the population. In reply Mr. William Gilliatt, the president, recalled that whereas the Royal College of Physicians was granted its first Royal Charter in 1518, and the Royal College of Surgeons in 1800, the Royal College of Obstetricians received its first royal charter as recently as last March; but, despite its youth, the college already had a record of useful achievement. It was a truly British college, with reference committees in the Dominions; the committee in Australia had been raised to the status of regional council and granted a fair degree of autonomy. Sir Herbert Eason and Mr. F. A. Maguire, chairman of the regional council in Australia, replied to The Guests, proposed by Mr. H. R. MacLennan, who suggested that obstetricians came of humble stock: "We are," he said, "the lineal descendants of Sarah Gamp."

CENTENARY OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association was founded in 1847, mainly through the efforts of Dr. Nathan Smith Davis, then in his thirtieth year and in general practice in Broome county, New York State. He lived to attend the association's jubilee meeting in 1897, when, "in a voice that all could hear," he gave an address on the origin and development of the association, and he died in his eighty-eighth year, having practised his profession for 67 years. The hundredth anniversary of the association's founding was celebrated at the centennial session in Atlantic City, in June, and a book[1] has been published in recognition of that occasion. It includes a history of the association written by Dr. Morris Fishbein, editor of the *Journal of the American Medical Association*, biographies by Dr. W. L. Bierring, and portraits of the 101 distinguished medical men who have been president; and it also describes the various "councils and bureaus" through which the association's activities are discharged. The result is a volume that cannot fail to interest doctors of whatever nationality. Specially noteworthy are the particulars given of the exposures made through the *Journal*, of "charlatans, low-grade medical schools, and fraudulent proprietary medicines." Readers who know little of this subject may find it hard to decide which is the more astonishing and deplorable, the brazen effrontery and success of the quacks or the abysmal folly of their dupes. British readers will note with interest that Dr. George Henry Simmons, whose work for the association was second in importance to that of the founder only, was born in England and emigrated to the United States at the age of eighteen. From 1899 to his retirement in 1924, as secretary and general manager as well as editor of the *Journal*, he made the association an influence of national importance.

A PERSPECTIVE OF DOCTORS

The 20th Century-Fox series of "March of Time" films has lately been augmented by a new short documentary, *Your Doctor Today*. Alastair Cooke, who gives the commentary, refers to the advances of recent years, such as the sulphonamides, penicillin, and streptomycin. The film shows the New York Academy of Medicine, now celebrating its centenary, and reviews some work in the great American hospitals, including the use of the artificial kidney, transfusion of a baby suffering from hæmolytic disease of the newborn, and the treatment of cancer with radioactive isotopes. All this is good, but the sequence on British medicine is curiously unrepresentative, showing only the treatment of industrial neuroses at Roffey Park, and a corner of a laboratory at Oxford where Dr. V. G. Korenchevsky is investigating longevity. It seems likely that 20th Century-Fox had difficulty in persuading most British centres of research to contribute to the film; and the result is a review which covers the two items mentioned with restraint and good sense, but gives no idea whatever of British medicine as a whole. Those who refuse to collaborate in this reasonable and informative kind of journalism might pause to consider the effect of such omissions on American—and indeed on British—opinion of our medical work.

CLASSROOM ATMOSPHERE

Before the war between three-quarters and one million tons of fuel were used each year for the heating of our schools, at a cost of about 5s. per child. A committee appointed by the building research board of the Department of Scientific and Industrial Research recommends in its report[2] a classroom temperature of 57–60°F. Of the heat lost from the classroom, 30–50% goes by ventilation, 20–30% through the roof, and 20–25% through the windows; thermal insulation and the installation of heating plant no larger than is essential may, it is suggested, help to achieve considerable economy. Moreover, double-glazing will halve the heat lost through a closed window. Pipes or tubular heaters at skirting level along three sides of the room probably give the most equable warmth; but these are difficult to clean and have been superseded by radiator systems. Floor-heating, the committee suggests, should be more widely employed; it has the great advantage of keeping the feet warm, and it takes up no floor-space.

For ventilation the report lays down as a minimum winter standard 1000–1500 c. ft. of fresh air per hour per pupil. This can be achieved in most classrooms by 5–7 air-changes per hour; and it should still be possible to keep the air velocity in the body of the room within the range of 20–40 ft. per min. In providing cross-ventilation hopper-windows should be fitted with side cheeks to prevent the incoming air being blown directly on to the children nearby; and a heating surface should be placed below the windows to counteract the cool down-draught. The committee finds no virtue in continuous windows along one side of the room, opening down to floor level—a practice which prevents the installation of a heating system along this wall.

ON USING AN ARTIFICIAL LIMB

The Ministry of Pensions have published an informative little booklet[2] of hints to users of artificial limbs. It encourages a confident attitude towards the limb, advises about special movements—for example, which foot to use when mounting stairs or descending from buses—suggests clothes for the limb and the way to put them on, reminds the wearer to look after his stump properly, and supplies some notes on the care of the limb itself. A paragraph on sport and recreations shows how little of a handicap an artificial limb can be. It is a useful booklet, which does not pretend to be comprehensive. Those who have further hints to add are asked to send them to the Director of Medical Services at the Ministry.

THE CHALK PIT MURDER

Last November the dead body of a decent harmless man named Mudie, employed as barman in a Surrey hotel, was found in a chalk pit near Woldingham. He had been gagged and trussed up and apparently subjected to some violence before his death from asphyxia, due to the tightening of a rope round his neck. The murder was planned by Thomas Ley, a rich Australian obsessed with insanely jealous suspicions of an elderly woman who had ceased to be his mistress many years earlier. He had suborned Smith and others (three of whom turned "King's evidence") to dispose of Mudie. The facts were clear. The two accused, Ley and Smith, were found guilty.[3] A fortnight after the Court of Criminal Appeal had refused to interfere, Ley was reported insane and removed to Broadmoor where he died of a seizure some two months later. The capital sentence on Smith was commuted when Ley was found insane.

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[1] A History of the American Medical Association, 1847–1947. MORRIS FISHBEIN, M.D.; WALTER L. BIERRING, M.D. Philadelphia and London: W. B. Saunders. 1947. Pp. 1226. 50s.

[1] Post-war Building Studies, no. 27: Heating and Ventilation of Schools. H.M. Stationery Office. 6d.

[2] Hints on the Use of an Artificial Limb. Ministry of Pensions, Sanctuary Buildings, 18, Great Smith Street, London, S.W.1.

[3] Trial of Ley and Smith (Notable British Trials Series, vol. 69). Editor: F. TENNYSON JESSE. London: Wm. Hodge. 1947. Pp. 313. 15s.

The sole medical interest of the case lies in the fact that Ley's obvious madness, discovered as soon as the law had secured the verdict of "guilty," could never be mentioned at the trial or on appeal. He chose to make a persistent denial of the charges; his learned counsel therefore could hardly pursue, as an alternative and much more hopeful defence, a plea of "guilty but insane." His earlier career had apparently included queer events which might have led to criminal proceedings; yet he had discharged without discredit the high office of Minister of Justice in Australia. So much we now learn from the introduction which Tennyson Jesse contributes to the story of the crime.

Royal College of Physicians of London

Dr. Janet Vaughan will deliver the Bradshaw lecture on Thursday, Nov. 6. She will speak on the Anæmia associated with Trauma and Sepsis. On Tuesday, Nov. 11, Mr. Harold Nicolson will give the Lloyd Roberts lecture on the Health of Authors. Both lectures will be held at 5 P.M. at the college, Pall Mall East, S.W.1.

Royal College of Obstetricians and Gynæcologists

On Oct. 3, to mark the grant of the Royal Charter to the college, the honorary fellowship was conferred on Sir Ewen Maclean, Sir William Fletcher Shaw, Prof. C. G. Lowry, and Prof. J. M. Munro Kerr, who are the four remaining signatories of the articles of association whereby the College was incorporated.

Postgraduate Course on Rheumatism

A weekend course on the chronic rheumatic diseases, for general practitioners and demobilised officers, will be opened by Lord Moran at St. Stephen's Hospital, L.C.C., Fulham Road, S.W.10, on Saturday, Oct. 25. Full details can be had from the Fellowship of Post-Graduate Medicine, 1, Wimpole Street, W.1.

Universities Federation for Animal Welfare

On Friday, Oct. 17, at 5.15 P.M., in the anatomy theatre of University College, Gower Street, London, W.C.1, Dr. H. R. Lillie, surgeon to an Antarctic whaling fleet, will open a discussion on Whaling Today—the Search for a Humane Method of Killing. Admission to the meeting is free.

R.A.F. Temporary Commissions for National Service Entrants

Doctors and dentists doing their national service in the Air Force will be in future granted temporary instead of emergency commissions. National-service men holding temporary commissions in the Medical and Dental branches may apply for short-service commissions.

Centenary of the Discovery of Chloroform Anæsthesia

On Tuesday, Nov. 4, the University of Edinburgh is celebrating the discovery of chloroform anæsthesia by Sir James Simpson in 1847. At 9.30 A.M. a scientific meeting to discuss the Use of Chloroform at the Present Date will be held in the surgery department, University New Buildings, when papers will be read by Prof. R. R. Macintosh, Dr. D. S. Middleton, and Dr. John Gillies. At noon there will be a laureation ceremony when the honorary degree of doctor of laws will be conferred on Dr. H. W. Featherstone and Mr. T. B. Simpson, K.C. At 3.45 P.M. Dr. Douglas Guthrie will give an address with a display of relics. The display will be open in the upper library of the Old College from Nov. 3 to 7 from 10 A.M. to 4.30 P.M. daily.

Regional Boards' Appointments

Scottish Western Region: Sir Alexander Macgregor has been appointed chairman of this board in place of Prof. E. P. Cathcart, who has asked to be relieved of the appointment on account of ill health. Sir Alexander Macgregor was medical officer of health for Glasgow from 1925 until his retirement in 1946.

The following appointments as senior administrative officers of hospital boards have been made: *South-western region:* Dr. G. C. Kelly (a senior medical officer of the Ministry of Health); *East Anglian region:* Dr. J. B. Ewen (principal assistant medical officer, hospitals section, Middlesex County Council). Mr. K. V. F. Morton has been appointed secretary to the East Anglian region.

Central Midwives Board for Scotland

As a result of a reallocation of duties, Mr. N. D. Wa the Department of Health for Scotland has been appoi a member of the board in place of Mr. T. A. Greig.

Irish Tuberculosis Society

At a meeting of this society to be held at Crook Sanatorium, co. Dublin, on Friday, Oct. 17, at 5 P.M., D Arthur Walsh will speak on Trends in Treatment of Pulmo Tuberculosis in Scandinavia; Dr. Pearl Dunleavy on Dispen Organisation in Tuberculosis in Scandinavia; and Dr. P Edwards on Some Essential Requirements in Tubercul Schemes.

CORRIGENDUM.—The specific antigenic reaction for coidosis described by Prof. Haxthausen at the Internati Conference of Physicians (*Lancet*, Sept. 20, p. 445) wa Kveim reaction.

Diary of the Week

OCT. 12 TO 18

Monday, 13th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
5 P.M. Prof. Ian Aird: Surgery of the Biliary System.
6.15 P.M. Dr. W. W. Mushin: Signs of Anæsthesia.

SOCIETY OF APOTHECARIES OF LONDON, Black Friars Lane, E.C
5 P.M. Dr. T. F. Cotton: Heart-failure and its Treatment.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1
8.30 P.M. Pathological meeting.

WESTMINSTER HOSPITAL, Horseferry Road, S.W.1
5 P.M. (Meyerstein lecture theatre.) Clinico-pathological Dem stration on Anterior Poliomyelitis.

Tuesday, 14th

ROYAL COLLEGE OF SURGEONS
5 P.M. Mr. C. E. Shattock: Appendicitis.
6.15 P.M. Dr. Mushin: Spinal Analgesia.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
5 P.M. *Psychiatry.* Sir David Henderson: Psychiatric Hy thesis and Practice. (Presidential address.)

LONDON SCHOOL OF DERMATOLOGY, 5, Lisle Street, W.C.2
5 P.M. Dr. I. Muende: Pathological demonstrations.

EDINBURGH POST-GRADUATE BOARD FOR MEDICINE
5 P.M. (Royal Infirmary.) Dr. R. McWhirter: Living Cryst

Wednesday, 15th

ROYAL COLLEGE OF SURGEONS
5 P.M. Mr. Grant Massie: Neoplasms of the Colon.
6.15 P.M. Dr. E. A. Pask: Resuscitation.

ROYAL SOCIETY OF MEDICINE
5 P.M. *Comparative Medicine.* Mr. R. E. Glover, F.R.C.V. Influence of the Small Animal Breeder on Biolo Research. (Presidential address.)

SOCIETY OF APOTHECARIES OF LONDON
5 P.M. Dr. R. D. Lawrence: Diabetes—New Theory and Tre ment.

UNIVERSITY OF GLASGOW
8 P.M. (Department of Ophthalmology.) Prof. A. J. Ballanty Ophthalmoscopic Diagnosis.

Thursday, 16th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Prof. John H. Garlock (New York): Surgical Treatme of Carcinoma of the Œsophagus and Upper Stomach.
5 P.M. Sir Stanford Cade: Cancer of the Mouth.
6.15 P.M. Dr. R. M. Johnson: Intravenous Anæsthesia.

ROYAL SOCIETY OF TROPICAL MEDICINE & HYGIENE, 26, Portland Place, W.1
7.30 P.M. Sir Philip Manson-Bahr: Practice of Tropical Medicine in London. (Presidential address.)

SOCIETY OF APOTHECARIES OF LONDON
5 P.M. Mr. Kenneth Walker: Modern Views on the Treatme of Venereal Disease.

HONYMAN GILLESPIE LECTURE
4.30 P.M. (Edinburgh Royal Infirmary.) Dr. A. S. Paters Electro-Shock and Electronarcosis in the Treatment Mental Disorders.

Friday, 17th

ROYAL COLLEGE OF SURGEONS
5 P.M. Mr. Murray Falconer: Principles and Results of Lumbar Intervertebral Disk Surgery. (Hunterian lecture.)
6.15 P.M. Dr. Massey Dawkins: Epidural Analgesia.

ROYAL SOCIETY OF MEDICINE
8 P.M. *Obstetrics.* Dr. Helen Payling Wright, Dr. Ma Haines, Mr. A. Dickson Wright, and Mr. Leslie William Postoperative Thrombosis.
8 P.M. *Radiology.* Dr. R. G. Reid: Interatrial Septal Defect.

SOCIETY OF APOTHECARIES OF LONDON
5 P.M. Dr. H. Stanley Banks: Meningococcal Disease.

LONDON CHEST HOSPITAL, Victoria Park, E.2
5 P.M. Mr. T. Holmes Sellors: Surgery of the Heart and Per cardium.

ROYAL MEDICAL SOCIETY, 7, Melbourne Place, Edinburgh
8 P.M. Marquess of Linlithgow: Medical Rehabilitati (Inaugural address.)

CYSTIC DISEASE OF THE BREAST

HUMAN AND EXPERIMENTAL*

B. D. PULLINGER
M.D. Lond.
CE MEMORIAL FELLOW, IMPERIAL CANCER RESEARCH FUND

HE three outstanding questions concerning cystic ease of the breast are the site and mode of origin of cysts, their cause, and their relation to cancer of the ast. Is such relation fortuitous or causal? According Cheatle and Cutler (1931) 20% of all mammary cancer gins in cystic breasts.

hese three questions have been investigated most gently for over 100 years since Brodie's lectures and ical account (1846). The work falls into descriptive, culative, and experimental phases. We are now in experimental period, and it is my object to examine cally what has been achieved in this direction and t still needs to be done.

Before these lesions were seen or reproduced experi-ntally in animals, there was a phase of speculation out the cause of the cysts. That stage of it, due to a hion in the latter part of the last century which ated everything to bacterial inflammation, may now, the light of greater knowledge, be ignored. Its merits re that attention was focused on the chronic nature d frequent localisation of the disease.

The first suggestion of a more probable cause was d on the known physiological relationship between ovaries and the mammary glands. From about 1895 erimental evidence began to accumulate opposing the w that nerves were primarily concerned in stimulating growth of the mammary gland, which up to then vailed. It was found that removal of the ovaries rested normal changes in the reproductive system, cluding development of the mammary glands, whereas bsequent transplantation of ovarian tissue led to ewed activity and growth. The hormone theory then king shape was early applied to treatment of breast ease. Lett (1905) suggested that a morbid variation the secretion of the ovary might be one of the pre-sposing causes of cancer of the breast. Speculating rther on the relation between ovarian secretion and ronic cystic disease Lett wrote:

> "Carcinoma, as is well known, not infrequently develops in a breast which is already the seat of a chronic mastitis, and it may be that there is a connexion between the secretion of the ovary, one or more of the varieties of chronic mastitis, and mammary cancer."

CYSTIC DISEASE OF MICE

This association, forecast in 1905, between the secretion the ovary, one variety of cystic disease, and mammary ncer, has since been substantiated in rats (Geschickter 45) and mice (Goormaghtigh and Amerlinck 1930). he question that has now to be asked is: does this sociation in rodents correspond to a similar condition the human female? One must expect variations etween the human and animal diseases based on ariation in normal anatomy and physiology. The uman mammary gland is far richer in connective tissue. here is little in comparison in the normal mouse but ore in the rat. Both anatomical development and hysiological maturation of epithelial elements in the rgan in human and animal species differ consider-bly owing to differences in structure and in the varian cycle. Whereas in the human after puberty here are both œstrogenic and luteal ovarian phases, here is in unmated mice and some rats no luteal hange.

According to most observers the effects of ovarian hormones on mammary glands of all species are twofold: œstrogens, whether natural or synthetic, cause duct outgrowth; and progesterone is responsible for lobular-alveolar differentiation. The debatable subject of the exact mode of action of these hormones, whether partly or wholly direct, or whether the pituitary gland is intermediary, need not now be discussed. The point is that all agree that two hormones, follicular and luteal, are required for full development of the gland by whatever route they operate.

The data imply that in unmated rats and mice (and a few other animals) which are not pregnant or pseudopregnant no lobular-alveolar development with acinus proliferation can be expected. In the young human female, on the other hand, after puberty and in the absence of pregnancy, a certain but variable degree of lobular-alveolar differentiation is normal and due to secretion of some progesterone from the corpus luteum accompanying menstruation. It is necessary to know the relationship of ovarian hormones to the development of glandular elements, and the differences between the human gland and those of rats and mice, if one is to follow the experimental work.

Goormaghtigh and Amerlinck (1930) claimed to have reproduced Reclus' cystic disease of the breast by repeated daily subcutaneous injections of an œstrin-containing extract into ovariectomised female mice. What they had achieved with this extract was as follows: they had induced extensive development of all the mammary glands and caused abundant lobular-alveolar differentiation in 9 out of 11 mice, though this response is supposed to be specific for the luteinising hormone. The luteinising hormone was not present either as an endogenous product or as an artificial application in the experiment. Further, there was cystic dilatation, with milky secretion into the dilated ducts. There were also nodular adenomatous collections of acini, and 1 mouse out of 11 had developed a mammary carcinoma. Here was a reproduction of human cystic disease with one of its problems (the cause) apparently solved and another (the relation to cancer) intruding again.

These changes were not uniform in the glands. They appeared irregularly in different parts, and some mammæ were unaffected. Whereas some of the ducts were distended with secretion, others were solid, filled with hyperplastic epithelial cells. When the changes in this experimental condition are compared with the final product of the descriptive study of the human disease (Cheatle and Cutler 1931), there is a rather close correspondence in spite of the underlying structural and physiological differences between the two species, as shown in the accompanying table. One of the most remarkable features of Goormaghtigh and Amerlinck's (1930) results was the non-specific development of lobules of acini in response to œstrogen alone; another was the appearance of a milky secretion. This, as mentioned before, was to be expected only if luteal and possibly other pregnancy hormones were present. Little attention has been given to this important feature. Whatever the explanation, this development certainly made the likeness between the disease in the mature but non-pregnant human gland and the experimental œstrogen-treated animal glands.

NEED FOR STANDARDISED ANIMALS

Besides this close resemblance between the human and animal condition due in the latter to an atypical response to œstrogen in some of the mice, another point requires special notice. Though Goormaghtigh and Amerlinck's 11 mice were all treated almost exactly alike, 2 did not respond by developing a cystic state after receiving excess of œstrogen.

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* Imperial Cancer Research Fund lecture delivered in December, 1946.

COMPARISON OF HUMAN AND MOUSE CYSTIC MAMMÆ

—	*Human cystic disease (Cheatle and Cutler 1931)*	*Experimental cystic state (Goormaghtigh and Amerlinck 1930)*
Cause.. ..	Unknown (disordered ovarian secretion suspected since 1905)	Extract of ovary containing œstrogen injected subcutaneously
Total incidence	Unknown	In 9 of 11 mice
Duct changes	Proliferation of smaller branches; dilatation macroscopically visible in smaller and terminal branches above 1–2 mm. in diameter; distributed in both breasts, one whole breast, or one lobule	General proliferation; dilatation visible macroscopically only when ducts are distended with milky secretion; some microscopical distension; distributed variously in 9 of 11 mice, either focal or widespread; no change in 2 of 11 mice
Contents of ducts	Fluid secretion (not inflammatory) thin, clear, or thick greenish, sometimes creamy (turbid, milky, or cheesy *); colostrum cells; desquamated hyperplastic duct epithelium; "pale" cysts common; irregular presence of periductal leucocytes	Fluid secretion often milky and concretous (many authors); colostrum cells (later authors); some ducts solid with epithelial cells; no desquamation, or very rare; no "pale" cysts in mice, some in rats; irregular presence of periductal leucocytes
Acini	Proliferation variable; dilatation	Proliferation regular and widespread (in 9 of 11 mice); dilatation and secretion

* G. Keynes

Here a digression must be made to explain that these observations were made in 1930, when a mouse was still just a mouse, and in laboratories, though not to fanciers, one mouse was thought to be quite the equal of another and just like it. But even then cancer workers knew that in at least one respect individual mice and stocks of mice differed. Some female mice developed cancer, whereas others did not, and some stocks had regularly a high incidence of mammary tumours, whereas others did not.

The breeding of these stocks was preceded by the work of Murray (1911), who in the Imperial Cancer Research Fund's laboratories had shown that female mice in whose ancestry cancer of the mamma had occurred not further back than the grandmother were distinctly more prone to develop cancer than were those in whose ancestry the disease was more remote. Geneticists also knew of heritable differences in mice and how they were inherited. A vigorous and finally successful attempt was begun in the U.S.A. to find out if cancer were truly hereditary and, if so, how it was inherited. Geneticists bred mice derived from various stocks in such a way as to make them identical. This was done by brother-and-sister or parent-and-offspring matings for so many generations that, according to mathematical calculation, the mice were approximately homozygous—i.e., the genes in each chromosome might be supposed to be identical with those on the homologous chromosome in about 98% of mice. So-called pure-line strains of mice are the result of this strict inbreeding for 20 or more generations. So far as concerns cancer, strains were developed in which the breeding females had either no mammary tumours, or a medium incidence, or a high incidence of 80–100%.

HIGH-CANCER AND CANCER-FREE STRAINS

Though the whole subsequent story of the man which mammary cancer in mice is inherited has been told, the discoveries of Little and his coll and of Bittner (American Association for the Adv ment of Science, 1945) must be briefly summ The mammary cancers which are apparently inh in these inbred strains are due not to true chromo inheritance, though this plays a part, but in the analysis to the presence in the mother's milk of a tum causing agent.

If newborn mice are removed from their own c prone mothers at the moment of birth and put to suckled by a mother from a mammary-cancer-free the young cross-suckled females, when they gro and breed, do not develop spontaneous mammary If left to be suckled by their own mothers they do. implies that the agent that causes the tumours is mitted in the mother's milk. It is not transmitt the males. (In exceptional experiments it app pass by other routes.)

Besides the transmission of the tumour agent Americans found two other conditions that were ess if the agent was to become effective in causing a tum in every mouse suckled. They found that the soil be receptive. The mammary gland must be under influence of œstrogen, and the mice must be derived a susceptible strain. In this latter instance the q of susceptibility was found to be inherited by c somal transmission. This was found out by d opposite experiment. Mice from a low-cancer were transferred to be suckled by mothers from a cancer strain. The incidence of cancer in these su when they grew up and bred depended greatly presence of relationship with a high-cancer strain. was as high as that characteristic of the foster m strain only in the first generation of hybrids father was derived from a high-cancer strain. In circumstances the transferred milk-borne agent become active, but the incidence of tumours was

The purpose of this digression has been to show not all mice are alike, but from some points of they can be made so. So far as concerns the pr under discussion, the differences between mice that be fixed or standardised are twofold. First, there strains of mice with a high incidence of mamm tumours, others with medium *or low incidence,* and others that never develop this type of tumour spont ously. The incidence of tumours depends on posse of a milk-borne tumour agent. Secondly, a high rate pathogenic activity or failure of activity of the age in respect of tumour growth depends on, and reveals th existence of, a receptivity or susceptibility or absence it in various strains. The quality of susceptibility inherited according to mendelian laws. There other accepted way of showing its existence than what may be called the tumour test, though an way may become possible (Pullinger 1947).

Since these discoveries were made, it has bee useful and often necessary to use these pure-line st of mice for all sorts of experiments. For example, was first pointed out by Boyland, of the Royal C Hospital, that experiments on tumour therapy could standardised by growing transplants in these strains. seemed also that, if the response to œstrogens was to investigated in the mammary gland, it was now lo to use pure-line mice, because the individuals might expected to react alike. Discrepancies such as that Goormaghtigh and Amerlinck's (1930) experimen when only 9 of 11 *mice responded atypically,* might disappear. Variable factors might next be introduced will instead of having them upset the results. artificial kind of experimentation has no bearing on response of the human gland to hormones, because

ans are mongrels. This very fact makes it impossible
nalyse variations that may be encountered in physio-
cal response without the aid of standardised
ditions.

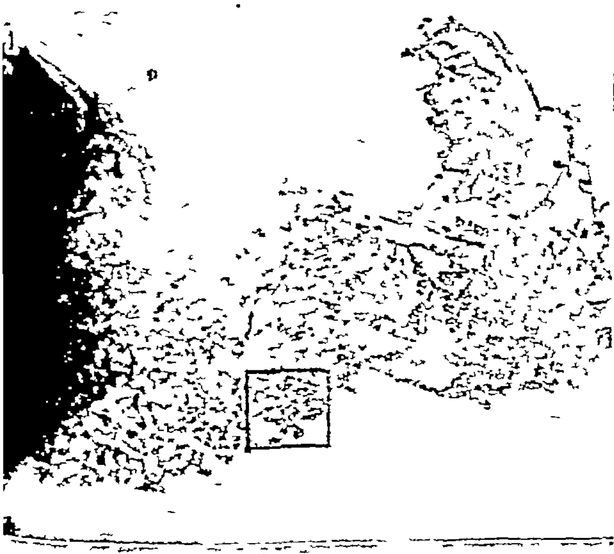
ŒSTROGENS

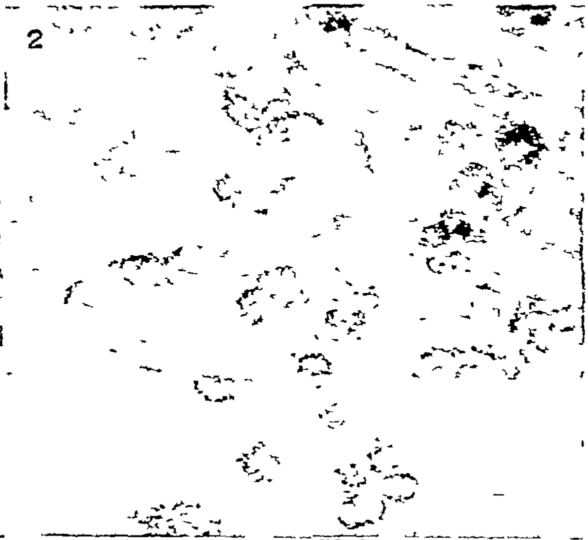
efore starting to test any of the mice for response
estrogens, another step had to be taken and another
ession must be made. Œstrogens are formative
its in the mammary gland. They cause its epithelial
ts to grow and multiply so that, if one wants to find
what œstrogens can do in any strain on either a
ntitative or qualitative basis, all other known
ative agents *must be eliminated from the experi-*
its Other than hormones the only formative agent
wn to be present in some mouse strains is the milk-
ne agent of mammary cancer. If, therefore, the
onse to œstrogen alone is to be examined, the mice
l must be first freed from the tumour agent. It might
rgued that this step is unnecessary, that one could
possibly mistake tumour growth for anything else,
use it is localised and unmistakable. This may be
but it must be remembered that in many of the high-
cer mouse strains mammary tumours are multiple.

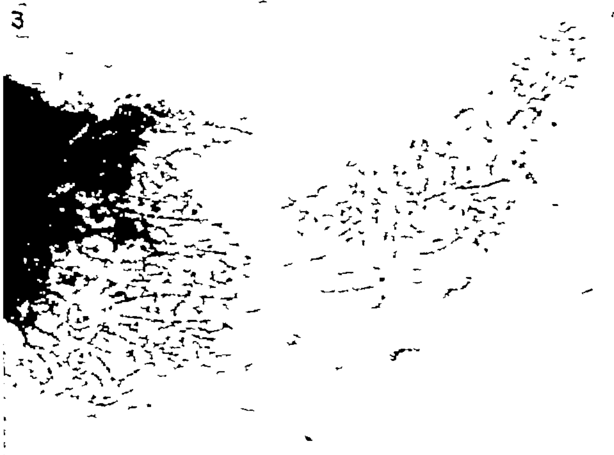
There are also many stages in the process of forming a fully developed malignant tumour. The earlier stages of proliferation are not recognisable as tumours. It could not be said of any particular region that had responded to œstrogen that the milk-borne agent had not taken part. This requirement necessitated the breeding of a special subline of two of the high-cancer strains free from the milk-borne tumour agent. It was done by the method of cross-suckling young from the moment of birth and then breeding from the transferred litters. From the two sublines so obtained from the two strains breeding females were obtained that did not develop tumours in 3–6 years. The mice tested to determine the response of the mammary gland to single or once repeated large doses of œstrogen were young mature virgin females of these strains. To make so far as possible the results comparable by subjecting all the mice to the same dose of œstrogen it was necessary first to remove the largest single source of natural œstrogen, the ovaries.

STRAIN RESPONSES TO ŒSTROGENS

Bilateral ovariectomy was done about the 56th day of life. Œstrogen was applied within 24 hours. If the







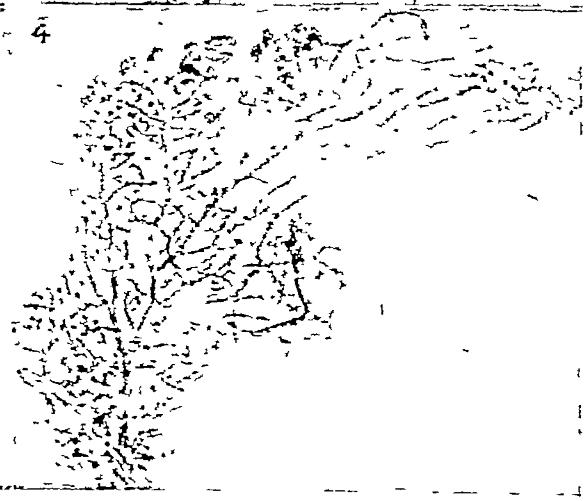


Fig 1—Response to 400 µg. of œstrogen in a 3rd thoracic mammary gland of an R3 mouse deprived of ovaries and of the tumour agent. (× 6.)

Fig 2—Enlargement of field outlined in fig. 1.

Fig 3—Response to 400 µg. of œstrogen in a 3rd thoracic mammary gland of a Strong A mouse deprived of ovaries and of the tumour agent. (× 6.)

Fig. 4—Response to 800 µg. of œstrogen in a 3rd thoracic mammary gland of a first-generation hybrid female deprived of its ovaries, from C57 (black) and R3 parents. (× 6.)

application is delayed longer, the mammary ducts will probably atrophy and subsequently not respond. The œstrogens separately tested were the naturally occurring ones, œstradiol and ketohydroxyœstrin. If these chemicals are dissolved in oil or included in pellets and put under the skin, their rate of absorption is variable and slow. To get a rapid response within a short or limited time, acetone solutions were applied to the skin. The original dose used, 400 μg., was probably excessive. For some purposes it was applied on one occasion only, for others it was repeated after an interval of 20 days. Full details of the experiments and results have been published by Pullinger (1947).

After a single dose of 400 μg. the mammary glands of one of these strains (R3) responded vigorously, similarly and in an unexpected manner to both œstrogens. It was unexpected, when one recollects that the normal response consists of duct outgrowth only. In the test mice of this particular strain, having susceptibility to cancer but no milk-borne agent and no tumours, not only did the ducts grow out and branch extensively but also there was considerable pseudolobular-alveolar development giving rise to clusters of acini and distension of both ducts and acini with secretion. Some of the acini were ballooned out and cyst-like, and the ducts in cross-section appeared cystic. Œstrogen alone produced this change, which, according to previous knowledge of it, should have required the combined action of œstrogen, progesterone, and probably a lactogen. It is a pathological adenosis with secretion and distension (figs. 1 and 2).

This reaction is the cystic disease of mice discovered by Goormaghtigh and Amerlinck (1930) and since confirmed by many others, chiefly in male mice. In the present experiments it has been obtained in a cancer-susceptible strain (R3), after freeing it from the tumour agent, in ovariectomised virgin female mice. It was seen constantly in every mouse examined after treatment with a single large dose of 400 μg. of either œstrogen. This is the condition that has finally to be compared *with human cystic disease of the breast. It is clear, so* far, that it is independent of the milk-borne tumour agent, of cancer, and of failure of involution, and is probably due to excess of œstrogen. The normal output of œstrogen is unknown—only what is excreted and the minimum required to produce œstrus are known—but I have other data which indicate that the dose used was excessive, even from the point of view of causing a pathological rather than a physiological response. The response to 400 μg. was similar for both œstrogens used.

At the time that these atypical responses were obtained by me it was still uncertain that the milk-borne agent had been eliminated, because insufficient time had elapsed for tumours to arise if they were going to do so. It seemed then advisable to repeat the same test in mice of a strain that had never developed mammary tumours in these laboratories nor borne the milk agent. The one next tested (C57 black) gave a typical normal mammary-gland response to both œstrogens similar to fig. 3. By increasing the dose of œstrogen and by prolonging the test period, some slight indications of acinus development could be found but no distension and no milky secretion.

It was clear from this result that there existed a strain difference in response long suspected by others through experiments on male mice. It then seemed possible that the hereditary-susceptibility factor in the causation of tumours might reveal itself morphologically in this capacity to undergo cystic mammary change in response to excess œstrogen.

The next strain (C3H), also having a high incidence of mammary cancer but not freed of the tumour agent, confirmed this suspicion by responding similarly though less uniformly. But mice of the fourth strain (Strong A), also having a high mammary-cancer incidence, responded like normal mice, whether or not the test animals had been freed from the tumour agent (fig. 3). Only *prolonged application of smaller doses* was a seen at length to some localised formation of small Thus it seems certain that the capacity to react by dilatation combined with adenosis-like which is hereditary in certain strains, is not corre with that hereditary factor which underlies susceptib to cancer.

CYSTIC DISEASE IN RELATION TO MOUSE CANC

It is certain also that cystic disease artificially ind in some mouse strains is independent of the can producing milk-borne agent. In this respect the condition conforms to the opinion expressed by and Cutler (1931) that in humans cystic disease disease sui generis and not part of a cancer process. in the mouse is it a prerequisite of milk-borne cancer. It is claimed, however, that in mice of strains that are devoid of milk-borne tumour methylcholanthrene, a powerful carcinogen, can mammary tumours, whether it is applied locally or a distance. Perhaps these methylcholanthrene- tumours are more readily caused in mammæ of strains which respond atypically to œstrogens. T point has still to be decided.

A comparison of cystic disease in rat and mammæ might be even more valuable than in and human, because in rats fibro-adenomas can induced as well as cystic disease and (Geschickter 1945). Rat strains are not yet from long pure-line inbreeding, nor has a separation the tumour-producing stimulus been found and This renders them unsuitable at present.

In this comparison between the mouse cystic sta and human cystic disease some discrepancies still rem These concern the localisation of the disease, the ex process by which it arises, and its hereditary basis in mi

LOCALISATION IN MOUSE AND HUMAN SUBJECTS

In the human, both breasts, one breast, or one lob may be affected. This is curious if the disease is cau by an excess of hormone, which one might expect to distributed evenly by the blood-stream. In the mou when one examines responsive inbred strains, peculiar reaction is found in every part of every gla It is at this stage that one can deliberately introdu complication into the experiments. *Having got* a dard response in pure-line inbred mice, one can gradually from the known to the unknown and in turn hybrids derived from peculiar reactors an normal reactors and then unselected mongrel mice.

Hybrids were bred from two strains, one (R3) reacti vigorously and atypically, the other (C57 black) normall by duct outgrowth only. First-generation female proge only were tested, and that hybrid which lacked th milk-borne agent (C57 × R3) was chosen. A double do of twice 400 μg. of œstrogen was given. The results curious. Part of each mamma reacted like one paren part like the other, the proportion being about half half (fig. 4). Every female of all litters examine responded similarly. The division into two parts *seldom quite exact. If ducts from* the non- half were traced back, it was usually possible to one that, on the whole, reflected the non-reacting paren yet here and there carried on it a few cystic acini. I many specimens there was a suggestion that a positio at the periphery of the gland favoured cystic chang but this was not always so. The dual response in the hybrid mice suggests that localisation of cystic respon is hereditary.

In another experiment hybrid mice of the first genera tion of the same cross which had been allowed to bree completely at random were tested. A few young virgi females were picked out at random and ovariectomithe age of 2 months and treated similarly with gen. In most of these there was a variety of sponse in all mammæ, and a few mice showed the two tremes of the two original parents.

On another occasion mongrel mice were obtained from dealer in Liverpool, chosen because, so far as one knew, ere was no breeding of pure lines in that town and no ance of dealers there getting pure-line mice into their cks via experimental laboratories. Eleven white mice ot all albinos) were tested in the same way for their ammary-gland response to œstrogen. Again there was ariety of reaction. Some mammæ responded normally duct outgrowth, others showed a localised lobular-eolar response, and the mammæ in one mouse resemd the highly atypical response of the R3 strain in ality but not to the same degree. The existence of s capacity in some mongrel mice to respond atypically nts to selection of this quality in pure-line mice from ilar ancestors by inbreeding. It appears to be a ncidence that milk-borne-agent carrying capacity, erited susceptibility, and a peculiarity of response in e mammæ have been inbred together.

The inherited capacity for a localised atypical response ikes one at first as very unusual, but it is no more and less odd than a peculiar human trait—e.g., a facial pression or nose handed down from generation to neration while other qualities vary. The fact that a culiar response is localised, for example, in the half-d-half reaction of the first hybrid generation, indicates o a localisation of special sensitivity in parts of the mmary epithelium. It is not a function of the pituitary d. But for this tendency to localisation of response, might have been thought that the pituitary glands of e reactors had been stimulated by œstrogen alone to crete all the mammogens needed to produce it. Perhaps e data provided by the mice serve as a clue to ausation of cystic disease in the human subject.

MODE OF ORIGIN OF THE CYSTIC STATE

In comparing the exact method by which the cystic ate arises in human and rodent there are two remaining oblems: (1) the mechanism of distension; and (2) the istence of any evidence of variation in response to strogens in human mammary epithelium.

In rodents it is clear that distension is passive, due to pid secretion of a milky fluid before which walls of ucts and acini appear to give way. So far as my observaons have gone of the artificially created cystic states, e distending force operates locally; the effects of a llection of fluid at one place are not transmitted back. ecretion and proliferation of ducts and acini are active. pithelial hyperplasia within the lumen of the ducts as absent except in outgrowing ducts while they were nder the influence of œstrogen. Desquamation was rely seen in the absence of milk-borne agent.

In the human disease the view taken by Cheatle and utler (1931) was that distension was passive, especially reference to duct distension, and was due to a secreted uid. It was not inflammatory in origin. But they ought also that epithelial hyperplasia and desquamaon of epithelial cells played an essential part in opening p the lumens of acini and in breaking down partition alls between them. Nevertheless they state:

> "In some instances the peripheral ducts and acini which have undergone cystiphorous changes only lead into large dilated ducts which exhibit no indication of epithelial hyperplasia and no cause for their obstruction. Their dilatation is due to their passive distension induced by the fluid secreted by the diseaso situated at their periphery."

In one and the same specimen one may often see both pithelial hyperplasia with desquamation and distended ystic ducts. The relationship, if any, between these two tatic pictures is a matter of guess-work. They may not e stages in one process.

This discrepancy of observation and interpretation between the human and rodent conditions is the most important that has been found in the course of this comparison. It might be resolved by assuming a difference in reactivity of epithelial cells in different parts of the duct and acinar systems in humans and mice. Such a difference is reflected in the sites from which tumours of the breast arise. In the human subject, according to Cheatle and Cutler (1931) and to Muir (1941) and most other observers, proliferation and malignant epithelial change are almost invariably intraductal. In the mouse, according to Bonser (1945), the malignant change is acinar in origin. It seems probable that responsiveness to formative stimuli is more pronounced in acinus-forming cells in the mouse, whereas in the human duct epithelium and acinar epithelium are equally responsive to hormonal impulses and the duct epithelium is more so towards malignant proliferation.

VARIATION IN RESPONSE OF HUMAN MAMMÆ TO ŒSTROGENS

The question remains whether there is any evidence of individual variation among human subjects in response to œstrogens. Two types of mammary parenchyma have been described in girls at and after puberty. There is also some controversy over changes that may accompany menstruation. This controversy applies to both types of gland and does not concern the present problem. It seems to be the case that the developing ductule at the end of a duct or branching from it is most often a compact structure with small patent lumen, but Dawson (1934), Dieckmann (1925), and Ingleby (1942) have also described dilated ductules, which are referred to as infantile or immature. Ingleby has suggested that cystic disease may arise in a type of mammary gland originally immature in morphological type. When acted on by the functioning ovary, the ducts and tubules continue to grow and distend, and in course of time give rise to signs and symptoms in virtue of distension.

The condition which occurs in women in the middle period of life differs from the immature pubertal gland essentially in increased proliferation and distension of ductules accompanied by secretion. The relationship, shapes, and sizes of ducts and ductules are most revealingly displayed by the thick-slice method of Ingleby and Holly (1939). When preparations made in the same way of the infantile type of adolescent breast and of adult cystic disease are compared, their similarity is striking. Allowing for differences in magnification, many of Ingleby's illustrations resemble also the induced cystic state in mice (fig. 2).†

Cheatle and Cutler (1931) mention two instances of cystic ducts in infants, one localised, the other widespread. At this stage the mammæ are subject to the influence of maternal œstrogen.

Ingleby's (1942) interpretation of the origin of cystic disease differs from that of Geschickter (1945) in that it emphasises an individual difference in anatomical type of gland rather than the action alone of œstrogen and progesterone imbalance. The occurrence of localised cystic disease strongly favours Ingleby's interpretation, and so does all the evidence from experimental mouse pathology. Evidence of inheritance of cystic disease seems not to have been collected. Geschickter mentions three sisters affected by it.

SUMMARY

Human and experimental cystic disease of the breast are comparable.

Discrepancies exist in the interpretation of the way the cysts develop.

Both conditions are probably brought about by excess of œstrogen acting on mammary epithelium that responds atypically.

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† All figures of mouse glands are photomicrographs of bulk stained whole mounts.

The decisive factor is not merely excess or imbalance of œstrogen but the nature of the parenchyma.

Cystic disease of the breast is an entity independent of mammary cancer.

It does not predispose to mammary cancer of mice when the cancer is activated by the tumour agent.

Its relationship to chemical carcinogens remains to be determined.

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SYCOSIS BARBÆ

SEROLOGICAL TYPES OF STAPHYLOCOCCUS PYOGENES IN NOSE AND SKIN AND RESULTS OF PENICILLIN TREATMENT

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It is recognised that the source of *Staphylococcus pyogenes* * causing sycosis barbæ may be a focus present in some part of the upper respiratory tract, particularly the nose and even the apparently healthy nose. Burrows et al. (1945) showed that relapses of sycosis barbæ were reduced by application of penicillin cream to the anterior nares as well as to the infected skin of the beard area. They emphasised the necessity for concomitant treatment of any active manifestation of sepsis, such as nasal discharge, blepharitis, and otitis media or externa. There does not appear, however, to have been any previous attempt to correlate serological types of *Staph. pyogenes* causing the lesion with those isolated from the patient's own upper respiratory tract.

The objects of the present investigation were (1) to study the effect of treatment of sycosis barbæ with penicillin cream, and (2) to compare serologically the strains of *Staph. pyogenes* isolated from the lesions with those found in the nose, eyes, or ears of each patient. The subdivision of *Staph. pyogenes* into serological types has enabled us to use the bacteriological findings in explaining cure, relapse, or recurrence of infection and failure of penicillin treatment.

PROCEDURE

Bacteriological.—On first examination swabs were taken not only from the skin lesions but also from the nostrils and throat, and (if they appeared to be infected) the ears and eyes. Further swabs, particularly from the nose, were taken at intervals during treatment and immediately before the patient was finally discharged. All swabs were cultured on two blood-agar plates, one of which contained 1/500,000 gentian violet, to disclose the presence of hæmolytic streptococci.

Coagulase-positive colonies of staphyloc
selected by using the slide coagulase test
Graves et al. 1943); and any colonies showin
reactions were re-examined by the tube test (
At least two colonies were subcultured for typ

Serological typing was carried out by Co
agglutination technique (Cowan 1939), using
instance the set of sera, absorbed and u
suggested by Cowan. These were supplem
absorbed sera prepared from strains differing an
from Cowan's types I, II, and III and isolated
and Keogh (1940) and by one of us (B. C. H.)
nomenclature has been adhered to as a basis,
strains which did not fit clearly into one or o
types were identified by using these additiona
sera.

Penicillin sensitivity tests by both plate
methods were carried out on the infecting
Staph. pyogenes when they were first isolated
time to time during treatment.

Treatment.—Cream containing penicillin
per g. in 25% or 30% neutral 'Lanette w
water (Gough et al. 1945) was issued to all pa
instructions to apply the cream to the face
morning or oftener if desired, and to insert the
the nose with a throat swab and to inhale
An alternative suitable cream was the same con
of penicillin in lanette wax sx 18%, glycerin
water 75%. Penicillin cream as described was
containing either 1·0% or 1·5% 'Phenoxe
preservative against contamination with gra
bacilli and moulds (Gough et al. 1944).

Fresh penicillin cream was issued at weekl
nightly intervals until the facial lesions had c
the infecting strain had disappeared from
If the infecting strain persisted, treatment i
was stopped after two or three months. On
patients were told to report immediately s
lesion recur. If profuse nasal carriage of the
strain of *Staph. pyogenes* was suspected to be
with some pathological condition of the upper r
tract, the patient was referred to the ear, nose,
department for investigation and treatment.

RESULTS

Staph. pyogenes was isolated, usually in pur
from the facial lesions of each of the 23
investigated.

Table I shows the degree of correlation
between the strains of *Staph. pyogenes* foun
lesion and in the nose of 19 patients whose str
typed. In each of the 17 patients in whom stap
were found in the nose the strains were of
serological type as those in the skin lesions: 1
showed one type only, and case 10 had two ty
corresponding organisms were found in the
2 instances, and in the eyes of 2 patients with bl
Nine different types were isolated from lesio
incidence was IIIc four times; I, Ib, and C
times; 1636 twice; and Ia, IIIa, IIIb, and
each. It was exceptional at the first examin
find more than one type in the same patient.

Owing to the failure of some patients to at
clinic regularly, the duration and end-results of t
could be followed in detail in only 13 cases, and a
of the results is shown in table II. The cases
conveniently divided into four groups based acc
the results of treatment and the bacteriological

Group A contains 6 men in whom the first trea
lesion and nose with penicillin cream led to the lesio
with elimination of the staphylococci from both
these, cases 10 and 20 have remained free from recur
at least six months, and no *Staph. pyogenes* was isola
the nose of either patient at the last time of swabbing

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* The name *Staph. pyogenes* denotes coagulase-positive strains of *Staph. aureus*, this property being at present recognised as the
of actual or potential pathogenicity.

LE I—CORRELATION BETWEEN SEROLOGICAL TYPES OF *taphylococcus pyogenes* FOUND IN THE LESIONS OF SYCOSIS ARBÆ AND IN NOSE AND THROAT

Type of *Staph. pyogenes* found in—			
Lesion	Nose	Throat	Other site
C.K.5	C.K.5	—	C.K.5—eye
Ib	Ib	..	..
IIIc	IIIc	+	..
IIIb	IIIb	IIIb	..
IIIc	IIIc	—	..
Ia	Ia	—	..
III/5	III/5	+	C.K.9—antrum
I	I	—	..
Ib	Ib	—	..
IIIa	IIIa and I	—	IIIa & I—eye
C.K.5	C.K.5	—	..
I	I	..	..
C.K.5	C.K.5	C.K.5	..
I	I	—	..
1636	1636	—	IIIc & H.S.—ear
IIIc	IIIc	—	..
IIIc	—	—	..
Ib	—	—	..
1636	1636	..	..

Staph. pyogenes present—not examined serologically; —, no *Staph. pyogenes* found; H.S., hæmolytic streptococci.

rted a very slight recurrence while he was ill in bed with vere cold, but the few spots cleared at once with penicillin m. Nose swabs taken at the end of the investigation wed *Staph. pyogenes* of a type different from that causing original infection. Cases 17, 21, and 22 have so far not orted at the clinic after the primary lesions had healed.

roup B consists of 4 patients in whom relapse took place, term "relapse" being used to indicate reappearance of s due to the same type of *Staph. pyogenes* as caused the cal skin infection. Of these patients, 3 were re-examined months after the relapses had been treated: 2 had ained clear of infection; case 23 showed no *Staph. pyogenes* the nose, case 1 showed *Staph. pyogenes* of a type different n that originally isolated from lesion and nose. Case 5 s suffering from a further relapse at the time of the follow-examination, and swabs from lesion and nose showed the e type of *Staph. pyogenes* as had caused the original ction. Cases 1 and 5 had had blepharitis for twenty rs and six years respectively; they reported persistence the condition in spite of treatment, though there was provement in case 1. The fourth patient (case 2) did not ear for re-examination after the relapse had cleared.

roup C includes 2 patients in whom sycosis recurred e to a type of *Staph. pyogenes* different from that which sed the original infection. Case 8 was interviewed five nths after the recurrence had cleared. He had remained e from infection during this period, and nose swabs revealed ph. *pyogenes* of yet a different type from those found in the ions and nose on the two previous occasions.

roup D illustrates the only case in which the infecting anisms were penicillin-resistant and the treatment failed. peated attempts were made to clear the infection by inject- as much as 10,000 units of penicillin locally into a large ion on the chin which had developed into a pocket of pus, little improvement was noted. Table III illustrates the gress of 3 cases representative of the first three groups.

The clinical improvement was usually immediate and amatic, as described by Roxburgh et al. (1944) and hers, but it seemed advisable to continue treatment til the nose was clear of staphylococci. In one tient (case 7) who had had sycosis for fifteen years ere was a surprising improvement in the texture of e skin when the infection was controlled. Another ase 1) could shave properly for the first time for fifteen ars and said that within a few days of the start of eatment he had the best shave for twenty years. When sociated blepharitis was treated, eyelashes grew and ayed in for the first time for years. Relapse came as a tter disappointment to a high proportion of the patients. hese relapses, however, usually responded to a second urse of treatment. Some of the relapses occurred uring treatment, probably owing to inactivation of e penicillin cream by the development of acid in the utoclaving of lanette wax SX (see Gough et al. 1945).

DISCUSSION

The bacteriological findings in sycosis barbæ show that the same types of *Staph. pyogenes* occur in the skin lesion and in the nose, and they provide further evidence to support the view that the beard becomes infected and reinfected by nasal discharge, by the hands of a persistent nasal carrier, or by the handkerchief. A study of the therapeutic effect of penicillin on these cases shows that a proportion can be cured, provided the infecting strain is also eliminated from other sites, such as the nose. Roxburgh et al. (1944) report good results with penicillin, but in one case there was not even temporary cure, probably owing to continued reinfection from nasal discharge. Du Boulay (1946) recorded improvement, but with some persisting infection in 5 cases of sycosis treated with penicillin cream; no mention is made of treatment of nose or other source of infection. Treatment must be directed to this end; but, even if elimination of the infecting strain is successful, it is no guarantee against relapse due to the same type or against recurrence of sycosis due to infection by a different type of *Staph. pyogenes*. In those who relapse with the same type, it is not possible to say whether the organisms persisted in the nose or whether the patient was reinfected from without. The possibility of persistent skin carriage—e.g., in the hands—of the infecting strain must also be considered; no attempt to determine or control this possible source of infection was made in the present series. Failure is also to be anticipated if the organism is penicillin-resistant. This was so in 1 of our 19 cases.

TABLE II—PERIODS OF TREATMENT WITH PENICILLIN CREAM NECESSARY TO CURE PRIMARY LESION AND RELAPSES

Case no.	Duration of infection (years)	Time to clear primary sycosis (weeks)	Interval to first relapse (weeks)	Time to clear first relapse (weeks)	Interval to second relapse or reinfection (weeks)	Time to clear second relapse or reinfection (weeks)	Remarks
Group A:							
20	15	7	..	..	..	..	Presumed cured
17	10	3	..	..	..	..	
13	8	3	..	..	..	..	
21	1¼	2	..	..	..	..	
10	4/12	7	..	..	..	..	
22	6/52	7	..	..	..	..	
Group B:							
1	20	4	24	6	..	..	One relapse; intermittent treatment 34 weeks
23	6	3	6	1	..	..	One relapse; intermittent treatment 10 weeks
2	5	7	17	2	..	..	One relapse; intermittent treatment 26 weeks
5	6	2	2	13	6	4	Two relapses; the first may be considered a continuation of the primary infection due to inactivity of the penicillin; intermittent treatment 27 weeks
Group C:							
8	5	5	12	11	5	5	One presumed relapse and one recurrence; intermittent treatment 43 weeks
6	1½	13	7	2	7	2	One relapse and one recurrence; intermittent treatment 31 weeks
Group D:							
9	5	2	2	Persisting	..	..	Infection persists due to a penicillin-resistant strain of *Staph. pyogenes*

TABLE III—CASE-RECORDS OF 3 PATIENTS REPRESENTATIVE OF GROUPS A, B, AND C

Group	Date	Type of *Staph. pyogenes* in—				Treatment	Remarks
		Lesion	Right nostril	Left nostril	Other site		
A	*Case* 13 (*aged* 34) Oct. 9, 1945	O.K.5	O.K.5	O.K.5	Throat O.K.5	Penicillin cream, face and nose	Sycosis barbæ for 8 years, chin and cheeks
	Oct. 16, 1945	..	..	..	..	„ „	Almost cured
	Oct. 30, 1945	..	—	—	..	Penicillin cream, nose	Face clear
	Nov. 13, 1945	..	IIIc	—	—	..	Face clear ; discharged
	Nov. 27, 1945	..	—	—	..	..	Remains clear ; duration of treatment 3 primary cure
	Dec. 11, 1945	..	IIIc	—	..	..	
B	*Case* 1 (*aged* 48) Feb. 22, 1945	O.K.5	O.K.5	O.K.5	..	Penicillin cream	Sycosis barbæ for 20 years with blepharitis ; during last 4 years ; *loss of eyelashes*
	Mar. 6, 1945	..	..	..	..	„ „	Very much improved
	Mar. 20, 1945	..	..	..	..	..	Now quite healed ; eyelashes growing, tre stopped
	Apr. 24, 1945	..	..	..	..	Penicillin cream plus phenoxetol	Returned to work ; shaves with comfort ; 3 pustules on left side of face ; ceased to attend
	Sept. 4, 1945	O.K.5	O.K.5	O.K.5	Eyes O.K.5	Penicillin cream, face, nose, and eyes	Slight relapse on face with some blepharitis last 3 months
	Sept. 25, 1945	..	O.K.5	—	Eyes —	„ „	Lesion cleared ; one spot only ; *eye still sore*
	Oct. 16, 1945	..	—	—	Eyes —	Penicillin cream for eyes	Face clear ; *eye improved*
	Nov. 13, 1945	..	1636	—	Eyes IIIc	„ „	Face clear ; eye still sore
	Nov. 20, 1945	..	—	—	..	..	Face clear ; eye clear ; discharged ; tre intermittent 34 weeks ; one relapse clea treatment of lesion, nose, and eyes with p cream
C	*Case* 6 (*aged* 53) Apr. 17, 1945	Ia	Ia	—	..	Penicillin cream	Sycosis barbæ 18 months, chin and lower lip ; already received penicillin treatment at hospital, and a relapse had occurred 2 weeks
	July 20, 1945	..	Ia	Ib	..	..	Lesion cleared ; infecting type still in nose ; stopped ; patient discharged
	Sept. 4, 1945	Ia	Ia	—	..	Penicillin cream, face and nose	Relapse (7 weeks later) due to original typ penicillin-sensitive and present still in nose ; ment resumed Patient did not attend clinic when cured
	Nov. 8, 1945	II	II	II	Eyes II	Plain penicillin cream, face, nose, and eyes	Recurrence due to a fresh type of *Staph. p* also present in the nose and eye
	Nov. 20, 1945	..	—	—	..	..	Face and nose clear ; patient discharged ; intermittent 31 weeks ; one relapse and one rence cleared with penicillin cream applied to and nose

—, no *Staph. pyogenes* found.

No serious ill effects were observed from the penicillin cream or the penicillin and phenoxetol cream in this series, but penicillin contact dermatitis may also be the cause of failure in treatment, and in some of the patients treatment had to be suspended temporarily because of reaction to penicillin. In a case of seborrhoeic dermatitis in which there was secondary infection with *Staph. pyogenes*, local treatment with penicillin cream produced œdema and erythema, and systemic injections produced a generalised rash.

It is not suggested that penicillin in the form of cream is necessarily the best means of treating the nose, but it was convenient to try it and thus keep the procedure simple. All those treated were outpatients, and it was impossible to provide an alternative method. Sprays or snuffs, however, may prove more effective.

SUMMARY AND CONCLUSIONS

Penicillin cream is effective in curing sycosis barbæ, provided the infecting strain of *Staph. pyogenes* is sensitive to penicillin.

The same serological type of *Staph. pyogenes* is usually present in lesion and nose, and failure to eliminate the strain from the nose may lead to relapse. The should therefore be treated at the same time as the lesions.

Penicillin cream is generally effective in clea *Staph. pyogenes* from the healthy nose unless the str is resistant to penicillin. Reinfection of the nose by same or a different type of *Staph. pyogenes* may be follow by a recurrence of the skin lesion.

The penicillin sensitivity of all infecting strains *Staph. pyogenes*, both in the lesion and in the n *should be determined.*

We wish to thank Dr. V. D. Allison for much encourage and helpful advice, and Dr. B. Thomas and Dr. T. Phillips assistance with the clinical side of the work.

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TENSIVE TREATMENT OF KALA-AZAR ITH SODIUM ANTIMONYL TARTRATE

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lves and Blair[1] have described a treatment for stosomiasis by the intensive administration of ium antimonyl tartrate. Though this drug has largely n supplanted in the treatment of kala-azar by various tavalent antimonials, or by the diamidines, we ided to try Alves and Blair's treatment in this disease. ing the past year six cases of Indian kala-azar have been treated.

he preparation used was a sterile 2% solution of um antimonyl tartrate, obtained in ampoules from ns Medical Supplies Ltd. The total dosage for each ent was about gr. 1 per 12 lb. of body-weight, in intravenous injections given at three-hourly intervals, lly at 9 A.M., noon, and 3 P.M., on two successive days. appropriate dose was made up to 15 or 20 ml. with mal saline and injected intravenously through a fine dle, a minimum of 5 min. being taken over the ction. Toxic symptoms as a result of the injections e not severe. Most of the patients had paroxysms oughing, lasting about a minute, immediately after or more of the injections, and in a few instances the ghing was followed by vomiting. Case 5 developed ric jaundice two days after the injections, but this ed in the course of a fortnight.

se 1.—An Indian seaman, aged 35, was admitted to pital on April 6, 1946, complaining of headache, fever, loss of weight during the previous month.

n admission : liver and spleen both enlarged (2 finger-dths); weight 6 st. 12 lb.; anæmia (red cells 3,200,000 c.mm.) and slight leucopenia (white cells 4200 per m.); formol-gel test strongly positive; Leishman-Donovan ies in films of the sternal marrow; marrow cultures tive.

reatment and Progress.—Patient was given sodium anti-nyl tartrate gr. 8 intravenously in six equal doses on il 16–17. Temperature, which had been ranging between F and 104°F, fell to normal on day after treatment continued so until his discharge, apparently well, on y 27. Weight was then 7 st. $9^1/_2$ lb., red cells 4,800,000 and ite cells 4150 per c.mm. Spleen no longer palpable, and r only just so. Formol-gel test showed slight opacity no solidification.

atient returned to India and was lost sight of, presumably ed of his infection.

Case 2.—An Englishman, aged 29, had served in the Army India and Burma from 1942 to October, 1945. In March, 6, he had reported sick, in Germany, with occasional vering attacks, loss of weight, and abdominal swelling of e weeks' duration. Leishman-Donovan bodies had been nd on spleen puncture. He was sent to Liverpool for atment and was admitted to hospital under our care on il 11, 1946.

On admission : abdomen distended by enlargement of liver d spleen to level of umbilicus; weight 8 st. 3 lb.; anæmia d cells 2,900,000 per c.mm.) and leucopenia (white cells 0 per c.mm.); formol-gel test strongly positive.

Treatment and Progress.—Patient was given sodium timonyl tartrate gr. 10 intravenously in six divided doses April 16–17. Temperature, which had been rising in e evenings to 99–101°F, fell to normal a week after the jections, and apart from four small rises remained so for weeks.

During that time there was no reduction in size of liver or leen, and formol-gel reaction remained strongly positive. eight increased to 9 st. 4 lb., red cells to 4,200,000 and white lls to 2500 per c.mm.

By June 28 he was again febrile, and cultures of his sternal arrow for leishmania were positive.

On July 4–5 he was given sodium antimonyl tartrate gr. $10^1/_2$ in six doses. His temperature became normal after four days; it remained so until Aug. 28, when he developed lobar pneumonia, which was treated with sulphadiazine.

On his discharge from hospital, apparently well, on Aug. 25 his weight was 9 st. $12^1/_2$ lb., red cells 4,100,000 and white cells 8500 per c.mm. Spleen and liver much smaller but still enlarged (2 finger-breadths). Smears and cultures from his sternal marrow were negative for leishmania.

Patient then returned to civil life and has remained apparently well to date. He may therefore be assumed to be cured of his infection after the second course of treatment.

Case 3.—An Indian seaman, aged 45, was admitted to hospital on April 27, 1946, with ten days' history of fever and malaise, accompanied by severe headache and pain in the loins.

On admission : liver not palpable, but spleen could just be felt; weight 7 st. 13 lb. Anæmia (red cells 3,200,000 per c.mm.) and leucopenia (white cells 4000 per c.mm.); formol-gel test negative; Leishman-Donovan bodies in sternal marrow films. Temperature, which was at first remittent and later intermittent, fell to normal before treatment.

Treatment and Progress.—Patient was given sodium antimonyl tartrate gr. 11 in six doses on May 26–27. He was discharged from hospital, apparently well, on June 18, when his weight was 8 st. $9^1/_2$ lb., red cells 4,800,000, white cells 6500 per c.mm. Spleen no longer palpable. Patient was lost sight of but was regarded as presumably cured of his infection.

Case 4.—An Indian seaman, aged 42, was admitted to hospital on July 30, 1946, with two weeks' history of intermittent fever. He was afebrile on admission, and remained so throughout his stay.

On admission : weight 6 st. 0 lb.; spleen enlarged (3 finger-breadths) and liver just palpable; anæmia (red cells 2,100,000 per c.mm.) and leucopenia (white cells 3400 per c.mm.); formol-gel test positive; Leishman-Donovan bodies in sternal marrow films.

Treatment and Progress.—Patient was given sodium antimonyl tartrate gr. 8 intravenously in six doses on Aug. 9–10. He was discharged, apparently well, on Oct. 8, when his weight was 7 st. 8 lb., red cells 4,100,000 and white cells 4900 per c.mm. Spleen just palpable. Films and cultures of sternal marrow were negative for leishmania. Patient was lost sight of, apparently cured of his infection.

Case 5.—An Englishman, aged 30, had served in the Army in India and Burma from June, 1942, to November, 1945. He was admitted to hospital on Sept. 5, 1946, with nine months' history of intermittent fever and of loss of weight.

On admission : liver and spleen much enlarged (a hand's breadth); weight 11 st. 8 lb.; anæmia (red cells 3,600,000 per c.mm.) and leucopenia (white cells 1450 per c.mm.); formol-gel test positive: Leishman-Donovan bodies in sternal marrow films.

Treatment and Progress.—Patient was given sodium antimonyl tartrate gr. 13 in six injections on Sept. 17–18, after which his temperature, which had been rising irregularly to 99–100°F, became normal in six days.

Patient was discharged from hospital, apparently well, on Nov. 28, when the formol-gel test was negative, and smears and cultures of sternal marrow were negative for leishmania.

When last seen as an outpatient, on March 15, 1947, his weight was 12 st., red cells 5,500,000 and white cells 5600 per c.mm.; spleen no longer palpable, and liver only just so. He may be regarded as cured of his infection.

Case 6.—An Englishman, aged 25, had served with the R.A.F. in India for the three years ending August, 1945. He had fallen ill in August, 1946, with fever, headache, and occasional vomiting, and had been admitted to Blackburn Royal Infirmary, where he had remained, apart from one short break, until Jan. 18, 1947. He was then transferred to Liverpool Royal Infirmary. In Blackburn he had had two courses of 'Neostam' (2·7 g. in all) without much benefit. On Jan. 13 Leishman-Donovan bodies had been found in the splenic pulp.

On admission under our care: liver and spleen enlarged (2 finger-breadths and a hand's breadth respectively); weight 8 st. 2 lb.; anæmia (red cells 2,400,000 per c.mm.) and leucopenia (white cells 1400 per c.mm.); formol-gel reaction positive.

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[1] Alves, W., Blair, D. M. *Lancet*, 1946, i, 9.

Treatment and Progress.—Patient was given sodium antimonyl tartrate gr. 10 in six injections on Feb. 5–6. This produced no effect whatever on his temperature, which had been rising daily to 100–102°F since admission. Blood-count remained unaltered, and on Feb. 19 a culture of leishmania was recovered from the sternal marrow.

Patient was subsequently successfully treated with pentamidine.

DISCUSSION

Of the six cases treated with sodium antimonyl tartrate one showed no response whatever to the drug, and another relapsed after a short period of clinical improvement, but was cured by a second course. Of the remaining four cases one was observed for six months after treatment and was certainly cured. The three other men were Indian seamen and returned to their occupation three, six, and eight weeks after treatment. That they were probably cured is suggested by the disappearance or diminution of the signs and symptoms of the disease during the period of observation, but the possibility of a subsequent relapse cannot be wholly excluded.

The results of intensive antimony treatment in these few cases do not compare favourably with those obtained with 'Neostibosan' or with 'Urea stibamine' in Indian kala-azar, a full course of either of which produces a cure-rate of 90–95%,[2] or with the aromatic diamidines. The method can at present be recommended only where many cases have to be treated rapidly, and the cost of treatment is an important consideration. The duration of treatment by the method we have used was two days as against eight days (neostibosan), twelve days (pentamidine), and thirty days (urea stibamine), and the cost of the drug was less than that of any of these.

GAUCHER'S DISEASE WITHOUT SPLENOMEGALY

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GAUCHER'S disease has been defined as a rare disease characterised pathologically by the deposition of kerasin in the reticulo-endothelial cells and clinically by splenomegaly, hepatomegaly, hypochromic anæmia, and leucopenia. Among other less constant findings are pallor, with a uniform brownish discoloration of the skin, pigmented pingueculæ, brown pigmentation of the shins, thrombocytopenia, and hæmorrhages, and deposits in the bones, leading to deformities, with local and referred pains. The disease is usually detected in childhood by the finding of a greatly enlarged spleen. Though admitted to be both congenital and familial, it is not generally considered to be hereditary. Its course is chronic, but survival beyond middle age is unusual. Death is usually due to intercurrent infection, but a few patients die from progressive anæmia or from thrombocytopenic purpura.

The present series of cases in one family is remarkable in three ways: (1) splenomegaly was absent; (2) a hereditary tendency was evident; and (3) the older patients have survived in active life to advanced age.

CASE 1.—Patient was a doctor, aged 67, of Welsh descent. From childhood his pallor had attracted notice, and in his early years he was always given iron. When he was a medical student his colour excited repeated comment, but his blood contained Hb 90%.

His present complaint was that during the previous two years, while exercising with the Home Guard, he had become more and more inconvenienced by shortness of breath. He had also noticed giddiness after sudden changes of posture.

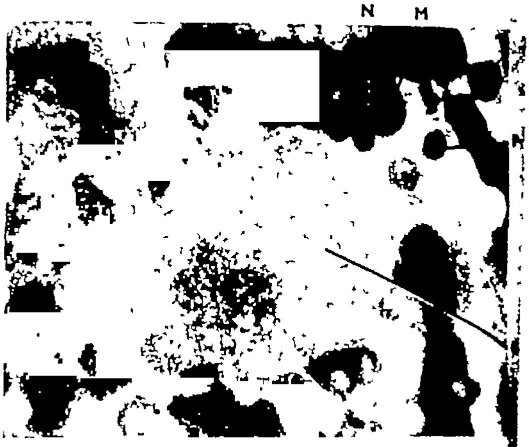

Fig. 1—Photomicrograph of sternal-marrow smear in case I
G, Gaucher cell; M, myelocyte; N, normoblast; P, polymor

When he consulted another doctor, his brownish pallor attracted attention, and a blood examination showed 60%, white cells 9000 per c.mm.

Iron was prescribed but had no effect, and patient referred for investigation of the anæmia. The past his viewed in retrospect appears now to have been signific For thirty years the patient had had pains in the low dorsal and lumbar regions and over the left hip and outer side of the left thigh. These he had regarded treated as sciatica. He had had a similar pain in the of the right arm. He had observed that all his bones unduly tender; if he knocked them, a peculiarly nau pain followed and persisted for some time, especially right radius. He was also said to have had renal colic years ago and to have passed "gravel"; but no stone ever demonstrated. Apart from these complaints he had bronchitis during the last five years; one attack sufficiently severe to be classed as bronchopneumonia.

On examination the patient was a slight brisk rather man in the late sixties. His skin was uniformly pale with a slight brown tinge. Pigmented pinguecula present in both eyes, but they were not notably diff from those often seen in hepatic disease. The sclerotics otherwise normal in colour. The tongue was normal rather pale. A pronounced "cobbler's breast" defo was present. Examination of the heart revealed no ab mality save a soft apical systolic murmur. The blood-pre was 170/90 mm. Hg; the limb arteries were rather tortu but the retinal arteries were normal. Showers of fine r heard at the bases of the lungs, persisted after cough The central nervous system showed no abnormality. the abdomen the liver was felt easily from one to two fing breadths below the costal margin; it was firmer than norm but smooth, and the edge was sharp, elastic, and regu The spleen was not palpable, nor was the splenic dull increased. There was no œdema of the ankles, no ascit and no collateral venous circulation. There was no pigmenta tion of the shins.

Investigations.—Blood: Hb 70% (Haldane), red cel 5,000,000 per c.mm., colour-index 0·7, mean cell diam 7·2 μ, white cells 7000 per c.mm. (polymorphs 58%, lym cytes 33%, monocytes 6%, eosinophils 3%), conside anisocytosis and hypochromia, no polychromasia, no nucle red cells; sedimentation-rate 8 mm./hr.; van den reaction direct negative, indirect 0·4 mg. per 100 c *Urine:* a trace of albumin; no other abnormalities; cult sterile. *Sputum:* no tubercle bacilli present. *Fracti test-meal:* resting juice 16 c.cm.; free acid rose to 30 c in 1½ hours; total acid rose to 60 c.cm. in 1½ hours. St one specimen contained occult blood, but the next contained none.

Radiography: chest showed no evidence of local disease; right and left domes of diaphragm at normal leve renal tract showed two faint opacities in front of the kidney, possibly a calcified gland or gall-stones; t showed gross alveolar absorption; barium meal showed abnormality.

The cause of the anæmia thus still remained obs so a *sternal puncture* was done to exclude, if possible,

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2. Napier, L. E. The Principles and Practice of Tropical Medicine, London, 1946.

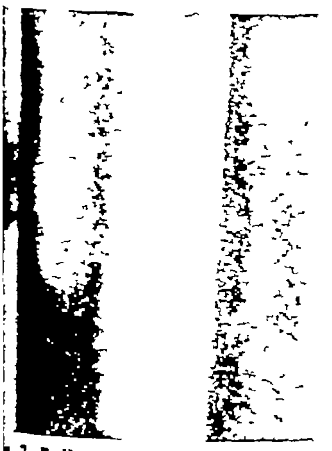
plastic anæmia, an aleukæmic leukæmia, or other disease of reticulo-endothelial system. Stained films of the marrow tained Gaucher cells. The differential count of 500 cells as follows:

	%
Polymorphs: adult	12·7
band	4·3
young	6·2
Eosinophils	1·2
Myelocytes	25
Eosinophil myelocytes	2·7
Premyelocytes	7·7
Myeloblasts	3
Lymphocytes	8·6
Monocytes	1·8
Normoblasts	3·2
Erythroblasts: acidophil	5·9
polychromatophil	3
basophil	15·7
Pro-erythroblasts	0·3
Plasma cells	0
Smudge cells	0·3
Gaucher cells	0·4

$$\frac{\text{Myeloid cells}}{\text{Nucleated red cells}} = \frac{2 \cdot 5}{1} \quad \left(\text{normal } \frac{8}{1} \text{ to } \frac{2}{1}\right)$$

The Gaucher cells (fig. 1) measured 30–80 μ. The cytosm showed the typical fibrillary structure as described Pick (1933). The cells varied in shape, but most of them re not stretched, as described by most workers in the eous form of the disease. The nuclei were commonly single, usually eccentric, and endothelial-like. The cells did not stain with Scharlach R. No crystals were seen with polarised light. A film was fixed in formaldehyde, heated in boiling water, and then again examined for optical activity, but no optically active substance was seen. The prussian-blue reaction was negative.

In view of the pains in the long bones and the detection of Gaucher cells in the sternal marrow it was decided to radiograph the skeleton. A small translucency in the ft parietal bone, two large ones in the right radius, and one the left radius (fig. 2), all typical of Gaucher's disease, were und. There were some doubtful translucencies in the upper alf of the humerus, and some in the bodies of T11, T12, and L1 ertebræ. These translucencies were thought to represent posits of Gaucher tissue. Osteo-arthritis was present in the kn.



2—Radiogram of radius and ulnar in case 1, showing typical translucency at lower end of radius (marked by arrow).

Case 2.—A soldier, aged 23, on active service, the son f case 1. A congenital abnormality of the heart was detected n routine examination in America, but the patient had no ability and no symptoms. He had a sallow complexion ut was not anæmic. He also had the "cobbler's breast" eformity noticed in case 1. There was slight enlargement f the heart, with an apical systolic murmur. Neither liver or spleen was palpable. He had no pingueculæ or pigentation of the legs. Radiography showed a definite transucency in the upper part of the shaft of the left humerus. he remainder of the skeleton was normal.

Case 3.—A schoolgirl, aged 14, the daughter of case 1, as very pale but was not clinically examined. She had no mptoms. Radiography showed typical translucent areas in he lower end of the femur (fig. 3).

Case 4.—A schoolboy, aged 12, the son of case 1, also had sallow complexion but was not anæmic. No enlargement f liver or of spleen. No pingueculæ and no pigmentation f legs. No "cobbler's breast" deformity. Radiography howed a doubtful translucency in the lower end of the etaphysis of the left humerus. This was not thought to e definitely diagnostic of Gaucher's disease.

FAMILY HISTORY

A family tree is shown in fig. 4. Case 1's maternal grandmother had been pale, with a peculiar brown skin; otherwise she had appeared well. She died from cerebral thrombosis at the age of 75. Her husband had been healthy and normal in appearance. Case 1's father died at 66, from carcinoma of the colon, and his mother at 54 from cerebral hæmorrhage. All her life she had been remarkable for her pallor. She had had intractable menorrhagia, which, if she had Gaucher's disease, might possibly have been caused by a thrombocytopenia. Case 1's maternal aunt, also remarkable for her sallow complexion, died at 69 from diffuse purpura after taking medicine, possibly iodine, prescribed by her doctor. If she had Gaucher's disease, this purpura may also have been caused by thrombocytopenia. Case 1's maternal uncle died as a baby from "brain-fever" (infantile cases of Gaucher's disease may run an acute downhill course with symptoms referable to the nervous system). Case 1's elder sister is pale, with a café-au-lait complexion. His younger sister is pale but less sallow than the elder; her daughter has a very clear complexion, but the elder sister's son is very pale. Case 1's three children are cases 2 and 3, who appear to have Gaucher's disease, and case 4, who is suspected of having it. His wife is an Austrian refugee, family history unknown.

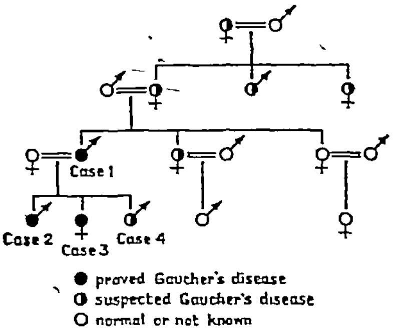


Fig. 4—Family tree showing proved and suspected cases of Gaucher's disease.

DISCUSSION

Hitherto it has been generally agreed that splenomegaly is an invariable and necessary feature of Gaucher's disease. The absence of splenic enlargement from the present cases is therefore of particular interest. In cases 1 and 2 the spleen was not palpable and there was no increase of splenic dullness. Case 3 could not be examined clinically, but it can be assumed that the spleen was at least not conspicuously enlarged, or it would have been detected when she was medically examined on other occasions. I have found only one case in the literature in which there was no splenic enlargement (Erf 1938). This patient complained of pains in the limbs; bone translucencies were seen on radiography, and Gaucher cells were seen in the marrow. It seems therefore that, besides

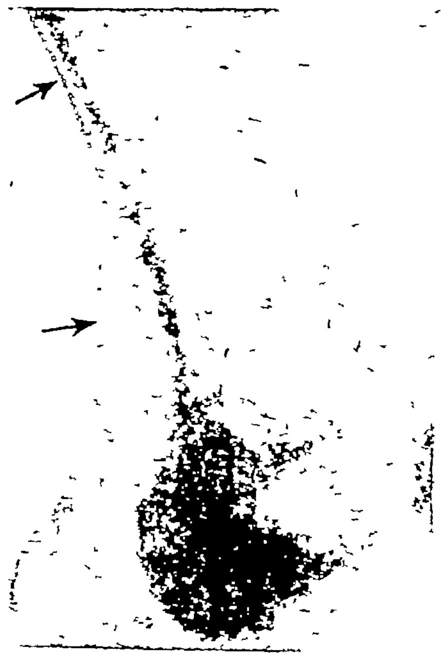


Fig. 3—Radiogram of lower end of femur in case 3, showing typical translucencies (marked by arrows).

the familiar form with splenomegaly and the acute infantile form with the involvement of the central nervous system, there is a third type of Gaucher's disease without splenomegaly. This type may be relatively common, as its only symptoms are those of a mild anæmia. In such cases the diagnosis can only be made with certainty during life by finding Gaucher cells in the bone-marrow.

Cases of Gaucher's disease which are first diagnosed after the second or third decades are rare enough to arouse comment. Horsley et al. (1935) describe a case first detected at the age of 47. Mandelbaum et al. (1942) claim that their case is of interest because it was not recognised before the fifth decade. Wechsler and Gustafson (1940) describe a case in which the disease was first detected at the age of 68. Case 1 reported here was not detected until the age of 67. The family tree (fig. 4) shows that Gaucher's disease is suspected in some other members of the family who lived an active life until well over middle age.

There is considerable divergency of opinion about whether Gaucher's disease is congenital, familial, or hereditary. Pick (1933) states that it is congenital and familial, and that in about a third of the cases several members of one generation are affected, but that the disease is limited to that generation. Hoffman and Makler (1929) state: "in no series of children did either of the parents suffer from the disease, nor has it been transmitted from any adult to a child." Most workers seem to agree with these views but there are a few notable exceptions.

Bloem et al. (1936) report cases of Gaucher's disease in two families which had an apparently normal common grandfather. His son by his first wife had an enlarged liver; one of this son's seven children was a proved case of Gaucher's disease with splenomegaly, and two were suspect. By his second wife he had an apparently normal son; among the latter's nine children were one proved case and two suspected cases of Gaucher's disease. Anderson (1933) reports that an apparently normal male had nine children, four of whom had splenomegaly. Two of these were proved cases of Gaucher's disease, and the two other children were remarkable for their pallor. The paternal grandmother and her two sisters were said to have had large abdomens and brown skin and to have died from a similar illness.

Pachman (1938) refers to possible hereditary transmission but gives no pedigree.

Bychowski (1911) described a family in which a father and three children had splenic enlargement and probably had Gaucher's disease.

Plehn (1909) observed Gaucher's disease in a man and his daughter.

The present case 1 has been proved to have Gaucher's disease, and two of his three children provide radiological evidence of the disease. Other members of the family, from their histories and description, may well be affected but were not available for investigation.

It thus appears from the published records of previous cases that there are reasons for considering that Gaucher's disease may be hereditary, provided it is accepted that the condition may be transmitted by an apparently healthy person. The importance of the present series in this respect is that it reveals that Gaucher's disease is compatible with a long healthy life and can exist without those visceral enlargements which have previously been considered one of its invariable features. It is therefore possible that those apparently healthy subjects, who are suspected of having transmitted the disease, may in fact have been affected by the condition in the form here described.

SUMMARY

A family affected by Gaucher's disease, but in whom none of those affected show splenomegaly, is described. The diagnosis was made by the detection of Gaucher cells in the bone-marrow and by the presence of typical radiological lesions in the bones. The family suggests that in this series the disease was not congenital and familial but also hereditary. All or were leading, active lives, and in one case the was first made at the age of 67 years.

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THE DROPSIDE COT IN HOSPITAL

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PHYSICIAN-SUPERINTENDENT, SHIELDHALL FEVER HOSPI
GLASGOW

It is a time-established custom to nurse young childr in hospital in dropside cots. Enclosed in one of th cage-like structures each newly admitted patient pe at his neighbours through iron bars, and displays fre fulness and homesickness that may well be related t the restlessness and fear so often shown by wild anim in captivity. As the days pass, apprehension and rese ment gradually give place to indifference, followed children, if not in animals, by a growing interest in is going on round them.

By the time he is convalescent the child is no afraid of his surroundings, and within certain limits age and vitality regards his cot as the ideal play. The active yearling, unless held back by a "restr will pull himself up by grasping the side of the cot travel round it, or lean on the rail and gaze at the flo while happily exercising his lower limbs. Even under possible vigilance he may topple over; and, thoug serious injury rarely results from such a fall, the dang cannot be ignored.

Manufacturers have attempted to reduce the risk making the sides of their cots taller. Thus the eff parapet in the oldest cots in this hospital, a style regarded as obsolete, measures only 12 in., and in most modern type 17 in. Even this, however, is quate protection, being little more than half the he the year-old child, who can add to his stature by stan on his pillow. Another modification has been the spacing of the vertical bars, from $5^{1}/_{2}$ in., which a baby to push his head between them, to 4 in. or less.

On children past the toddler stage the dropside cot has little or no restraining influence, but serves to stimulate the climbing instinct. Boys enjoy t thrill of going over the top to recover a toy or merely an outlet for high spirits. Girls, usually more decorous, soon learn how to undo the so-called safety catch may attempt to lower the cot-side at the risk of a br forearm.

EFFECTS ON NURSES

As regards the nurse, the effect of the closed cot on subconscious mind must surely be that of frustration. Between her and her patient there is a barrier, removal and replacement of which many times a day entail no little inconvenience and loss of time. She needs at least one hand free for this purpose; so basin or tray she is carrying must first be set down, in all likelihood there is no convenient table or chair to receive it. Even in the lowered position the cot-side may be a hindrance to her work. In a modern type of cot it definitely interferes with bedmaking, and I often seen nurses balanced on one foot while with e they depress the top rail out of the way of the bed- hes. Some find it easier to disarticulate the side of cot completely before tucking in the blankets.

ilure to close the cot when leaving the patient has erto been regarded as a cardinal sin. In practice an omission is rare, but failure to secure the cot- properly is a common and subtle danger, for the t pressure is then liable to send it clattering down, an almost guillotine effect on any projecting limb.

he amount of energy expended in closing a series ildren's cots is not generally realised. Increase in height of the cot-sides has added to their weight; in ost modern type of cot here each weighs 17½ lb. This derous mass has to be raised vertically through 18 in., the top rail a final position of 44 in. from the floor. the nurse of average height little or no stooping is ssary, and the load falls almost entirely on the cles of the arm and shoulder girdle. The lift is efore an awkward one and when repeated a number imes imposes no small strain on the adolescent girl. ward of twenty cots, three rounds of bedmaking— ery conservative estimate of the 24 hours' routine h leaves out of account the many casual openings cot for feeding, &c.—entail in this respect alone expenditure of 3150 foot-pounds of energy, the total s lifted weighing almost a ton.

he opening and closing of the dropside cot is an ration which cannot be done quietly, and in a busy d the clang and clatter of metal can be almost con- [illegible]. It is common to see a drowsy or sleeping start convulsively as his cot is opened, and the sleep of older children is not always proof against ightly disturbance. In a fever hospital it is often ssary to accommodate adults in the same ward as cases," and to them the noise can be very trying day and almost intolerable by night. But the nuisance ot confined to the children's ward; it will penetrate ed doors and be felt all over a hospital block.

REMOVAL OF DROPSIDES

Thinking of these things led me inevitably to question ether the dropside is really necessary. The answer ed obvious enough: for any child aged over 3 years not mentally defective or delirious it is not. In ing this belief into practice I expected some opposi- from my ward sisters, and was not disappointed. The gestion that they leave in the open position the cots children between the ages of 3 and 8 years (7 years is usual age of transition to a full-size bed, but lack of accommodation may necessitate somewhat older ients being nursed in cots) evoked a chorus of dis- proval: "The cots are so untidy like that." "The ered sides interfere with floor sweeping." "We shall ver be able to keep the children in their places." Who is to be responsible when they fall out?"

The first two objections, both reasonable, were met by ing the cot-sides removed altogether and stored. e third contingency did not arise: occasionally a ld did leave his bed, but not more often than formerly, very much more safely. And no child at this stage out. It was soon found possible to give the same edom to children of 2½ years, and later, with some eptions, to those of 2 years.

The infant patient next claimed attention. There be general agreement that the hospital type of cot easuring 4 ft. 6 in. by 2 ft. 6 in. is far too large and ewise unsuitable for the baby of 6 months or less. whom the smaller domestic pattern or the cradle form ng from upright supports is more appropriate. Pro- sion of such special types, however, inevitably limits commodation to the youngest age-group, and in an fectious-diseases hospital accepting children of all ages is inexpedient to have any but a large size of cot. nts under 6 months old can be nursed in any case perfectly safely without the dropside, and it is now the practice here to do so. Admittedly there is a bias against it. Parents do not like to see their children apparently in danger of falling, and nurses to some extent share their feelings. When it is pointed out, however, that the baby, no matter how actively he moves his limbs, cannot alter his position, their apprehensions are allayed.

At the age of 6 months the child enters the most difficult period as regards control. He soon learns to sit up, a position which makes it possible for him to roll out of the open cot. Fixed sides some 6 in. high would now be ideal, but they are not on the market, and the dropside becomes a necessity. A few months later he may tend to stand upright, and when this happens he is no longer safe even in the closed cot. Many children at this stage of development need to wear a restrainer—i.e., a safety belt with tapes for attaching to the framework of the cot. Properly applied it is a harmless and very necessary article in a children's ward, allowing considerable liberty of movement, but the tapes must be strong and well tied to prevent breakage or self-release. It is wise to avoid any form of restraint, especially in the acutely ill child, whenever possible. My opinion is therefore that within the age-group 6 months–2 years both sick and convalescent children who show no inclination to stand upright should be nursed in the closed cot without further precaution. For those requiring mechanical restraint, and this may include some over 2 years, the dropside becomes redundant and should be dispensed with.

RESULTS

For several months these principles have been tested throughout this hospital, all cots, with the exceptions mentioned above, being left open. The benefit is apparent in every ward, particularly in the diphtheria and scarlet-fever pavilions, where most of the children are over 2 years old. The absence of metallic noise creates in these wards a hitherto unobtainable atmosphere of quiet. Though proof is still lacking of a decline in fretfulness among new arrivals, there is no doubt of the preference of young patients for the open cot; they enjoy being treated as little adults and, now that they are used to it, take no undue advantage of their freedom. Any threat to close a cot is looked on by its occupant as a punishment. Only two fallings-out have been reported to me, in each case a 2-year-old in isolation and therefore less constantly under nursing supervision. It is clear that less liberty than usual can be given to such patients, and no child under 3 years is now left alone and unprotected.

With few exceptions the nurses, including ward sisters, have come to look favourably on the new arrangement, which they regard as both time-saving and muscle-saving. The *Nursing Times* said recently: "With the shortage of labour so acute, it is important for all of us to economise in the expenditure of energy and time whenever we can."[1] This statement is endorsed by a publication of the Ministry of Aircraft Production on motion study,[2] the aim of which is to lighten the task of the industrial worker by doing away with waste of human effort. Nurses can well be drawn within the scope of this science, and this paper is in part an attempt to do so.

SUMMARY

The dropside cot for certain age-groups of children in hospital is condemned as unnecessary, noise-producing, not free from danger, and wasteful of nurses' time and energy.

I wish to thank the sisters and nurses of Shieldhall Hospital for their coöperation.

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1. *Nursing Times*, 1946, 42, 775.
2. Shaw, A. G. An Introduction to the Theory and Application of Motion Study, London, 1945.

the familiar form with splenomegaly and the acute infantile form with the involvement of the central nervous system, there is a third type of Gaucher's disease without splenomegaly. This type may be relatively common, as its only symptoms are those of a mild anæmia. In such cases the diagnosis can only be made with certainty during life by finding Gaucher cells in the bone-marrow.

Cases of Gaucher's disease which are first diagnosed after the second or third decades are rare enough to arouse comment. Horsley et al. (1935) describe a case first detected at the age of 47. Mandelbaum et al. (1942) claim that their case is of interest because it was not recognised before the fifth decade. Wechsler and Gustafson (1940) describe a case in which the disease was first detected at the age of 68. Case 1 reported here was not detected until the age of 67. The family tree (fig. 4) shows that Gaucher's disease is suspected in some other members of the family who lived an active life until well over middle age.

There is considerable divergency of opinion about whether Gaucher's disease is congenital, familial, or hereditary. Pick (1933) states that it is congenital and familial, and that in about a third of the cases several members of one generation are affected, but that the disease is limited to that generation. Hoffman and Makler (1929) state: "in no series of children did either of the parents suffer from the disease, nor has it been transmitted from any adult to a child." Most workers seem to agree with these views but there are a few notable exceptions.

Bloem et al. (1936) report cases of Gaucher's disease in two families which had an apparently normal common grandfather. His son by his first wife had an enlarged liver; one of this son's seven children was a proved case of Gaucher's disease with splenomegaly, and two were suspect. By his second wife he had an apparently normal son; among the latter's nine children were one proved case and two suspected cases of Gaucher's disease. Anderson (1933) reports that an apparently normal male had nine children, four of whom had splenomegaly. Two of these were proved cases of Gaucher's disease, and the two other children were remarkable for their pallor. The paternal grandmother and her two sisters were said to have had large abdomens and brown skin and to have died from a similar illness.

Pachman (1938) refers to possible hereditary transmission but gives no pedigree.

Bychowski (1911) described a family in which a father and three children had splenic enlargement and probably had Gaucher's disease.

Plehn (1909) observed Gaucher's disease in a man and his daughter.

The present case 1 has been proved to have Gaucher's disease, and two of his three children provide radiological evidence of the disease. Other members of the family, from their histories and description, may well be affected but were not available for investigation.

It thus appears from the published records of previous cases that there are reasons for considering that Gaucher's disease may be hereditary, provided it is accepted that the condition may be transmitted by an apparently healthy person. The importance of the present series in this respect is that it reveals that Gaucher's disease is compatible with a long healthy life and can exist without those visceral enlargements which have previously been considered one of its invariable features. It is therefore possible that those apparently healthy subjects, who are suspected of having transmitted the disease, may in fact have been affected by the condition in the form here described.

SUMMARY

A family affected by Gaucher's disease, but in whom none of those affected show splenomegaly, is described. The diagnosis was made by the detection of Gaucher cells in the bone-marrow and by the presence of typical radiological lesions in the bones. The family suggests that in this series the disease was not congenital and familial but also hereditary. All
or were leading, active lives, and in one case the
was first made at the age of 67 years.

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THE DROPSIDE COT IN HOSPITAL

WILLIAM NAPIER
M.D. Glasg.
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GLASGOW

IT is a time-established custom to nurse young chil
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DISCUSSION

The possibility has not been overlooked that other members of the urinary steroid or 17-ketosteroid groups, particularly those most closely allied to dehydroisoandrosterone, may give similar colour reactions. Isoandrosterone gives the same reaction; it has been isolated from the urine in adrenal hyperplasia (Butler and Marrian 1938), but neither the amount isolated nor the results of the present work suggest that it would complicate the reaction in adrenal hyperplasia. Moreover there is no indication that it is present in urine from cases of adrenal tumour in amounts likely to contribute significantly to the chromogenic capacity of the adrenal-tumour extracts as prepared in this investigation.

Evidence has also been obtained that a third substance is present in urine from cases of adrenal tumour which can give a similar reaction. The nature of this substance has not yet been fully investigated, but it may prove to be $\Delta^{3:5}$-androstadiene-17-one, which was isolated from the urine of a male patient with a malignant tumour of the adrenal gland by Burrows et al. (1937), who showed that it could be prepared from dehydroisoandrosterone by dehydration. This same compound also appeared in appreciable quantity, though in considerably less amount than dehydroisoandrosterone, among the products isolated by Wolfe et al. (1941) from extracts of the urine of a female patient with an adrenal tumour. Since, however, it is only known to be present in urine from cases of adrenal tumour, it can only reinforce the dehydroisoandrosterone reaction when the latter is used in its present form for the purpose of indicating the presence of adrenal tumours.

SUMMARY

A new colour reaction for dehydroisoandrosterone here described will demonstrate the presence of excess of this compound in extracts of urine from cases of adrenal tumour.

Under comparable conditions urines from cases of adrenal hyperplasia give negative results; hence the reaction differentiates cases of adrenal tumour from other adrenal cases with high 17-ketosteroid output.

The same reaction is given by isoandrosterone, and by a third substance present along with dehydroisoandrosterone in urine from cases of adrenal tumour. Neither of these additional compounds complicates the reaction in the diagnosis of adrenal tumours.

I am particularly indebted to Mr. L. R. Broster, whose cases have furnished the greater part of the clinical material in this investigation, and to Dr. C. W. Shoppee for a sample of pure isoandrosterone.

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Medical School.

“. . . The patient is an essential part of medical treatment, and unless the patient makes some sort of contact with the physician the latter cannot give her the benefit of either his diagnostic or his therapeutic resources. Herein lies the great opportunity for popular education.”—Prof. EMIL NOVAK, *J. Amer. med. Ass.* Sept. 27, 1947, p. 206.

Medical Societies

ROYAL SOCIETY OF MEDICINE

Poliomyelitis and Meningo-encephalitis

AT a meeting of the section of epidemiology and State medicine on Oct. 6, with Dr. W. S. C. COPEMAN in the chair, Mr. K. I. NISSEN described the outbreak of poliomyelitis on the island of St. Helena in 1945–46.

There were 216 cases with 11 deaths, the attack-rate being 5% of the population. The outbreak began in November, 1945, and was over by the end of the following January. None of the patients was under one year of age and only 5 were under five years. Most of the cases were in the 5–20 years age-group and most of the deaths in the 15–20 group. There were no cases among the small garrison of European troops. The last ship to call at the island before the outbreak did so thirty-one days before the onset of the first case; this patient was the fiancée of a soldier travelling on the ship and had been visited by him for a few hours on the day the ship called. A few British troops were embarked during the call at St. Helena and among them was a sergeant who reached his home at Ealing fifteen days later. The daughter of this sergeant, aged four years, developed poliomyelitis eleven days after his arrival home. No other cases were reported as travelling in or otherwise connected with this ship, which came from South Africa and called at St. Helena when less than a week out from Capetown. Food and water supplies were not thought to be connected with the spread of the outbreak. Transmission of infection to outlying districts appeared to be by human carriers, often apparently healthy and usually adults. Clinically just over 60% of the cases were non-paralytic and might be regarded as “ abortive.” A characteristic early sign appeared to be a cold bluish-grey appearance of the tongue. There was also a characteristic odour of the fæces which persisted several days after the fall in temperature.

Dr. ALLAN MCFARLAN commented on the long interval between the arrival at the island of the ship which was the suspected source of infection and the onset of the first paralytic case. He did not think that this case was an instance of a direct infection with a long incubation period, but realised the difficulties in such urgent circumstances of making an adequate retrospective investigation into the possibility of a chain of infections linking the source with the first recognised case.

Dr. L. J. M. LAURENT gave an account of a series of 13 patients apparently suffering from a form of meningo-encephalitis of unknown ætiology who were admitted to the Park Hospital, London, during the summer months of 1946. None of these patients showed any evidence of spinal paralysis and all but one recovered. A careful pathological investigation had been made of the fatal case. An infiltration of the meninges with large mononuclear cells was the outstanding histological feature. In the pons, midbrain, and the region of the basal ganglia there were small areas of perivascular cuffing with the same type of cells. No neuronic degeneration could be found in the medulla or spinal cord, and attempts to isolate a virus by inoculating animals with serum, cerebrospinal fluid, and parts of the central nervous system had been unsuccessful. It was not considered likely that these patients had a form of poliomyelitis, but Jennings [1] had reported a similar series which occurred at about the same time of year in an area affected by an outbreak of poliomyelitis. Careful investigation had failed to disclose any connexion between the Park Hospital patients and known cases of poliomyelitis. In only one of the patients was it probable that other persons in the same household had a similar illness. During the summer of 1947, when poliomyelitis had been prevalent in London, 2 further cases clinically resembling the 13 observed in 1946 had been admitted to the Park Hospital.

Dr. DOUGLAS MCALPINE said that the current epidemic of poliomyelitis differed from previous English experience of the disease in clinical features as well as in extent. He was inclined to postulate the recent introduction of a new strain of virus and made a plea for the provision

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[1] Jennings, G. H. *Lancet*, 1947, i, 471.

Preliminary Communication

DIAGNOSIS OF ADRENAL TUMOURS

A NEW CHEMICAL TEST

INVALUABLE as the estimation of urinary neutral 17-ketosteroids has proved in the diagnosis of adrenal tumours, in which cases extremely high values are often encountered, the method is incapable in many instances of differentiating between adrenal tumour and adrenal hyperplasia. Especially does the group classified as prepubertal virilism (Broster et al. 1938) yield very high figures, with the result that on the scale of daily output of 17-ketosteroids there is a considerable overlap between tumour and non-tumour cases (Patterson et al. 1942, Callow and Crooke 1944). It is therefore evident that, where the problem of differential diagnosis arises, further laboratory investigation may be required, and the manner in which this may be most usefully carried out has engaged the attention of many workers in recent years.

Most research has been centred on one of the members of the 17-ketosteroid group, dehydroisoandrosterone, which was first demonstrated by Callow (1936) in relatively large amounts in urine from a case of adrenal tumour. It was isolated from an extract of the urine by the formation of its sparingly soluble benzoate. Crooke and Callow (1939), using the same procedure, found in two tumour cases that the increase in 17-ketosteroid output was largely due to an increase in the output of this substance. Subsequently Talbot et al. (1940) used the differential estimation of the separated α and β ketosteroid fractions to reveal the presence of dehydroisoandrosterone by a well-marked increase in the ratio of β to α compounds; and Callow and Crooke (1944) applied the original benzoylation technique and a modification which involved prior separation of the β fraction to the investigation of adrenal cases. The application of these principles, together with some notable work on the fuller fractionation of the 17-ketosteroids (Wolfe et al. 1941, Mason and Kepler 1945), has amply confirmed that the presence of relatively large quantities of urinary dehydroisoandrosterone constitutes a distinguishing feature of adrenocortical tumours in female subjects.

During experiments on the possible chromogenic properties of dehydroisoandrosterone it was found that the pure crystalline substance gave an intensely violet-blue colour with some green fluorescence when treated with sulphuric acid in the sequence of steps described below. The reaction was capable of being made sensitive down to less than 0·1 mg. Subsequently it was ascertained that this reaction could be used to detect excess of the compound in extracts prepared for the ordinary 17-ketosteroid assay of urine from cases of adrenal tumour and, for diagnostic purposes, could be substituted for the much more complicated and time-consuming methods hitherto used.

METHOD

Collection of Urine.—A 24-hour specimen is collected into a Winchester quart bottle, containing either 5 ml. of chloroform or of toluene, or 10 ml. of 30% sulphuric acid as preservative, and is used as soon as possible after the collection is complete.

Preparation of Extract.—25 ml. of urine is hydrolysed by adding 0·75 ml. of concentrated sulphuric acid and heating to boiling under a reflux condenser for 30 min. After cooling, the urine is extracted in a separating-funnel with two lots of peroxide-free ether, 30–35 ml. of solvent being used each time. The combined ether extracts are washed with 5 ml. of 10% sodium hydroxide and then with 5 ml. of the same alkali in which is dissolved a knife-point of sodium hydrosulphite. The period of vigorous shaking with the latter should not be less than 2 min. After the alkali has been off, the ether extract is washed with three 5-ml. lots of water. The washed extract is quantitatively transferred the aid of a little more ether into a 100-ml. flask, about 0·1 of 'Norit' (or other suitable decolorising charcoal*) is and the ether is evaporated down to a volume of 8–10 ml. It is then filtered through a small cotton-wool fitted fairly tightly into a small glass funnel so as to be cap of retaining every trace of charcoal. The flask and the are washed with two further lots of 5 ml. of ether, and whole of the filtrate is taken down to dryness, the ext being then dissolved in 1 ml. of absolute alcohol; 0·2 ml. this solution is used for the preliminary estimation of 17- steroids in the usual way (for detailed technique see C et al. 1938). According to the intensity of the colour the residual alcoholic solution is later used in dilution with alcohol for a second and more accurate while the rest is taken for the dehydroisoandrosterone reaction.

Dehydroisoandrosterone Colour Reaction.—0·2 ml. of alcoholic solution is transferred to a dry test-tube evaporated to complete dryness in a vacuum 1 ml. of concentrated sulphuric acid is added, and the shaken until the extract is completely dissolved. It is kept in a water-bath maintained at a temperature of for 20 min. The tube is next immersed in cold water, and 1 of distilled water is added drop by drop down the side wi shaking. The diluted solution is then heated in a boi water-bath for 1 min., during which time the blue colour develops if the dehydroisoandrosterone is present in signific amounts. Heating for several minutes in the last stage d not appreciably alter the colour, which is very stable. Extra from urine which does not come from a case of adrenal tum give various shades of brown.

RESULTS

The test has been applied to three cases of adre tumour, all in females. On the day that the urine w collected for the tests they had 17-ketosteroid outputs 215 mg.,† 335 mg., and 1980 mg.‡ All gave inte reactions.

In contrast to these results are the series of complete negative results obtained from six cases of prepubertal virilism which had 17-ketosteroid outputs ranging fro 24 to 81 mg. a day. Whereas in the tumour cases the fin extract could be diluted until the amount of tota 17-ketosteroid was no more than 0·2 mg. in the sampl under test and still gave an appreciable colour, in th other group no reaction was seen at levels of 1 mg. o more of total 17-ketosteroid. Some experiments based on the addition of known amounts of pure dehydroisoandrosterone to extracts of urine from cases of prepubertal virilism showed that the reaction could be masked by the presence of a high proportion of the other constituents in the extract. A negative reaction therefore does not necessarily mean the absence of dehydroisoandrosterone, but only that it is not present as a major constituent.

Application of the reaction to eight cases of second virilism, selected because they had 17-ketosteroid tions in the higher part of the range for this group, i.e., from 21 to 30 mg. a day—has given uniformly negative results.

With the clinical material available it has so far only been possible to apply the test to tumour cases in which the ketosteroid output was so high that a definite diagnosis on that ground alone could be established with certainty. It is therefore impossible to dogmatise on its full potentialities, but in view of its demonstrably high sensitivity there seems to be no fundamental reason why it should not apply over a much wider range and to more difficult cases.

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* For accurate estimation of ketosteroids, but not necessarily for the qualitative dehydroisoandrosterone reaction, the charcoal should be previously tested and only used if it does not remove any 17-ketosteroids from ethereal solution.

† Case previously described (Anderson et al. 1943).

‡ Case awaiting publication (Broster).

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TRAUMATIC SHIN ULCER

HEALED WITH JELONET, VISCOPASTE, PARAGON SPONGE RUBBER & ELASTOPLAST

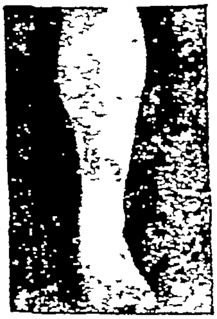

Fig. 1

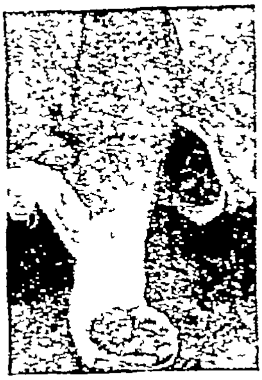

Fig. 2

Case History

G.H.H. Aged 38. Dock Labourer. Injured his left shin whilst at work. On attending the clinic he had a deep traumatic ulcer surrounded by an inflamed area of skin . . . no varicose veins. (Fig. 1.)

Treatment. *August 9th*, 1946.—Jelonet was applied to cover the ulcer and inflamed area, and a pad of cotton-wool to cover the ulcer only. The leg was bandaged from toes to knee with Viscopaste. (Fig. 2.)

August 23rd, 1946.—The inflamed area was re-dressed with Jelonet covered by strips of Ichthopaste. A well bevelled adhesive sponge rubber pad was applied to cover the ulcer, and the leg firmly bandaged with Elastoplast.

Sept. 13th, 1946.—After liberally painting with calamine in oil, covered with Ichthopaste, a large pad of cotton-wool was placed to cover the ulcer and the leg again firmly bandaged with Elastoplast.

October 4th, 1946.—Ulcer healed. (Fig. 3.)

October 18th, 1946.—Patient discharged to work.

Comment. Although initial bandaging with Viscopaste resulted in marked improvement, there was not sufficient pressure as was evident on August 23rd when, although the ulcer was reduced in size, there was pronounced granulation tissue. This resolved rapidly with concentrated compression beneath sponge rubber with the additional support of Elastoplast. (August 23rd and September 13th.)

Details and illustrations above are of an actual case, T. J. Smith & Nephew, Ltd., Manufacturers of Jelonet, Viscopaste, Ichthopaste and Elastoplast are privileged to publish this instance, typical of many, in which their products have been used with success, in the belief that such authentic records will be of general interest.

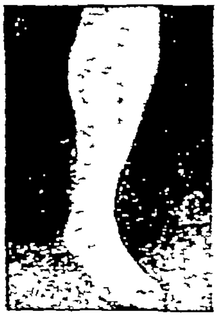

Fig 3

and training of more laboratory and field workers to investigate unusual outbreaks of virus diseases at short notice.—Dr. F. O. MacCallum spoke on the difficulties likely to be encountered in organising work of this kind.

Reviews of Books

Current Therapies of Personality Disorders

Editor: Bernard Glueck, M.D. London: W. Heinemann. 1946. Pp. 296. 17s. 6d.

How is the busy practitioner to learn which of the many books and papers coming his way deserve his time and study? The answer seems to be, by bush-telephone —by someone handing on his personal judgment of what someone else has handed on to him. There are many to whom this book should be handed on. Somehow, nineteen papers given at the thirty-fourth annual meeting of the American Psychopathological Association and reprinted here have achieved a unity. Nineteen skilled, educated, and thoughtful therapists have cogitated on their subject; none of them suggests finality, none has found "The Way"; but though they are walking along separate roads they are going in one direction—towards the freeing of the mind.

On the wide frontier of psychiatric practice small irregularities do not show; but Dr. Robert M. Lindner makes a significant outward dent with his evaluation of hypno-analysis. Both his theory and his warning of danger demand and easily receive a second reading. Group therapy is assessed by several practitioners, drug treatment is fully reported, and family guidance receives its measure of advocacy and explanation. The use to which psychiatry was put in war selection of personnel, with its ruthless emphasis on function—how useful the sailor or soldier would be to the organisation—reads strangely among a group of papers which stress the opposite value —the Socratic ideal of the physician. The book, packed with concrete evidence, will appeal to all those who have some knowledge of and some interest in psychotherapy and who wish to know where we have got to.

Annual Review of Biochemistry

Vol. xv. Editors: J. Murray Luck; James H. C. Smith; Hubert S. Loring; Stanford University. London: H. K. Lewis. 1946. Pp. 687. 30s.

In the sciences allied to medicine, dozens of discoveries are made each year of a quality which would have aroused the widest interest and excitement a decade or so ago, but they now raise little comment. We are not over-sophisticated; we are overwhelmed. The biochemist is particularly unfortunate since his interests cover such a wide field, and he has to rely on the *Annual Review* and the subject indexes of the abstract journals to give him the key to the previous year's publications. It is announced that an *Annual Review of Microbiology* will begin to appear in 1947. If more and more of the applied aspects of biochemistry could thus be shed until a parent volume is left containing only work on fundamental principles, most readers would value it still more. In the present volume the fundamental aspects are given their full due, however, and special subjects reviewed include the biochemistry of teeth, the growth factors for micro-organisms, immunochemistry, the viruses, and the inactivation and detoxication of pressor amines.

Care of the Breast

Else K. La Roe, M.D. New York: Froben Press. 1947. Pp. 246. $3.75.

The publishers of this work hope that it will make women "breast-conscious," and persuade them "that a competent doctor should be consulted at the first sign of any change or peculiarity." It covers the anatomy, physiology, endocrinology, and morbid anatomy of the breast. Malignant new-growth and surgery, including plastic surgery, are particularly considered, and "a new concept is propounded regarding the causation of cancer, based on the significance of growth hormones and their anarchic potentialities under specific conditions." The book is lucidly written and superbly illustrated, but it is rather too ambitious in its aims. To the lay reader the discussion of "all possible diseases, injuries, and inflammations" and of "the latest methods of breast examination" will be confusing and apt create breast-conscious hypochondriacs. The of surgical procedures may appeal to surgeons experienced in this special branch, since it will them to compare ideas and methods on the two sides of Atlantic, but details of operations do not mean m to the general practitioner and are frightening to average woman. As a comprehensive and well-produc account of one organ, however, the book will have uses.

Human Torulosis

A Clinical, Pathological and Microbiological Study *a report of thirteen cases.* Leonard B. Cox, F.R.A.C.P., neurologist, Alfred Hospital, Melbourne; J C. Tolhurst, M.Sc., senior bacteriologist to the hosp London: Oxford University Press. 1946. Pp. 149.

Only 120 cases of human torulosis have been rec nised and recorded. Most of the patients have b Australians, though occasional cases have occurred other places, including England. Torulosis is a chro disease which sometimes appears alone, but often conjunction with other diseases; it is found most of in the central nervous system. Clinically it is not e to distinguish, from tuberculosis, and sometimes fro syphilis; but its pathology and bacteriology are evident fairly distinctive, as the authors show. Iodides an sulphonamides have been tried, and sulphadiazin brought about slight temporary improvement. Penicilli and streptomycin are not mentioned, but X rays hav been used. This is a good book on a rare but highly fata condition.

Dolores Mortales

M. L. Esnaurrizar, surgeon to the Clinica Fr of the Mexican Academy of Surgery. Mexico. 19 Pp. 67. $15.

Pain serves a useful purpose in making the patient se medical advice, but colic can kill because of the intensit of the pain, or as the result of morphine or barbiturat given to relieve it. That the sympathetic chain is th main means of transmitting the dread and sometim fatal pain of organic lesions is suggested here and ther in medical literature, and this led Dr. Esnaurrizar to a study of the "physiopathology" of the sympatheti chain. On the clinical side this consisted in injecting local anæsthetic into the nerve, and, when relief of pain confirmed that the point of the needle was correctly lodged, injecting alcohol, which gave freedom of pain for 15–40 days. In appropriate cases he has seen much improvement from an injection of 8–15 cm. of 96% ethyl alcohol. The amount seems large, but he is definite that he has seen no trouble of any significance as a result. His technique is beautifully illustrated by drawings.

Clinical Examination of the Nervous System (8th ed. London: H. K. Lewis. 1947. Pp. 380. 16s.).—The basic clinical methods of examination of the nervous system do not change much, so in essence Prof. G. H. Monrad-Krohn's handbook is much the same as it was before the war. The notable extensions of neurological methods of examination in recent years have been in radiology and electrophysiology; and this edition contains 30 pages on the radiology of the skull and brain, with numerous plates of encephalograms and arteriograms made in Professor Monrad-Krohn's clinic—which has done advanced work in this field. Later editions will no doubt deal with electro-encephalography as adequately.

Recent Advances in Medicine (12th ed. London: J. & A. Churchill. 1947. Pp. 442. 21s.).—Dr. G. E. Beaumont and Prof. E. C. Dodds, in their latest edition, have revised this book thoroughly and added about 100 pages. So as not to add to its bulk they have omitted the sections dealing with the kidneys and with diphtheria. Sections on the sulphonamides and synthetic antimalarial drugs have been brought up to date, and the new penicillin chapter carries accounts of other antibiotics as well. The latest ramifications of the vitamins are given their due, and there are new articles on thiouracil, primary atypical pneumonia, infective hepatitis, homologous serum jaundice, bone-marrow transfusion, and the use of thiocyanates in the treatment of hypertension. New prospects in œstrogen therapy fill an inviting section of the chapter on sex hormones.

THE LANCET

LONDON: SATURDAY, OCT. 18, 1947

The Barbiturates

s 1934 a short-lived but violent controversy[1] d round the risk of poisoning by barbiturates. haps the attack on them was too intemperate; ainly the defence seems to have been successful, whereas in 1934 orders for this group of drugs prised 1·1% of all National Health Insurance scriptions, they now account for 4·6%: and if comparison is based on cost of ingredients of scriptions, the barbiturates' share of the total risen from 1·5% to 5·4%.

he increase is to some extent explained by the ing vogue of bromides. Bromides certainly had their wbacks: sometimes they depressed the patient rought him out in spots, and they were sometimes ifiably indicted as a cause of delirium. The biturates have largely been used in the treatment epilepsy; and their use has been extended to other ditions, such as hyperpiesia and migraine, where ir application if not always rational is usually ensible. Practitioners have also come to rely on m in the treatment of minor psychiatric disorders l sleeplessness, and for the palliation of many disers where the diagnosis is uncertain or where no rnative treatment presents itself. These drugs thus achieving the same status with the doctor t aspirin has long held with the layman. Some chiatrists would ascribe much of their increased to the more frequent diagnosis of psychiatric abilities.

here is no doubt, of course, that these drugs are y valuable, provided they are used with proper crimination. Some of the group—for example, dium amytal' and phenobarbitone—have been wing in favour, while others such as barbitone are comparatively seldom prescribed. Fashion and nouncements in textbooks have no doubt played ir part, but there are rational indications for choice of a particular drug, depending on its mptness of action and duration of effect. These perties largely depend on the saturation of the yl side-chain, the unsaturated members of the up having a shorter effect because of their quicker struction in the body. Thus phenobarbitone, which eliminated mainly through the kidneys, acts preciably longer than sodium amytal or pentorbitone, both of which are broken down in the liver. e rate of excretion or destruction will obviously influenced by renal or hepatic disease which makes the use of an otherwise safe dose risky and its frequent repetition dangerous. Dosage must always be determined in the light of the normal pharmacological action, of the ratio between therapeutic and lethal dose, and also of the responsiveness of the subject: the patient who is comfortable and tranquil needs less than the one who is in discomfort or distress; and the more irritable the patient's nervous system the larger the dose necessary to exert an effect. Through lack of supervision or a too ready attribution of symptoms to a functional origin, patients taking barbiturates are sometimes allowed to spend the first half of each day in a cloud of weariness and lassitude whose true origin remains unrecognised.

To prevent their uncontrolled use by the public the law has placed the barbiturates among the first-schedule poisons, issued only against a prescription. This very safeguard, however, fosters another danger. The doctor ordering one of these drugs for sustained use is likely to prescribe a large number of tablets at a time, so that the patient need not return soon merely for a further prescription; and such generous supplies may tempt some patients to excessive dosage, besides constituting a danger to children. Accordingly some practitioners, with commendable caution, make it a rule never to prescribe at one time enough barbiturate tablets to be lethal if taken in a single dose; and this should be the ideal, if only because small prescriptions bring the patient back more often for supervision. Fortunately, there is little risk of addiction, though Hambourger[2] has shown that habituation and undue dependence can occur. But the risk of accidental or suicidal poisoning is by no means negligible. In Hambourger's series acute poisoning accounted for 0·05% of all admissions to thirteen large American hospitals; and Goldstein[3] has since reported a growing number of deaths and non-fatal cases from this cause. In the States of California, Illinois, Massachusetts, and Ohio there were 367 deaths from this cause in 1945, compared with 104 in 1936. Unfortunately no comparable figures have been published in this country.

Clearly barbiturates are not the harmless sedatives that their present wholesale distribution might suggest.[4 5] Constant watch must be kept for chronic intoxication: impaired concentration, drowsiness, vertigo and ataxia, thick speech, nystagmus, difficulties of accommodation, and paresis or tremor are among the possible manifestations. It is even more important to bear in mind the possibility of acute intoxication, which demands prompt and energetic treatment. Patients unable to sleep but fuddled by a previous dose of barbiturate of which they remember nothing have been known to poison themselves accidentally by reaching for further tablets; and this has prompted some physicians to place the drug in the keeping of some other member of the household. Whatever expedients and safeguards may be adopted, it is clear that the many advocates of the barbiturates should at all times bear in mind the perils as well as the blessings of the drugs they prescribe.

Pro. R. Soc. Med. 1934, 27, 504. See *Lancet*, 1934, i, corre-

[2] Hambourger, W. E. *J. Amer. med. Ass.* 1939, 112, 1340; *Ibid*, 1940, 114, 2015.
[3] Goldstein, S. W. *J. Amer. pharm. Ass.* 1947, 36, 5.
[4] Weiss, S. *J. Amer. med Ass.* 1936, 107, 2104; *Int. Clin.* 1936, 1, 38.
[5] Curran, F. J. *Amer. J. Psychiat.* 1938, 95, 73; *Ibid*, 1944, 100, 142; *Ass. Res. nerv. ment. Dis. Proc.* 1939, 19, 154.

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AGENTS THROUGHOUT THE BRITISH EMPIRE AND MOST OVERSEAS TERRITORIES

ining centres, supported by special tests and by ychiatrists' reports, are, as never before, helping fit square pegs into square holes. Thirdly, the dier must be protected from illness by public-health asures such as immunisation and the surveillance water-supplies. Finally, the soldier's environment ist be watched, and if necessary modified; and it a greater interest in environment at close quarters t Dr. **Gear** particularly urges in his article else- ere in this issue. Like H. L. **Marriott** before him, AR pleads for a change of emphasis in our military dical services. As consulting physician to the AC land forces **Marriott** wrote[1]: "At least four- hs of our sickness casualties have been due to ease capable of classification as 'preventable'"; m which he concluded[2] that more men should be otted to the hygiene service and that regimental dical officers should be given encouragement and thority to tackle preventable illness. The R.M.O. n a better position than anyone else to teach giene to his unit and to foster their health and ll-being; and he alone can detect and remove the st roots of disease before the start of that insidious ckle of sick to the rear which saps the strength and rale both of those who go and of those who stay.

The efficiency of the curative services in the late r has been rightly commended; but before the ons of war are relegated to the history-books we ask whether a more aggressive policy of preven- might not have substantially reduced the calls on se services. Many who served as R.M.O.'s received tle incentive to pursue such a policy. Denied any ospect of promotion while continuing in their esent employment, cut off from the stimulating ntact with other doctors and with the more seriously patients, and sometimes accorded scant encourage- ent by the unit's commanding officer, some threw their hands and did little more than regulations emanded. In such circumstances a man, particu- rly if young and lacking a forceful personality, cannot greatly blamed if he does "just sit around feeling orry for himself that he is not doing something hich he thinks more important—i.e., working in ospital."[3] If the R.M.O. is to accept wider responsi- ities he must be encouraged; he must be made to el—what indeed should be the truth—that he and hose like him are the bedrock on which the medical ervices are built. If the work of prevention is to be one properly, medical officers must be given more nstruction in the broad principles, both as students nd on entry to the Army; and they must be offered ewards for good and responsible service in the rospect of promotion to field rank, those who fail eing withdrawn to medical units where they will be upervised by senior medical officers. But that is ot all: if the R.M.O., who now often feels that he is orking in a vacuum, is to retain his enthusiasm for duties which are largely arbitrary and voluntary, he must be constantly inspired by the direction and advice of a wise administrator. In his A.D.M.S. he should find support informed by personal knowledge. Lieut.-General Sir **Alexander Hood**, director-general of Army Medical Services, has postulated that the administrator should be "not the specialist in adminis- tration, but the doctor who has worked his way through many and various departments and specialties before starting to administer."[4] So far no attempt has been made to sponsor regular meetings of R.M.O.'s on the scale of those held successfully in Army hospitals; yet such meetings would give the R.M.O. a chance to judge his results against other peoples'. (Why is there so much grousing about food in unit A, while in unit B, with comparable cooking, complaints are rare? Why does the sick-parade in infantry battalion C number only 11 per day, while in battalion D, just down the road, the daily rate is 23? How comes it that in unit E 4 patients, previously well, have mild anxiety states?) Finally, if field research into preventive methods is to be given the weight it merits, further senior specialists should be appointed, whose main task would be to tour units, helping medical officers with local problems and guiding them in the conduct of on-the-spot research.

Books from Abroad

Most of us have been brought up to believe that progress largely depends on the free circulation of thought. Since the end of the war politicians of some nations have slowed, and at points stopped, this free circulation; and we have damned them for it. Now the clamp is to be gently applied to Britain—not, it is true, from political motives but from economic need. On another page Dr. **Israëls** protests at the ban on the import, except under licence, of books from abroad; and his remarks will strike a chord in all who recognise the necessity for the flow of knowledge between the countries. The position now is that "learned, scientific, and technical books in English" may be imported from abroad by booksellers up to, but not beyond, the value of their pre-war purchases; which, since prices have risen, means that only about two-thirds of the number of books imported in 1939 will reach the country in this way. Applications for licences to import books in foreign languages, and applications from firms with no pre-war imports, will be considered "on their merits"; while private persons wanting particular books may apply through their bank for permission to buy them abroad. This ruling will presumably cause foreign books to disappear from the bookshops, for booksellers are likely to use up their quota on specific orders from their customers. If no difficulty is placed in the way of individual purchase of single copies, the purchaser may suffer no more than inconvenience; but if, on the other hand, this part of the regulation is grudgingly interpreted, it will insidiously but progressively reduce our intellectual and technical contacts with other lands, particularly with America. Impediments of this kind became familiar during the war, and were generally tolerated; but at a time when so much hangs on our not falling behind, in science or in industry, they cannot be accepted without question. A wide choice of imported books is certainly more valuable to this country than tobacco, and as "essential raw materials" books can even compete with food. We must face the fact that what we cannot pay for, we cannot have. At the same time this new regulation is one of the most disquieting so far produced by the economic crisis, and its effects will be anxiously watched; for it contains a precedent alien to a free people.

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[1] *Lancet*, 1945, i, 679.
[2] *Army Quart.* 1946, 52, 63.
[3] Marriott, H. L. *Trans. R. Soc. trop. Med. Hyg.* 1946, 39, 462.
[4] See *Lancet*, 1945, i, 711.

Rocky Mountain Spotted Fever

IN parts of America and Africa a closely related group of tick-borne rickettsial infections are endemic, and one of these is Rocky Mountain spotted fever, which RICKETTS,[1] in 1907, showed to be caused by an agent now known as *Rickettsia* or *Dermocentroxenus ricketti*. At that time the disease was thought to be confined to the western part of the United States, but later a much wider distribution was recognised. As early as 1912 cases of a similar disorder were seen on Long Island, New York State; but it was not until 1931 that DYER et al.[2] isolated the rickettsia of eastern Rocky Mountain spotted fever and found that it was antigenically similar to the agent of the western form.

Some idea of the importance of this disease can be obtained from the report of a recent symposium held in New York.[3] The epidemiology of the infection is closely associated with the biology of the tick.[4] The vector in the west is the wood-tick, *Dermacentor andersoni*, and in the east the dog-tick, *Dermacentor variabilis*; several other ticks, such as *Amblyomma americanum* on the Gulf coast, may also act as vectors. The tick has a complicated life-cycle, passing through the four stages of egg, larva, nymph, and adult. An infected female can transmit rickettsias to her eggs and throughout all stages to successive generations; thus the tick serves not only as a vector but as a reservoir for rickettsias. The disease is commonest in the summer, when ticks are abundant. Several small rodents act as host during the developmental stage, but the dog is the important host for the adult tick. Ingestion of mammalian blood by the adult tick results in a multiplication of the rickettsias and an increase in their pathogenicity—so-called "reactivation." The exact rôle of the dog is not certain; it undoubtedly acts as host to the tick and itself becomes infected, as is shown by the high complement-fixation titre of the serum of dogs in infected localities. How the disease is transmitted to man has yet to be decided; but it is significant that many cases are seen without any evidence of a tick bite or local lesion. Rickettsias present in tick fæces, reactivated by ingestion of blood, may penetrate the skin or be inhaled as fine particles. This certainly happens in other rickettsial infections such as epidemic and scrub typhus and may well be the means of infection in Q fever. Thus there seems to be a definite risk in handling dogs harbouring infected ticks. The apparent differences in severity between the eastern and western forms are probably due to minor differences in rickettsial strains, such as occur in any infectious disease, and to the fact that in the west a different population is at risk. There the disease is found most often in old people, so the mortality-rate is higher than in the east where over half the cases are in children under the age of 12 years.

Nearly 100 cases of eastern spotted fever have been recorded in New York State since 1912, most of them in Suffolk county at the eastern end of Long Island. The symptoms are remarkably uniform and similar to those seen in other rickettsial tions. The onset is sudden with chills, fever, muscle pains accompanied by profound with every indication of involvement of the system. The temperature tends to remain 103–105°F—falling by lysis in the third week; pulse-rate is not greatly raised. A rash was present in all the New York cases; it appeared about the third day as a macular on the extremities, particularly on the palms soles; but it later became petechial and spread the trunk. Tick bites were seen in only 10% cases, and splenomegaly in only 20%. The Felix test is of some value in diagnosis. agglutinins to *Proteus OX19*, as with epidemic murine typhus, begin to appear on or about eleventh day, the titre rising during c Recently more specific results have been with complement-fixation tests employing rickettsial suspensions as antigen. The lesion is an acute infection of the small blood-throughout the body, particularly in the skin brain, which leads to thrombosis and later to and hæmorrhages. The basis of all treatment therefore rest in the acute and convalescent Specific immune antiserum has provided good when given early in the disease,[4] and so has p benzoic acid, which reduces the toxic mani *Two vaccines are used in prophylaxis*, one from infected ticks and the other from the of the developing chick-embryo, as described Cox.[6] Both have given encouraging results.

Meanwhile, eastern spotted fever, with a *fatality rate of 30%*, must be attacked by the public in its cause and method of spread, prophylactic vaccination, and by attempts to the tick population.[7]

A Change of Emphasis

THE opportunity for promoting "positive is nowhere greater than in the Armed Forces; here, as in no other walk of life, groups of fit men are brought together in an environment they may be ordered, instructed, or guided in the they live. In time of war the opportunity is by the need; then men are scarce and trained still scarcer; and during a campaign every man ill is not only a negative loss but a positive drag the whole force, for he must be evacuated, hospital treatment, and replaced by another Thus the first duty of a military medical service to keep men fit and in the field; and every case preventable illness is a defeat for that service.

On what does the avoidance of disease de In the first place, the soldier must be physically for the duties he is called on to undertake. In week's Chadwick lecture, summarised on another Brigadier RICHMOND referred to the Army's systems of medical categorisation and physical ing, which together go far to assure that no shall break down through physical in Secondly, men must be given work suited to aptitude and experience; in this respect the ining centres, supported by special tests and by chiatrists' reports, are, as never before, helping fit square pegs into square holes. Thirdly, the lier must be protected from illness by public-health sures such as immunisation and the surveillance water-supplies. Finally, the soldier's environment st be watched, and if necessary modified; and it greater interest in environment at close quarters t Dr. GEAR particularly urges in his article else-re in this issue. Like H. L. MARRIOTT before him, AR pleads for a change of emphasis in our military dical services. As consulting physician to the lc land forces MARRIOTT wrote[1]: "At least four-hs of our sickness casualties have been due to ase capable of classification as 'preventable'"; n which he concluded[2] that more men should be tted to the hygiene service and that regimental dical officers should be given encouragement and hority to tackle preventable illness. The R.M.O. in a better position than anyone else to teach iene to his unit and to foster their health and ll-being; and he alone can detect and remove the t roots of disease before the start of that insidious kle of sick to the rear which saps the strength and rale both of those who go and of those who stay.

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[1] Ricketts, H. T. *J. infect. Dis.* 1907, 4, 141.
[2] Dyer, R. E., Badger, L. F., Rumreich, A. *Publ. Hlth Rep., Wash.* 1931, 46, 1403.
[3] *N.Y. St. J. Med.* 1947, 47, 1575.
[4] Topping, N. H. *Publ. Hlth Rep., Wash.* 1943, 56, 757.
[5] Tichenor, C. J., Ross, S., McLendon, P. A. *J. Pediat.* 1947, 31,
[6] Cox, H. R. *Publ. Hlth Rep., Wash.* 1939, 54, 1070.
[7] Bishopp, F. C. *Amer. J. Publ. Hlth*, 1946, 36, 593.

The efficiency of the curative services in the late r has been rightly commended; but before the ons of war are relegated to the history-books we ask whether a more aggressive policy of preven- might not have substantially reduced the calls on e services. Many who served as R.M.O.'s received tle incentive to pursue such a policy. Denied any spect of promotion while continuing in their sent employment, cut off from the stimulating ntact with other doctors and with the more seriously patients, and sometimes accorded scant encourage-nt by the unit's commanding officer, some threw their hands and did little more than regulations manded. In such circumstances a man, particu-rly if young and lacking a forceful personality, cannot greatly blamed if he does "just sit around feeling ry for himself that he is not doing something hich he thinks more important—i.e., working in spital."[3] If the R.M.O. is to accept wider responsi-ties he must be encouraged; he must be made to el—what indeed should be the truth—that he and ose like him are the bedrock on which the medical vices are built. If the work of prevention is to be ne properly, medical officers must be given more struction in the broad principles, both as students d on entry to the Army; and they must be offered wards for good and responsible service in the spect of promotion to field rank, those who fail eing withdrawn to medical units where they will be pervised by senior medical officers. But that is ot all: if the R.M.O., who now often feels that he is orking in a vacuum, is to retain his enthusiasm for uties which are largely arbitrary and voluntary, he ust be constantly inspired by the direction and dvice of a wise administrator. In his A.D.M.S. he hould find support informed by personal knowledge. ent.-General Sir ALEXANDER HOOD, director-general f Army Medical Services, has postulated that the dministrator should be "not the specialist in adminis-ration, but the doctor who has worked his way through many and various departments and speciali before starting to administer."[4] So far no atten has been made to sponsor regular meetings R.M.O.'s on the scale of those held successfully Army hospitals; yet such meetings would give R.M.O. a chance to judge his results against ot peoples'. (Why is there so much grousing about f in unit A. while in unit B, with comparable cooki complaints are rare? Why does the sick-parade infantry battalion C number only 11 per day, wh in battalion D, just down the road, the daily r is 23? How comes it that in unit E 4 patie previously well, have mild anxiety states?) Fina if field research into preventive methods is to given the weight it merits, further senior speciali should be appointed, whose main task would be tour units, helping medical officers with local proble and guiding them in the conduct of on-the-s research.

Books from Abroad

MOST of us have been brought up to believe t progress largely depends on the free circulation thought. Since the end of the war politicians of so nations have slowed, and at points stopped, this f circulation; and we have damned them for it. N the clamp is to be gently applied to Britain—not, i true, from political motives but from economic ne On another page Dr. ISRAËLS protests at the ban the import, except under licence, of books from abroa and his remarks will strike a chord in all who recogn the necessity for the flow of knowledge between countries. The position now is that "learned, sci tific, and technical books in English" may be impor from abroad by booksellers up to, but not beyond, value of their pre-war purchases; which, since pri have risen, means that only about two-thirds of number of books imported in 1939 will reach country in this way. Applications for licences import books in foreign languages, and applicati from firms with no pre-war imports, will be conside "on their merits"; while private persons wanti particular books may apply through their bank permission to buy them abroad. This ruling presumably cause foreign books to disappear from bookshops, for booksellers are likely to use up th quota on specific orders from their customers. If difficulty is placed in the way of individual purch of single copies, the purchaser may suffer no more th inconvenience; but if, on the other hand, this part the regulation is grudgingly interpreted, it will insi ously but progressively reduce our intellectual a technical contacts with other lands, particularly wi America. Impediments of this kind became famil during the war, and were generally tolerated; but a time when so much hangs on our not falling behi in science or in industry, they cannot be accept without question. A wide choice of imported books certainly more valuable to this country than tobac and as "essential raw materials" books can even co pete with food. We must face the fact that what cannot pay for, we cannot have. At the same ti this new regulation is one of the most disquieting far produced by the economic crisis, and its effects be anxiously watched; for it contains a precede alien to a free people.

Lancet, 1945, i, 679.

Army Quart. 1946, 52, 63.

Marriott, H. L. *Trans. R. Soc. trop. Med. Hyg.* 1946, 39, 462.

[4] See *Lancet*, 1945, i, 711.

Annotations

TRAINING THE SPECIALIST

FEW are content with present arrangements for the training of specialists. Undue weight is attached, particularly by the laity, to higher degrees and diplomas; and the extent and quality of teaching varies from one university to the next and from one department to another. Last week, in the annual address to the Institute of Laryngology and Otology, London, Sir Francis Fraser, director of the British Postgraduate Medical Federation, suggested that the remedy lies in the competitive selection and progressive training of candidates, who before applying for a specialist hospital appointment should reach a standard imposed by their colleagues. As he pointed out, the Royal Colleges and the associations of specialists have recommended at least five to six years' postgraduate experience for each intending specialist, of which the first one or two years should always be devoted to general medicine or general surgery, and a year or more should be spent in scientific training and laboratory discipline. The programmes include higher degrees and diplomas, but these are not to be regarded as qualifying men as specialists.

Sir Francis Fraser favours progressive selection from the stage of senior house-appointments onwards—a process facilitated by the larger grants for medical education and the introduction of the National Health Service. The first stage of a registrarship should if possible be in a teaching hospital, but since the clinical material in a university teaching hospital is regulated by the needs of the undergraduate the registrar should go elsewhere for fuller practical experience, spending his second year perhaps in a regional hospital, or a special department, which has been approved for the purpose and where teaching can be supervised. The third stage of training will depend on the candidate's previous experience and aptitudes: he may return to his teaching hospital; he may be attached to a professorial department; or, if his bent is towards the treatment and management of patients, he may seek a further period of clinical experience. At some time all should have the chance of travelling to other centres in this country or abroad.

It is debatable whether courses are of much value to fully trained men, except to those who find it hard to synthesise their knowledge; certainly they cannot take the place of hospital appointments with graded responsibilities. The usual type of organised course is designed as an introduction to a specialty, but unfortunately it often enables candidates to obtain diplomas. Some of these diplomas should be regarded as simply qualifying their owners to start specialist training; few of them indicate that training has been completed. There is real danger, in Sir Francis Fraser's view, that London may come to be regarded as a purveyor of diplomas; and he proposes that the Royal Colleges and the university should work together to ensure that these higher qualifications take their proper place in the training. The experience in London, with its specialist teaching hospitals, is, he said, that the standard of teaching is generally higher in the branches where there is no diploma. The specialist hospitals are the basis of the institutes now being built up by the university, and as soon as possible the university will be asked to appoint a professor or reader to each.

Sir Francis sees a place for two types of course in each specialty. First, there may be a course, lasting about six months, in the fundamentals, with practical work supplemented by group discussions, lectures, and demonstrations: it should be preparatory and educative rather than vocational, and all those attending it should be able to go to central lectures in the basic sciences. Secondly, there should be courses designed to coö and systematise practical experience. An adv revision course of this second sort, lasting some weeks, makes heavy demands on teaching staffs, and should be attended only by those advanced enough benefit.

FILLING THE GAP AFTER PNEUMONECTOMY

AFTER pneumonectomy it is found paradoxically mediastinal shift is greater in uncomplicated cases, in the less fortunate ones where infection necessitat thoracoplasty to reduce or obliterate the empy cavity. The sequel in the uncomplicated case is "co pensatory" emphysema with reduction in exerc tolerance and, later, impairment of general activ The outlook is more hopeful when in the absenc infection and drainage the cavity gradually fills serum, for this provides splintage and when it bec organised draws the mediastinum slowly towards chest wall, allowing a maximum time for pulmo adjustment with a minimum effect on the great ve Unwilling to undertake elective thoracoplasty a pneumonectomy, thoracic surgeons occasionally in serum or blood into the empty pleural sac with relativ successful results.

Other media for prosthesis, such as liquid para intrapleurally or paraffin wax extrapleurally, have be tried and discarded. Johnson et al.,[1] in animal experiment found a shaped hollow metal-box prosthesis (of zirconium a stainless metal) too unwieldy and mildly irritati After total pneumonectomy in the dog they inser one-inch hollow balls of methyl methacrylate (lu into the pleural cavity, taking care to remove as m air as possible when closing the chest and drawing excess fluid by thoracentesis next day. Of 16 do 3 died three weeks later, from causes unrelated to t operative interference, and the remainder were ki at intervals to study the reactions of the pleura. Th reactions were negligible, consisting of minimal fibroblast proliferation and round-cell infiltration. At two month the longest interval up to the date of the report, the ball were free and evenly distributed throughout the pleur cavity and the fluid present occupied the intervenin spaces; mediastinal displacement was effectively prevented and the remaining lung had not become overdistended. Wilson and Baker[2] have also studied th effects of methyl methacrylate on pleural and extrapleural tissues in animals, and have used hollow ba of this material to fill the extrapleural cavity after extrapleural pneumonolysis in patients with pulmonary tuberculosis. Provided preliminary tests for individual sens tivity to the acrylic resin are applied, a prosthesis made of this plastic may be successful in preventing overdistension of the remaining lung after pneumonectomy in man.

MISUSE OF THE EMERGENCY BED SERVICE

WE have lately published several examples of what seemed to be gross abuses of the Emergency Bed Service—the bureau set up by the King's Fund to simplify and hasten the admission of urgent cases to London hospitals. The complaints come from the hospitals receiving patients via the E.B.S. from practitioners or (in one case) from another hospital, and *Dr. Herbert's* letter of Oct. 11 shows that some of the trouble arises from the well-known faculty of patients to change or lose their symptoms on their way to hospital. But there are also cases where doctors suppress undesirable clinical features and emphasise desirable ones because they know that with the present shortage of beds the patient will otherwise have little chance of getting into hospital at all.

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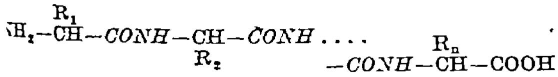
1. Johnson, J., Kirby, C. K., Lazatin, C. S., Cooke, J. A. *Surgery*, 1947, **22**, 179.
2. Wilson, D. A., Baker, H. *Surg. Gynec. Obstet.* 1946, **82**, 735. Wilson, D. A. *Surg. Clin. N. Amer.* 1946, p. 1060.

practice of "dumping" by ambulance, at one time opular way of shifting responsibility for the chronic in London, has largely been checked by limiting the t to order a free ambulance to the hospital underng to admit a patient. Places intended for the nic sick are now very scarce. It is understandable, efore, if doctors are occasionally tempted to embroider history and findings so as to bring the patient within scope of the well-oiled machinery intended for urgent s. When, however, as Dr. James (Oct. 11, p. 562) es, such embroidery extends to denying a history of rhœa in a child destined for a premature-babies l there is a danger of undermining the confidence which the E.B.S. scheme stands. The staff of the .S. ask for full details of each case submitted to n, and base their search for a bed on the replies they ive. They can serve the best interests of patient, or, and hospital only if they can rely on the good of all parties. There will always be borderline s, because the definition of an emergency depends on point of view—what looks desperately urgent in a cottage at 2 A.M. may be a case for routine investi-on next day in a hospital bed—but as Dr. Herbert : "If occasionally a case is sent which does not it immediate attention, it is better thus than that s should be neglected for fear of criticism from the lent staff."

SYNTHETIC PROTEIN ANALOGUES

ROTEINS are composed of long chains of amino-acids d together by peptide links. These peptide links ONH—) are formed by the elimination of water reen the carboxyl (COOH) group of one amino-acid the α-amino group (NH_2) of the next amino-acid. no-acids may be written in the general form $CHNH_2—COOH$, where R is methyl in the case of ine, *p*-hydroxybenzyl in tyrosine, and so on. The cture of the protein chain may therefore be written :



$$\mathrm{NH_2{-}\overset{R_1}{CH}{-}\mathit{CONH}{-}\underset{R_2}{CH}{-}\mathit{CONH}\ \ldots\ {-}\mathit{CONH}{-}\overset{R_n}{CH}{-}COOH}$$

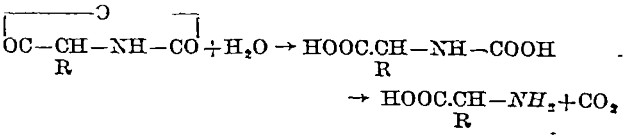
urally occurring proteins have molecular weights ing from a few thousands to a few millions—that is, e contain 100 or so amino-acid units in the molecule, rs 100,000 or more. The different proteins con- different proportions of the naturally occurring no-acids, of which some 25 are known.

he joining up, in the laboratory, of amino-acids by ns of the peptide linkage to form peptides requires rtain amount of chemical tactics. This has been ible since the beginning of this century, when Emil her devised several methods, and more recently gmann and Zervas have introduced their elegant obenzoxy method. By repeated application of his ous methods and with much labour Fischer in 1907 eeded in joining together 18 amino-acids to form "octadecapeptide" which had some protein-like perties.

e are now in the age of haste and plastics; the er have achieved such social significance that in lern mythology a shower of nylons would replace shower of gold. One product of research into plastics be a short cut to the laboratory synthesis of protein- bodies. Plastics of the "superpolyamide" type, h as nylon, consist of very large molecules containing ltiple peptide linkages. Nylon itself, synthesised by others in 1935, is made by heating hexamethylene mine with adipic acid, and it has the structure :

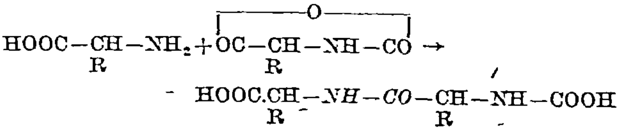
$$\mathit{-NHCO}-(\mathrm{CH_2})_4-\mathit{CONH}-(\mathrm{CH_2})_6-\mathit{NH-CO}-(\mathrm{CH_2})_4-\mathit{CONH}-(\mathrm{CH_2})_6-\mathit{NHCO}-$$

nce long chain compounds with multiple peptide s can be obtained by polymerisation processes. Recently Woodward and Schramm,[1] of Harvard University, have found that bodies more nearly related to proteins may also be obtained by polymerisation reactions. Leuchs and Geiger[2] had shown that the anhydrides of N-carboxyamino acids lose CO_2 in the presence of water and yield solid insoluble substances, obviously polymers. Woodward has realised that these are peptides of high molecular weight. Whereas the anhydrides of the N-carboxyamino acids are crystalline bodies stable in the absence of water, the free acids which they yield in the presence of water break down, losing CO_2 and forming a new free amino group.



$$\mathrm{\overbrace{OC{-}\underset{R}{CH}{-}NH{-}CO}^{O} + H_2O \rightarrow HOOC.\underset{R}{CH}{-}NH{-}COOH \rightarrow HOOC.\underset{R}{CH}{-}\mathit{NH_2} + CO_2}$$

The free amino group enables the product to combine with a second molecule of anhydride forming a peptide :



$$\mathrm{HOOC{-}\underset{R}{CH}{-}NH_2 + \overbrace{OC{-}\underset{R}{CH}{-}NH{-}CO}^{O} \rightarrow HOOC.\underset{R}{CH}{-}\mathit{NH{-}CO}{-}\underset{R}{CH}{-}NH{-}COOH}$$

The resulting substance is unstable and loses a molecule of CO_2 from the $-NH-COOH$ group, thereby generating a free amino group, which enables it to combine with a third molecule of anhydride. The process thus goes on, building up a chain of the general structure (I) possessed by proteins. Woodward and Schramm dissolved together N-carboxyleucine anhydride and N-carboxyphenylalanine anhydride in benzene containing a trace of water. The reaction proceeded for a fortnight at room temperature, the solution gradually becoming more viscous. The solution was then cast, leaving a clear tough film. The molecular weight of the product, a peptide of leucine and phenylalanine, was several million, indicating that not less than 10,000 amino-acid residues were present in the molecule.

The value of this remarkable discovery to the protein chemist is not yet certain. The protein analogue formed differed from naturally occurring proteins in being soluble in benzene. This was because the two amino-acids of which it was composed have non-polar R groups—i.e., benzyl in phenylalanine, *iso*butyl in leucine. It remains to be seen whether the process is applicable to the amino-acids containing polar R groups which enter so largely into the composition of proteins. Even if it were found possible to copolymerise several amino-acids, would it be possible to control the order in which the different amino-acids linked up to form the chain? This order is presumably of great importance, and if it were not controlled the product would be a mixture of a very large number of different peptides. As matters stand it seems that Woodward's discovery may be of greater value in plastic technology than in protein chemistry, but in the long run it may open up new fields of protein research.

It is unlikely that living tissue synthesises protein by polymerisation reactions of this sort. Recent American work points to a possible mechanism for peptide bond synthesis in vivo. Synthesis of hippuric acid from benzoic acid and glycine and of *p*-aminohippuric acid from *p*-aminobenzoic acid and glycine in liver homogenates has been studied by Borsook and Dubnoff[3] and by Cohen and McGilvery.[4] These workers found that adenosine triphosphate promotes the synthesis, and it is suggested[4] either that the aromatic acid forms a

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1. Woodward, R. B., Schramm, C. H. *J. Amer. chem. Soc.* 1947, 69, 1551.
2. Leuchs, H., Geiger, W. *Ber. dtsch. chem. Ges.* 1908, 41, 1721.
3. Borsook, H., Dubnoff, J. W. *J. biol. Chem.* 1947, 168, 397.
4. Cohen, P. P., McGilvery, R. W. *Ibid*, 1947, 169, 119.

phosphate of the energy-rich type[5] which then reacts with glycine releasing phosphoric acid, or alternatively that the glycine forms an energy-rich phosphate which then reacts with the aromatic acid. Again, the amide group of glutamine is analogous to a peptide link, and there is some indication that an energy-rich phosphate of glutamic acid is an intermediate in the enzymic synthesis of glutamine from glutamic acid and ammonia.[6] If it is confirmed that this type of mechanism is involved in peptide bond synthesis in these simplified systems it may conceivably also be involved in the synthesis of some of the peptide bonds in proteins.

OPERATIONS ON INFANTS: THE MOTHER'S PART

MANY have advocated that when an infant needs an operation his mother should be admitted to the hospital at the same time, so that she may continue to tend him; and the plan has been successfully tried in some parts of England, notably in the department of child health at Newcastle. In New Zealand the principle has been carried a step further at the Bassam Clinic, outside Wellington. In a recent account[7] of this experiment Dr. Cecily Pickerill, who, with her husband, Mr. H. P. Pickerill, F.R.A.C.S., is in charge of the clinic, refers to the dangers of cross-infection to which infants undergoing plastic operations are exposed in a general ward. A cleft-palate case, for example, offers a raw nasal surface to all the organisms present in the air. The Pickerills believe in early operation for this malformation and such others as hypospadias, epispadias, angioma, and syndactyly, because successful treatment in infancy allows the child to grow up without a period of disability or disfigurement, and because the baby is much more passive under plastic surgery than the growing child, and hence is less liable to spoil results. Yet the dangers to all such infants in the wards of a hospital are very great: not only may the wound slough from local infection, but the child may sicken or die of a general infection. At the Bassam Clinic they have reduced this danger by admitting each mother, with her baby, to a small bed-sitting-room of her own. This is comfortably and pleasantly furnished, containing besides the mother's bed a crib or cot for the baby, an easy chair, an electric fire, and what other appropriate furniture is needed. Here the mother can look after the baby exactly as though she were at home. She has the companionship of other mothers in neighbouring rooms, and can enjoy the garden where the babies take the air in perambulators; freed from household responsibilities, she can rest and give her whole care to the baby. All dressings are done in the theatre, under aseptic conditions, the children usually being put under short light anæsthesia for the purpose. This means that strapping and dressings can be removed deliberately and carefully, and the area cleaned without pain to the baby. Chances of cross-infection are reduced to a minimum, and the child suffers no emotional shock. Moreover, only a few skilled nurses are needed: the mother does all the routine tasks for the baby which take up so much nursing time in a hospital. She also keeps the weight chart, and of course feeds the baby; and, as no child with a falling weight is sent for operation, this means that the mother has responsibility and incentive beyond the ordinary—an important point, since the feeding of a child with a double hair-lip is at best tedious, and would engross a great part of a nurse's time. Operations are done in several stages, on the principle that babies stand several small operations better, and with less postoperative shock, than one or two more extensive ones. The Pickerills note their experience that preoperative and postoperative sedation is hardly necessary: the best sedative for any the mother.

The clinic, built with the sanction and help of New Zealand Health Department, has been running five years; during that time there has not been a case of cross-infection, local or general, and not a slough or case of dehiscence.

SOCIAL WORKERS

CORRESPONDENTS have recently discussed the typ social worker needed to help the general practitio Dr. Beryl Harding[1] has suggested a service of volun workers, supervised by trained welfare workers. Marjorie Steel,[2] of the Institute of Almoners, notes the health visitor is "the health worker in the setting" and quotes a letter from Miss Amy Sayle, Women Public Health Officers' Association, to Times on Sept. 12, in which she spoke of the visitor as being the future general medical social for the whole population. In our present issue C. E. A. Bedwell (p. 594) reminds us of the played by the district nurse as the general practitio coadjutor.

The almoner of course has her own sphere, special type of social worker in hospital; and functions of her department have recently been set in a statement issued by the council of the Institute Almoners.[3] Her work, they say, falls under three ma heads: medical social work directly concerned with doctor's investigation and treatment of the pati illness; other work within the hospital in which knowledge and skill of a trained social worker is ne (including teaching, research, and the planning facilities for patients); and coöperation with agencies concerned with the social aspects of medici She will also help to plan details under the N Health Service. She should try to have at least interview with every patient in the hospital wards attending the clinics, should consult often with medical and nursing staff, and should keep the social histories readily accessible to the doctors. An social worker with a place in the health team is obvi the psychiatric social worker.

The difficulty in the past has been that the p tioner, though he has been in close touch with district nurse, could seldom work in direct with the health visitor, the psychiatric social worker, the almoner. Eventually all such workers will pr have some connexion with the health centres, and might meet some of Dr. Harding's requirements. In further letter this week she refers to the important point made in the *Times* of Oct. 8 by Dr. H. Morley F as chairman of the Nursing Recruitment Committee—namely that hospitals in their present straits cannot afford to lose so many of their trained nurses to public-health services where they are not concerned with the care of the sick. Dr. Fletcher objects to the W Party's unrealistic statement that "the proper stage the estimation of sick nursing requirements should subsequent to the estimation of the optimal requirements of the health nursing services." The *Times* last Tuesday wisely suggested an inquiry into the work and training of the health visitor which might help to show what particular functions each kind of worker should perform in the medical social field.

RELEASE OF DOCTORS FROM SERVICES.—The Central Medical War Committee have been informed by the Air Ministry that Royal Air Force medical officers in age-an service group 64 will be made available for release in December, 1947.

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[5] Lipmann, F. *Adv. Enzymol.* 1941, 1, 99; Dickens, F. *Rep. Progr. Chem.* 1944, 41, 230; Baldwin, E. Dynamic Aspects of Biochemistry, London, 1947, p. 296.

[6] Speck, J. F. *J. biol. Chem.* 1947, 168, 403; Elliott, W. H. (to be published).

[7] *Nursing Mirror*, Aug. 16, supplement, p. ii.

[1] *Lancet*, Sept. 27, p. 488.

[2] *Ibid*, Oct. 4, p. 525.

[3] Functions and Organisation of the Almoner's Department. Institute of Almoners, Tavistock House North, Tavistock Square, London, W.C.1. Pp. 8.

Special Articles

ARMY HEALTH AND MEDICAL ADMINISTRATION

H. S. Gear

M.D. Witwatersrand, D.P.H., D.T.M. & H.

PUTY CHIEF HEALTH OFFICER, UNION OF SOUTH AFRICA

RING the late war the medical organisation of the monwealth armies was efficient in its provision of cal care. "The sick and wounded have been nded with devotion, efficiency, and unprecedented ess, while the high level of physical and mental th in the Forces owes much to an improved practice preventive and social medicine."[1] The hygiene ch successfully controlled preventable disease and loped and maintained the fitness of the Army during Middle East, Mediterranean, and European camns; moreover, its advice was heeded by the General f and administrative services on such subjects as ons, clothing, equipment, and camp siting. Neveress there is some justification for inquiring whether present system provides the best means for ensuring the Army receives the best possible information health and medical questions.

he main concern of the average medical administrator till for the patient—wounded or sick—and hence is chiefly interested in administering the medical rices proper. But one of the two cardinal functions director of medical services is to estimate all factors cting the health of the army and inform the comder of the force of any measures necessary to counterharmful influences or to enhance or introduce eficial ones. Is the expert in hygiene given a rôle responding to the importance of this task ?

HYGIENE AND THE ADMINISTRATOR

Army medical administrators have been basically ined as clinicians. As students they have been steeped the traditions and atmosphere of curative and hospital dicine. Their concern has been with the sick— rticularly the sick in hospital. As students and actitioners they have rarely had to reflect on the dinary daily lives of their patients in work-place, me, or society, and so find it foreign to think of the ldier in his daily activities.

Again, medicine both in peace and war is activated the deep emotional forces of humanitarianism. Thus e injured and the sick always have first claim on the elings and instincts of medical officers. This care of tients during campaigns must be a major concern of a nically trained administrator, especially as the soldier's orale is maintained by the knowledge that in distress will be succoured by an efficient and sympathetic edical service.

To the influence of training and humanitarian feelings added the deep satisfaction given to the medical dministrator by "running his own show." He is ctively occupied in directing his own hospitals, field mbulances, medical laboratories, and staffs of medical fficers, nurses, and orderlies. Indeed, it is by the fficiency and adequacy of his hospitals and clinical fficers rather than by his hygiene service that he is udged by his peers and by the General Staff and dministrative services.

Such are the influences which have combined to mphasise the curative and clinical sides of military medical organisations. Under existing conditions their dministrators could not but become absorbed in directng, training, allocating, and moving medical units, medical personnel, patients, and medical stores, and ttention to these tasks has sometimes prevented them from giving adequate consideration to the "hygiene" needs of the Army. In their tours during the war they usually found it impossible, for example, to visit other than medical units: only seldom was an inspection made of a battalion in the line, a lines-of-communication camp, a depot, a workshop, or a cook-house by other than hygiene representatives of medical headquarters. Thus the director of such a headquarters could rarely get first-hand knowledge of the factors contributing to an army's efficiency and well-being. He could know little directly of the many medical problems associated, for example, with armoured fighting vehicles, or the use of labour in large modern vehicle-repair or other workshops, or with equipment, clothing, food, recreation, or transport. Yet it is these factors which largely produce the sick and injured, and so fill the hospitals.

Some specialised services, such as Mountain Warfare and Combined Operations, were faced with serious problems in such fields; and as the orthodox methods could not always help them sufficiently, they tended to appoint their own medical advisers. Such ad-hoc arrangements, detached from the general medical services of an army, must be considered undesirable. They must be avoided by the appropriate development of the advisory branches of the existing organisation.

HYGIENE AND THE UNIT MEDICAL OFFICER

Theoretically, it should have been possible for unit medical officers at subordinate levels to give equal emphasis to both aspects—clinical medicine and hygiene. It has been one of the sad revelations of the war, however, that the average unit medical officer is often uninterested in other than clinical duties. Often the daily sick-parade has constituted the beginning and the end of his duty. He is not to blame. His view of medicine is that fixed by his medical school. Though the Army has usually put him through short courses on military medicine, in which broader responsibilities have been brought to his notice, unhappily the results of such preparation have not always been impressive in hygiene fields. The unit medical officer, on completion of his sick-parade, rarely went on to study the health factors influencing his men in all their activities. Some, however, knew how the rations should be drawn, stored, and prepared; how equipment and clothing met the needs or were inefficient, irritating, or even harmful; how the distribution of duties left men fit or exhausted; how mail, parcels, news, and amenities affected morale and sickness; how positive interest in welfare contributed to the unit's success—in a phrase, how hygiene "paid."

A partial explanation of the lack of interest shown by medical officers lies in the inclusion in most unit establishments of so-called hygiene personnel. Generally such personnel consists of non-technical non-commissioned officers or men given a rudimentary training in sanitation and water duties. Their presence has led many medical officers to wash their hands of any "hygiene" responsibility.

A final contributing factor to this attitude is that the junior takes his cue from the senior. These juniors have been aware of the dominance of sick-bays, first-aid posts, lines of evacuation, stretcher-bearers, and medical panniers in the plans and inspections of their medical administrative superiors. Naturally, they too had to give prominence to these matters in their own work.

HYGIENE AND THE CONSULTANT

The position and function of consultants and advisers deserve some attention in connexion here.

During the war any lack of direct administrative power was more or less counterbalanced by their possession of special privileges. They held extraordinarily high rank, and they had the right to direct communication with their senior consultant colleagues in their respective home headquarters—e.g., the War Office in the case of U.K. Forces. Consultants were mostly prominent members of the profession brought into the Army from civilian life. Their ignorance of Army procedure and conditions occasionally made them unsympathetic to the men carrying the real burden—i.e., the administrators, who were usually Regulars. This situation might have created unending friction, and it is proof of the adaptability and good will of both groups that so much harmony and coöperation existed. Nevertheless, if the full purpose of army medical services is to be achieved, some of the anomalies existing in the present system of providing consultants must be removed.

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[1] *Lancet*, 1945, ii, 531.

High rank was apparently given to ensure that the views and opinions of the consultants were not lightly rejected. However, it seems that the other extreme was reached. Quite youthful brigadiers, consultants in very limited fields, had the power to exaggerate the importance of their subjects and press their claims unduly on less exalted administrative medical officers. Such administrators were sometimes awkwardly placed in having to reject unsuitable and unreal advice and recommendations from such sources. A suitable rank for advisers is necessary, but it should not be above that of the administrators who are advised. Here it may be interjected that there seems to be no reason why surgery should be specially glorified by having a consultant of higher rank than his medical colleague!

Having a large group of high-ranking clinical consultants attached to each medical directorate was another contribution to the tendency towards concentration of the medical services on curative medicine to the relative neglect of hygiene. As in the previous groups mentioned, these consultants absorbed in clinical work could rarely initiate investigations of the everyday problems of an active army. Yet such problems were legion—topees and effects of the sun; desert glare and sun-glasses; shape, size, and weight of weapons in relation to human capacities to use them; the effects of noise; hours of work in repair depots and in transport companies; acclimatisation factors. Advisers and consultants were as much inclined as their administrative colleagues to gravitate towards clinical medicine.

NEED FOR IMPROVEMENT

In the Middle East campaigns, as has been shown in an earlier paper,[2] the first six most important causes of hospital admissions—in other words the main causes of man-power wastage—were largely preventable: they were diseases of skin and areolar tissue, diseases of the alimentary system, accidental injuries, dysentery, malaria, and venereal diseases. The prevention of such conditions in an army will only be fully effective when the army medical services—administrators, consultants, and unit medical officers—seek out the entire epidemiology of these diseases. This presupposes a knowledge of the soldier in all his doings and not merely when he is recumbent on a sick-bed. Such knowledge is the essential basis for the more positive modern purpose of medicine of enhancing health and vigour. Further, this improvement in the hygiene services must be accomplished without in any way diminishing the high excellence of the curative services.

PROPOSALS FOR A BETTER-BALANCED SERVICE

(1) No senior army medical administrator should be appointed who is not trained and experienced in hygiene. Hygiene is here used in its widest and most proper sense to include considerations of all influences on the health of man as an individual and as a member of a community. Such officers, by training and experience in law, statistics, epidemiology, preventive medicine, and public administration, are accustomed to take into account *all* factors affecting the health and efficiency
community and to dispose of their resources ac
This will not mean neglect of curative and
services, for the health administrator is accustom
handling curative and institutional services as part
parcel of his means of improving the health of the
munity. Further, he has that perspective, given
a philosophy based on vital-statistical and epid
logical grounds, which should ensure the optimum
of clinical facilities as well as their complete inte
with other agencies. One index of a training in
fields is possession of a qualification in State
or public health.

(2) At the level of the unit—battalion,
depot, barracks—the medical officer should fulfil
hygiene as well as his clinical functions. This
depend on emphasis given to this subject not
his preparatory training but also by his seniors in
supervision and inspection of his work. It is not
much new knowledge is required of the medical
but rather a concern by him in his unit at all times.

(3) The curative services, with their personnel
institutions, should become the source of much of
expert advice and of such special facilities as labor
investigations needed by unit medical officers practi
preventive and social medicine. The unit medi
officer following up problems of gun-sights, battle noi
agents inimical to the skin, morale, &c., should
expert assistance, and the obvious source in most
would be the medical and surgical specialists on
hospital staffs. It should be brought home to
specialists that such an extramural service is expe
of them.

(4) As a corollary to the above, consultants
advisers should extend their interests and tours to ca
barracks, workshops, and battlefields, to assess and
on the medical aspects of the multitudinous pr
there to be found influencing the efficiency and
being of the Army. Obviously, the arrangements
using clinical services as indicated in these last
recommendations will be the responsibility of the
medical administrators. With the appointment
hygiene-minded administrators, this should be a
development.

(5) The panel of consultants attached to the m
branch of a general headquarters should be increased
include expert advisers on such subjects as
physiology, biochemistry, nutrition, industrial
water and sanitary engineering, health education,
the prevention of any diseases of special importance.
present the two hygiene administrators on such a head
quarters have to cover this vast complex technical
with very little direct consultation available to them
except in malaria control.

(6) Even with the above changes there is not a
assurance that the commander of a force, especially in
secret planning and operations, will be au
informed of the importance of these medical fac
The only solution appears to be the inclusion of
director of medical services in the immediate staff of
commander-in-chief.

(7) The optimum benefit of the recommendati
given here, however, will only follow a change in emp
in medical education. Preventive medicine and h
(including social medicine) have yet to be accorded th
due in most Commonwealth medical schools.
needs of organised medicine, whether civil or milit
demand recognition in the curricula of these schools.

COMMENT

I wish to make it clear that criticism is not
directed at the broad principles on which the A
medical services have been operating. In theory
are good. For example, the regulations governing

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[2] Richmond, A. E., Gear, H. S. *J.R. Army med. Cps*, 1945, 85, 1.

ices have, in principle, emphasised the prevention lisease and the duty of medical officers to advise on preservation of health. It is the unequal emphasis practice and in administrative control and detail n to the curative duties to the neglect of hygiene which uestioned.

uring the recent campaigns the hygiene branch had nore complicated and difficult task to accomplish n its sister clinical services. "Hygiene" gave the h Command fitter and more vigorous armies than in previous war, but it did so under serious handi-. If these can be removed, the army of the future not lack the soundest health and medical advice in ts activities, without any reduction in the excellence he curative and clinical services. Whatever new ructive agents may be developed, this balanced th and medical military organisation will be essential. hether armies will be needed in the future or not, rience in large-scale administration is surely valuable pertinent to countries now planning national medical ices. The traditional, emotional, professional, and al eminence given to the surgeon and physician is rved; but only when the medical administrator ned in hygiene is equally recognised will an integrated, d, comprehensive, and balanced medical and health ice be achieved. Some of the community needs -bed or consulting-room attendance some of the time; the community needs health guidance all the time.

POSITIVE HEALTH IN THE ARMY

BRIGADIER RICHMOND'S ADDRESS

N a Chadwick lecture delivered in London on Oct. 7, gadier A. E. Richmond, director of hygiene, War Office, gested that "the medical profession has marched much in the gloomy vales of disease." The achieve- nt of positive health was, he said, essential to the Army: nfluenced morale, and without it the highest pitch of ciency could not be achieved. During his one year's ning in the Army the National Service recruit must shown what he could do for his own health and for t of others, and what could be done by others for him.

f the men examined by civilian medical boards ween June, 1939, and March, 1947, and excluding se with gross incapacity who were not called up for mination, 65·7% were placed in grade I; 15·2% in de II; 8·8% in grade III; and 10·3% in grade IV. third of the rejections were due to disorders of the diovascular system, of locomotion, and of the ears, h of which accounted for just over 10%; nervous tability or mental disease caused 7·4% of rejections, l diseases of the lung, other than tuberculosis, 6·95%.

f 5169 recent recruits to the Army, 85·24% were ced in category A1, and 7·06% in lower A categories; 0% were placed in category B1, and 1·05% in lower categories; while 0·6% were placed in category C1 C2. The common causes for recruits being placed in egory B were: ear diseases (9·4%), diseases of the piratory system (7·9%), defects of the abdominal gs (7·9%), cardiovascular disorders (5·1%), and eases of the central nervous system (4·5%). Of all ruits, 3·5% needed psychiatric guidance on the form Service employment.

The maintenance and advancement of health must be ieved largely by attention to the form of employment d by ensuring that the employment was suitable to e man's gifts. Thus selection and categorisation were the first importance. The PULHEEMS system of tegorisation, already in use by the Canadian Army, s to be adopted by all three Services and would be ed by the Army from the beginning of next year.

For substandard recruits physical development centres d been started before the late war; and they were eatly expanded during the war. Of 35,000 men dealt th in courses lasting eight weeks, 71% had been raised category, and of these 69% had been placed in tegory A1. There was now one centre, dealing with ,000 recruits each year. The task of making these ung men fit should, suggested Brigadier Richmond, undertaken about school-leaving age.

At primary training centres drill occupied at first 14% and later 9% of the recruit's training hours. Drill was important, for it taught obedience, cohesion, precision, carriage, and self-respect. Physical training occupied 17% of the training hours; its object was "to get the man fit and to keep him fit, and to refit the convalescent." The soldier must be imparted with the will to be fit, and physical training must be both purposeful and recreational. At the end of his primary training the recruit had an increased exercise-tolerance, and greater endurance, control, coördination, alertness, and quickness of action; and his weight had risen by 6–8 lb.

For the recruit's training in hygiene selected instructors from training centres attended special courses at the Army School of Hygiene. At the primary training centre the recruit received instruction in personal hygiene, and at the corps training centre instruction in communal hygiene. Other ways in which the young soldier was guided towards positive health were through attention to his moral welfare, through the "C.O.'s hours," and through the "padre's hours."

The trained soldiers' physical and mental health were cared for by their officers, who were trained in man-management and hygiene; by the medical service; and by the Army's psychiatric organisation. Environmental hygiene was also not neglected: included under this heading were accommodation, food, water, clothing, welfare, recreation, and education. Personnel research was receiving increasing attention: by this was meant the study by physiological, psychological, anatomical, and other methods of means by which operations could be carried out with the greatest possible efficiency, safety, and comfort; and the adaptation of vehicles and other mechanical devices to the needs of their users.

CONFERENCE ON FOOD AND DRINK INFECTIONS

A ONE-DAY conference and exhibition on food and drink infections, organised by the Central Council for Health Education at Friends House, Euston Road, London, on Oct. 11, brought together 1100 delegates—medical officers of health, bacteriologists, chairmen of public-health committees, and sanitary inspectors representing most local authorities in the country, together with representatives of the food and catering trades.

Lord WOOLTON, president of the C.C.H.E., in opening the conference, said it was not known how many are killed each year by food and drink infections, but he instanced the 1500–2000 children who die annually from bovine tuberculosis, the 200–400 deaths from typhoid and dysentery, and the 3000–4000 infants, mostly artificially fed, who succumb to enteritis. In addition there is evidence of a greatly increased incidence of bacterial food-poisoning associated with the increase of communal feeding. A large part of this kind of infection is avoidable—and this point was also emphasised in a message from the Minister of Health—by pasteurisation of milk and by a much higher standard of cleanliness of personnel and equipment, an objective attainable even in these difficult times.

SOURCES OF INFECTION

Sir WILLIAM SAVAGE said that our knowledge of the problem has been growing steadily in the past 20–30 years and the time has now come for that knowledge to be applied on a much larger scale. Most of the food-borne diseases are due to infection with specific germs, though the occasional chemical poisoning—arsenic, lead, antimony, cadmium, zinc—must not be overlooked. The reservoirs of these germs are man in the case of typhoid and dysentery, mostly animals in the salmonella infections, and the soil in the case of botulism, a rare infection in this country. When the reservoirs are known the paths by which the germs can be transferred to consumable foods become obvious, but it is important to recognise which foods are most likely to become dangerously contaminated. Outbreaks are often traced to cooked ham but rarely to fresh pork; bread is practically never incriminated because it does not encourage bacterial growth. To control food-borne infections we must see that our food is itself free from disease; although there has been a concentration of slaughterhouses to some 500 centres, meat inspection is still far from satis-

factory and a large amount of raw infected milk is still being consumed. Large-scale handling and preparation of food needs expert supervision but it is in the retail distribution that most trouble arises. While improvements in kitchen and personal hygiene are urgently needed, Sir William Savage recounted some of the difficulties: shortage of crockery and cutlery, and of washing facilities particularly during rush hours; staffing problems; inadequate cold storage; and wash-basins inconveniently placed if present at all. He did not favour regular medical examination of food-handlers but suggested that all cases of illness in catering establishments should be reported to the medical officer of health. He thought we should determine which are the essential matters in food hygiene and make our legislation more precise and practical so that there could be a better control over hygiene in the kitchen. To this end, he suggested, a national committee of experts and administrators might be appointed.

Prof. G. S. **Wilson** remarked that ptomaine poisoning from decomposition of food is a myth and that the various types of food-borne intestinal infection—acute gastro-enteritis, bacillary dysentery, and enteric fever—are due to contamination of the food, usually undetected by the senses, with specific germs. The increasing tendency to communal feeding means that the contamination of one article of food may involve 200–300 workers or school-children and not just 2–3 members of a household. The source of the infecting germs is, in typhoid and dysentery, the fæces of cases and carriers, and since it is often impossible to say who may be a carrier, and since contamination of the hands with bowel germs is practically unavoidable, hand-washing after use of the W.C. should become a universal social habit. The salmonella food-poisoning group is found in a variety of animals—cattle, pigs, poultry, vermin—and as an example of how infection can be spread he instanced the recent outbreak in Essex traceable to an infected pig in a slaughterhouse with secondary contamination of pressed beef in the butcher's shop. The staphylococcus, which has now been incriminated in many food-poisoning outbreaks involving ice-cream, cheese, trifle, gelatin-glazed sausage meat, &c., is derived from the human nose and skin, so with a high nasal carrier-rate and the frequent occurrence of skin infections and septic sores among food-handlers the opportunities for staphylococcal contamination of food are great. Foods in which rapid bacterial growth is most likely to occur are milk and milk products; synthetic cream, ice-cream, and custards; made-up dishes such as pies, brawn, pressed beef, and cooked sausage; soups, gravies, and stews; and canned foods *after* the tin has been opened. Professor Wilson gave illustrative examples of outbreaks of food-poisoning and discussed some of the principles of prevention.

Mr. L. H. **Lampitt**, D.SC., chief chemist of the Lyons Laboratories, pointed out that a great deal of self-education in food hygiene has been done by the large catering firms and that no large-scale outbreak of food-poisoning has been attributed to his firm in the past twenty years despite a staff of 20,000 and a service of some half a million meals a day. They have adopted a three-tier system of education: inspectors are specially trained to supervise production and investigate complaints; all reports of inspectors are available to managers of departments, to whom faults of staff are also reported; and simple demonstrations are given to staff about personal hygiene and about the dangers of direct or indirect contact between raw and cooked foods. The main obstacles to a higher standard of food hygiene are human inertia which requires constant correction, the present standards of behaviour which make good discipline difficult, and supply problems in equipment, staff, and materials. A great deal of work has been done on the physics and chemistry of food to ensure a better micro-biological control—e.g., on heat penetration and lethal heat points, moisture and salt content, and hydrogen-ion concentration.

CONTROL OF INFECTIONS

In the afternoon session, Dr. **Robert Cruickshank**, director of the Central Public Health Laboratory, Colindale, discussed four measures in the control of food-borne infections—education of the food-handler; public-health supervision of catering establishments; protection of food against bacterial cont sanitation of food utensils and food-con described the progress being made alone the U.S.A. Education is better than comp courses of three lecture-demonstrations by a specially trained sanitary inspector, medical health, and bacteriologist have been organised American cities with the help of the U.S. Publ Service, which supplies films, lantern slides, as described in their pamphlet *Guide to Safe Food* A beginning has been made with similar cours sanitary inspectors, school-canteen supervisors, and personnel among food-handlers in this country. tunately the rank and file of the food-handlers are poorly paid and of low-grade intelligence, so is difficult, but the introduction of a minimum a greater realisation of their importance to the health may attract a better grade of worker. is made under the Food and Drugs Act, 1938, for vision of food-handling establishments, but the legislation has not gone far enough, and, what is sanitary inspectors do not have time to pay visits which might stimulate the management and to higher standards of food hygiene. Consi should be given to the training and appointment of officers, male or female, whose duty it would be supervise catering establishments and organise tional courses in food hygiene.

As regards medical supervision, existing regul prevent a typhoid carrier from being a food-handl a water-works employee, while sufferers from inte infections or sore throat can be debarred from hand milk. But a much wider provision of medical ca required for all food-handlers so that any infective can be immediately reported and properly bacteriologically as well as clinically. The effect of and suitable temperature in allowing bacterial plication in prepared foods indicates the urgent much more cold storage, particularly in res canteens where for one reason or another food has to be prepared and cooked hours before it is eaten. food manufacturer should also aim at minimising manual handling of food by the greater use of machi Flies can be eliminated by screens and D.D.T. and ve kept at bay by a kitchen cat.

Improperly cleansed crockery and cutlery may p some part in the spread of intestinal and respira infections, and much progress has been made detergents and a reliable dish-washing drill in pr such a risk. Washing either by hand or machine is out at temperatures of 120–140°F, with detergent or sulphonated alcohol to ensure proper cleansing of utensils; this is followed by rinsing for half a minute 170–180°F, which sterilises the utensils and obviates need for wiping crockery; clean dish-cloths must be for cutlery. Similar treatment is used for the large containers. A combined detergent-antiseptic proved very useful for rinsing glasses in public-houses.

HEALTH EDUCATION

Dr. **Robert Sutherland** discussed how health tion could help in improving food hygiene. The task a complex one, for besides the specific intestinal in there is the risk of tuberculosis and other diseases drinking raw milk, and there is the large problem infantile enteritis from which 1 in 200 babies die reaching one year of age. Pending the time pasteurisation can be universally applied, he mended that raw milk should be boiled before given to children, while the toll of deaths from and vomiting could be reduced by a concerted effort increase the proportion of women who breast-fed babies—at present only 1 in 2 do so for the first ti four months of the baby's life. Education of the c mercial food-handler is the joint responsibility of Ministry of Health, the food industry itself, and local authority. The Ministry is preparing a film food and drink infections, and in conjunction with Public Health Laboratory Service is always ready help local authorities in the investigation of outbreaks food-poisoning. Large catering firms could lead the way towards improved food and kitchen hygiene. Difficulties about equipment and staff should not be exaggerat since ignorance and apathy are often the main brunt of the health education will fall on the authority, and here the C.C.H.E. is anxious to in arranging local educational programmes. These d be aimed first at the leaders in food-hygiene ition—key personnel in the food trade, sanitary ctors, doctors and nurses, school teachers, and h organisers; then the rank and file of food-lers, kitchen staff, waitresses, and the like; and ly, the housewife and general public. A course of lecture-demonstrations devised in conjunction the Central Public Health Laboratory has been urated in the London area, and arrangements are made for similar courses to be given throughout ountry. These courses should be supplemented by publicity, posters, and leaflets from practitioners atients with intestinal infections, and from the cal officer of health to food-handlers and housewives. lar inspection of catering establishments should be d out by officers whose approach will be that of ducator rather than the policeman.

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ny practical points were made in the general ssion—e.g., the lack of sanitary facilities on farms; enalisation of food-handlers for sickness absenteeism; suggestion that public-houses should lose their es if they do not conform to certain requirements; oor standards of meat inspection; and carelessness e distribution of food. That many of the diffi-s could be overcome was shown by an outline of rogramme of food hygiene which has been put into n in the Guildford area.

summing-up, Lord WOOLTON felt that the most tant message that emerged from the conference "No dirty fingers in the people's food!"

STREPTOMYCIN ARRANGEMENTS

PPLIES of streptomycin are still strictly limited, and tunately there is not enough to treat every case of culous meningitis or miliary tuberculosis. This s that doctors or hospitals trying to get patients tted to one of the beds now set aside for strepto-n treatment will sometimes be unsuccessful. It would ps be unwise to set up a waiting-list for these beds, the chances of recovery are greatest in early cases. plications by doctors for the admission of patients reptomycin treatment should be made to the nearest e following hospital or other centres.

rculous Meningitis and Miliary Tuberculosis

don area.—Emergency Bed Service (Monarch 8515); ; London Hospital; Middlesex Hospital; St. Bartho 's; St. Mary's; St. Thomas's; or Hospital for Sick ren, Great Ormond Street.

vinces.—Birmingham Children's Hospital, Ladywood ; Bristol General Hospital; Cardiff Isolation Hospital; General Hospital; St. James' Hospital, Leeds; Alder (Children's) Hospital, Liverpool; Royal Southern Hos- Fazakerley, Liverpool; Manchester Royal Infirmary; l Victoria Infirmary, Newcastle; or Children's Hospital, ern Bank, Sheffield.

land.—Four regional committees have been set up, the chairmanship of the deans of the university faculties dicine, to select patients for treatment at City Hospital, leen; Bangour Hospital, West Lothian; Royal Hos- for Sick Children, Glasgow; or Knightswood Hospital, ow. Applications from doctors should be made through edical officers of health.

rthern Ireland.—Inquiries should be addressed to the h departments.

enzal Meningitis

ndon area.—London Hospital; Middlesex Hospital; artholomew's; or St. Mary's.

ovinces.—Queen Elizabeth Hospital, Birmingham; rtment of Medicine, Cambridge University; Welsh onal School of Medicine, Cardiff; School of Medicine, s; Alder Hey (Children's) Hospital, Liverpool; Man-er Royal Infirmary; or Radcliffe Infirmary, Oxford.

quiries with regard to streptomycin treatment for tuberculous cases, other than influenzal meningitis, be made to Prof. Clifford Wilson, Medical Unit, lon Hospital.

In England Now

A Running Commentary by Peripatetic Correspondents

A PRETTY subject for a thesis, treatise, brochure, or Penguin which has not—so far as I know—hitherto received adequate treatment would be the Rise and Fall of Swooning. True, attention has often been drawn to the oddness of the fact that something which was *apparently* as common seventy years ago as constipation is today as dead as duelling, dodos, or Dundrearys. But much more than this is wanted; such a treatise should have at the very least sections on the statistical, physiological, psychological, social, and literary aspects of "the swound." Of these, far the most important would be the critical statistical approach, including an examination of class incidence—I suspect that only chlorotics and social climbers among the working-classes indulged in the practice—and above all keeping a wary eye on the possibility of a grossly exaggerated incidence in novels owing to the extreme convenience of the swoon as a literary device.

Perusal of some of the works of the lesser female mid-Victorian novelists—besides affecting my style—suggests that the following scene must have often occurred. The novelist easily and rapidly achieves some sort of everyday situation such as is always cropping up—e.g., the humble girl whom the Baronet married in a fit of spleen has (*a*) staged a faked suicide, (*b*) subsequently produced a baby in an Italian convent, (*c*) developed smallpox at Twickenham [sic] and been rendered unrecognisable by all, (*d*) had her boy rescued from drowning in the Thames by its father, who had of course immediately got himself remarried to a cold, heartless, highborn Beauty. Enter dripping Baronet to humble peasant cottage bearing son to restore him to unknown humble peasant mother—or so *he* thinks.[*] I can imagine the Bertie Wooster of the period looking over the novelist's shoulder and saying: "What ho! Aunt Agatha, bit of a tricky situation you've got into, what? I mean to say, you've got to extravasate, if that's the word I mean, the Baronet and the beazel. Perhaps Jeeves could bring that bulge behind his ears to bear on the subject." And Jeeves, resourceful as ever, would cough deprecatingly and say: "If I might venture to intrude a suggestion, Madam, the situation calls for a swoon." All is then well, and, if the authoress is feeling particularly daring, the Heroine's dress might be sufficiently disarranged to reveal the strawberry mark on her wrist and thus disclose to the Baronet her true identity.

Anyway, I am sure there is a catch in this swooning business somewhere, and I appeal to Professor Greenwood to let us have the Facts.

* * *

One of my colleagues has developed a unique technique in the conduct of his viva-voce examination. "What are the signs and symptoms of an intracranial tumour?" he asks. "Headache, vomiting, and optic neuritis, aren't they?" he continues before the candidate has time to answer. "What are the chief causes of hæmoptysis? Pulmonary tuberculosis, mitral stenosis, bronchiectasis, eh? Any others besides carcinoma of the lung? Only very rare ones don't you think?" "What's the incubation period of measles? Less than a week? No?"

By this time, the candidate, having satisfied himself that he is not fast asleep and dreaming, and—although this is more difficult—having persuaded himself that the examiner is not to be suspected on the *timeo Danaos* principle, wisely keeps his mouth shut for the remainder of the interview with the exception of an occasional yes or no to supplement his nods of acquiescence.

I have not seen him at work during the clinical examination, though I can well imagine that he carries on in much the same fashion—"Examine this man's heart. Where's the apex-beat? Here in the fifth space, isn't it? Put your stethoscope there. Are there any murmurs? A systolic and a diastolic? Yes?"

But I visualise the danger; a candidate either hypnotised to a state of mental paralysis, or, if he still

factory and a large amount of raw infected milk is still being consumed. Large-scale handling and preparation of food needs expert supervision but it is in the retail distribution that most trouble arises. While improvements in kitchen and personal hygiene are urgently needed, Sir William Savage recounted some of the difficulties: shortage of crockery and cutlery, and of washing facilities particularly during rush hours; staffing problems; inadequate cold storage; and wash-basins inconveniently placed if present at all. He did not favour regular medical examination of food-handlers but suggested that all cases of illness in catering establishments should be reported to the medical officer of health. He thought we should determine which are the essential matters in food hygiene and make our legislation more precise and practical so that there could be a better control over hygiene in the kitchen. To this end, he suggested, a national committee of experts and administrators might be appointed.

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[*] See *Can Wrong be Right?* by Mrs. S. C. Hall. Tauschnitz. 1868.

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As regards medical supervision, existing regul prevent a typhoid carrier from being a food-hand a water-works employee, while sufferers from int infections or sore throat can be debarred from ha milk. But a much wider provision of medical c required for all food-handlers so that any infective i can be immediately reported and properly investi bacteriologically as well as clinically. The effect of and suitable temperature in allowing bacterial m plication in prepared foods indicates the urgent nee much more cold storage, particularly in restaurants canteens where for one reason or another food has to be prepared and cooked hours before it is eaten. food manufacturer should also aim at minimising manual handling of food by the greater use of machi Flies can be eliminated by screens and D.D.T. and ve kept at bay by a kitchen cat.

Improperly cleansed crockery and cutlery may some part in the spread of intestinal and respir infections, and much progress has been made detergents and a reliable dish-washing drill in preven such a risk. Washing either by hand or machine is ca out at temperatures of 120–140°F, with detergent pow or sulphonated alcohol to ensure proper cleansing of utensils; this is followed by rinsing for half a minute 170–180°F, which sterilises the utensils and obviates need for wiping crockery; clean dish-cloths must be for cutlery. Similar treatment is used for the large fo containers. A combined detergent-antiseptic mixture proved very useful for rinsing glasses in public-houses.

HEALTH EDUCATION

Dr. **Robert Sutherland** discussed how health ed tion could help in improving food hygiene. The tas a complex one, for besides the specific intestinal infec there is the risk of tuberculosis and other diseases drinking raw milk, and there is the large problem infantile enteritis from which 1 in 200 babies die reaching one year of age. Pending the time pasteurisation can be universally applied, he mended that raw milk should be boiled before given to children, while the toll of deaths from diarr and vomiting could be reduced by a concerted effort increase the proportion of women who breast-fed t babies—at present only 1 in 2 do so for the first three four months of the baby's life. Education of the c mercial food-handler is the joint responsibility of Ministry of Health, the food industry itself, and local authority. The Ministry is preparing a film food and drink infections, and in conjunction with Public Health Laboratory Service is always ready help local authorities in the investigation of outbreaks food-poisoning. Large catering firms could lead the way towards improved food and kitchen hygiene. Difficul about equipment and staff should not be exaggera since ignorance and apathy are often the main obst.

brunt of the health education will fall on the authority. and here the C.C.H.E. is anxious to in arranging local educational programmes. These be aimed first at the leaders in food-hygiene tion—key personnel in the food trade. sanitary tors, doctors and nurses. school teachers. and organisers; then the rank and file of food-ers. kitchen staff, waitresses. and the like: and y. the housewife and general public. A course of lecture-demonstrations devised in conjunction the Central Public Health Laboratory has been urated in the London area. and arrangements are made for similar courses to be given throughout ountry. These courses should be supplemented by publicity, posters. and leaflets from practitioners atients with intestinal infections. and from the cal officer of health to food-handlers and housewives. lar inspection of catering establishments should be d out by officers whose approach will be that of ducator rather than the policeman.

* * *

ny practical points were made in the general ssion—e.g., the lack of sanitary facilities on farms; nalisation of food-handlers for sickness absenteeism; suggestion that public-houses should lose their es if they do not conform to certain requirements; oor standards of meat inspection: and carelessness e distribution of food. That many of the diffi- es could be overcome was shown by an outline of programme of food hygiene which has been put into in the Guildford area.

summing-up, Lord WOOLTON felt that the most tant message that emerged from the conference "No dirty fingers in the people's food!"

STREPTOMYCIN ARRANGEMENTS

PLIES of streptomycin are still strictly limited, and tunately there is not enough to treat every case of culous meningitis or miliary tuberculosis. This s that doctors or hospitals trying to get patients tted to one of the beds now set aside for strepto- in treatment will sometimes be unsuccessful. It would aps be unwise to set up a waiting-list for these beds, the chances of recovery are greatest in early cases. plications by doctors for the admission of patients reptomycin treatment should be made to the nearest e following hospital or other centres.

rculous Meningitis and Miliary Tuberculosis

don area.—Emergency Bed Service (Monarch 8515); s; London Hospital; Middlesex Hospital; St. Bartho-'s; St. Mary's; St. Thomas's; or Hospital for Sick ren, Great Ormond Street.

vinces.—Birmingham Children's Hospital, Ladywood l; Bristol General Hospital; Cardiff Isolation Hospital: s General Hospital; St. James' Hospital. Leeds; Alder (Children's) Hospital, Liverpool; Royal Southern Hos-, Fazakerley, Liverpool; Manchester Royal Infirmary; l Victoria Infirmary, Newcastle; or Children's Hospital, ern Bank, Sheffield.

land.—Four regional committees have been set up, the chairmanship of the deans of the university faculties dicine, to select patients for treatment at City Hospital. deen; Bangour Hospital, West Lothian; Royal Hos- for Sick Children, Glasgow; or Knightswood Hospital. ow. Applications from doctors should be made through medical officers of health.

thern Ireland.—Inquiries should be addressed to the h departments.

enzal Meningitis

don area.—London Hospital; Middlesex Hospital; Bartholomew's; or St. Mary's.

vinces.—Queen Elizabeth Hospital, Birmingham; rtment of Medicine, Cambridge University; Welsh onal School of Medicine, Cardiff; School of Medicine, ls; Alder Hey (Children's) Hospital. Liverpool; Man- ter Royal Infirmary; or Radcliffe Infirmary. Oxford.

quiries with regard to streptomycin treatment for -tuberculous cases, other than influenzal meningitis, be made to Prof. Clifford Wilson, Medical Unit, don Hospital.

In England Now

A Running Commentary by Peripatetic Correspondents

A PRETTY subject for a thesis, treatise, brochure, or Penguin which has not—so far as I know—hitherto received adequate treatment would be the Rise and Fall of Swooning. True, attention has often been drawn to the oddness of the fact that something which was *apparently* as common seventy years ago as constipation is today as dead as duelling. dodos, or Dundrearys. But much more than this is wanted; such a treatise should have at the very least sections on the statistical, physiological, psychological, social. and literary aspects of "the swound." Of these, far the most important would be the critical statistical approach, including an examination of class incidence—I suspect that only chlorotics and social climbers among the working-classes indulged in the practice—and above all keeping a wary eye on the possibility of a grossly exaggerated incidence in novels owing to the extreme convenience of the swoon as a literary device.

Perusal of some of the works of the lesser female mid-Victorian novelists—besides affecting my style—suggests that the following scene must have often occurred. The novelist easily and rapidly achieves some sort of everyday situation such as is always cropping up—e.g., the humble girl whom the Baronet married in a fit of spleen has (*a*) staged a faked suicide, (*b*) subsequently produced a baby in an Italian convent, (c) developed smallpox at Twickenham [sic] and been rendered unrecognisable by all, (*d*) had her boy rescued from drowning in the Thames by its father, who had of course immediately got himself remarried to a cold, heartless, highborn Beauty. Enter dripping Baronet to humble peasant cottage bearing son to restore him to unknown humble peasant mother—or so *he* thinks.* I can imagine the Bertie Wooster of the period looking over the novelist's shoulder and saying: "What ho! Aunt Agatha, bit of a tricky situation you've got into, what? I mean to say, you've got to extravasate, if that's the word I mean, the Baronet and the beazel. Perhaps Jeeves could bring that bulge behind his ears to bear on the subject." And Jeeves, resourceful as ever, would cough deprecatingly and say: "If I might venture to intrude a suggestion, Madam, the situation calls for a swoon." All is then well, and, if the authoress is feeling particularly daring, the Heroine's dress might be sufficiently disarranged to reveal the strawberry mark on her wrist and thus disclose to the Baronet her true identity.

Anyway, I am sure there is a catch in this swooning business somewhere, and I appeal to Professor Greenwood to let us have the Facts.

* * *

One of my colleagues has developed a unique technique in the conduct of his viva-voce examination. "What are the signs and symptoms of an intracranial tumour?" he asks. "Headache, vomiting, and optic neuritis, aren't they?" he continues before the candidate has time to answer. "What are the chief causes of hæmoptysis? Pulmonary tuberculosis, mitral stenosis, bronchiectasis, eh? Any others besides carcinoma of the lung? Only very rare ones don't you think?" "What's the incubation period of measles? Less than a week? No?"

By this time, the candidate, having satisfied himself that he is not fast asleep and dreaming, and—although this is more difficult—having persuaded himself that the examiner is not to be suspected on the *timeo Danaos* principle, wisely keeps his mouth shut for the remainder of the interview with the exception of an occasional yes or no to supplement his nods of acquiescence.

I have not seen him at work during the clinical examination, though I can well imagine that he carries on in much the same fashion—"Examine this man's heart. Where's the apex-beat? Here in the fifth space, isn't it? Put your stethoscope there. Are there any murmurs? A systolic and a diastolic? Yes?"

But I visualise the danger; a candidate either hypnotised to a state of mental paralysis, or, if he still

factory and a large amount of raw infected milk is still being consumed. Large-scale handling and preparation of food needs expert supervision but it is in the retail distribution that most trouble arises. While improvements in kitchen and personal hygiene are urgently needed, Sir William Savage recounted some of the difficulties: shortage of crockery and cutlery, and of washing facilities particularly during rush hours; staffing problems; inadequate cold storage; and wash-basins inconveniently placed if present at all. He did not favour regular medical examination of food-handlers but suggested that all cases of illness in catering establishments should be reported to the medical officer of health. He thought we should determine which are the essential matters in food hygiene and make our legislation more precise and practical so that there could be a better control over hygiene in the kitchen. To this end, he suggested, a national committee of experts and administrators might be appointed.

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* See *Can Wrong be Right?* by Mrs. S. C. Hall. Tauschnitz. 1868.

Prof. G. S. Wilson remarked that ptomaine poisoning from decomposition of food is a myth and that the various types of food-borne intestinal infection—acute gastro-enteritis, bacillary dysentery, and enteric fever—are due to contamination of the food, usually undetected by the senses, with specific germs. The increasing tendency to communal feeding means that the contamination of one article of food may involve 200–300 workers or school-children and not just 2–3 members of a household. The source of the infecting germs is, in typhoid and dysentery, the fæces of cases and carriers, and since it is often impossible to say who may be a carrier, and since contamination of the hands with bowel germs is practically unavoidable, hand-washing after use of the w.c. should become a universal social habit. The salmonella food-poisoning group is found in a variety of animals—cattle, pigs, poultry, vermin—and as an example of how infection can be spread he instanced the recent outbreak in Essex traceable to an infected pig in a slaughterhouse with secondary contamination of pressed beef in the butcher's shop. The staphylococcus, which has now been incriminated in many food-poisoning outbreaks involving ice-cream, cheese, trifle, gelatin-glazed sausage meat, &c., is derived from the human nose and skin, so with a high nasal carrier-rate and the frequent occurrence of skin infections and septic sores among food-handlers the opportunities for staphylococcal contamination of food are great. Foods in which rapid bacterial growth is most likely to occur are milk and milk products; synthetic cream, ice-cream, and custards; made-up dishes such as pies, brawn, pressed beef, and cooked sausage; soups, gravies, and stews; and canned foods *after* the tin has been opened. Professor Wilson gave illustrative examples of outbreaks of food-poisoning and discussed some of the principles of prevention.

Mr. L. H. Lampitt, d.sc., chief chemist of the Lyons Laboratories, pointed out that a great deal of self-education in food hygiene has been done by the large catering firms and that no large-scale outbreak of food-poisoning has been attributed to his firm in the past twenty years despite a staff of 20,000 and a service of some half a million meals a day. They have adopted a three-tier system of education: inspectors are specially trained to supervise production and investigate complaints; all reports of inspectors are available to managers of departments, to whom faults of staff are also reported; and simple demonstrations are given to staff about personal hygiene and about the dangers of direct or indirect contact between raw and cooked foods. The main obstacles to a higher standard of food hygiene are human inertia which requires constant correction, the present standards of behaviour which make good discipline difficult, and supply problems in equipment, staff, and materials. A great deal of work has been done on the physics and chemistry of food to ensure a better micro-biological control—e.g., on heat penetration and lethal heat points, moisture and salt content, and hydrogen-ion concentration.

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district nurses are the only section of the nursing unity who are associated with the health services, stinct from the hospital services. Their position ves to be as widely appreciated by all who are rned with the health of the people as their services their patients.

C. E. A. BEDWELL

Chairman, Metropolitan Federation of
don, S.E.24. Queen's District Nursing Associations.

,—Miss Steel (Oct. 4) aptly describes the problem ed by me in my previous letter (Sept. 27) as the an's-land of social medicine, and she seems to agree this territory could well be covered to a considerable t by voluntary workers. Whether the supervision ese workers is effected through the health visitor the local authority, or the almoner at the divisional h centre referred to by Miss Sayle, seems to me terial—a question in fact of availability of nnel.

e chairman of the Nursing Recruitment Committee, ng in the *Times* of Oct. 8, refers to the shortage alth visitors and to the extension of their duties the National Health Service Act comes into force 48. It is clear that very careful use of all our ed medical social workers will be essential in the ahead, if the ever-widening fields of work which be their province are to be properly covered. My is that those voluntary workers who for so many have satisfactorily filled a gap in our social services be given an opportunity to help cover that part e field where specific medicosocial training is not sary.

don, S.W.10. A. E. B. HARDING.

MENINGITIS LEPTOSPIROSA

R,—In stressing the importance of anicteric Weil's se, particularly that form presenting as an innocent meningitis, Dr. Buzzard and Dr. Wylie (Sept. 20) recorded cases almost identical with others seen in pshire during the past ten years.

have now had the good fortune to see some 40 cases roved Weil's disease; about half remained anicteric ughout, and over a dozen of these have presented ses of meningitis showing pleocytosis in the cerebro-al fluid (C.S.F.). These too were in young people were apparently infected by contact with river er, though 3 had done nothing more daring than lle. One, an A.T.S. girl of 30, had had no such sure, but her billet was shown to be rat-infested.

ll my cases, however, have shown several features, ical and laboratory, which seem to have been lacking he Oxford series; and it was these very features ch directed attention to the correct diagnosis. All wed muscle tenderness of varying degree which sted until convalescence had been established. I e come to rely so much on this sign that in searching Weil's disease during this summer it has seemed icient when going through the infective-hepatitis ds to squeeze each patient's biceps.

hough I have not found nitrogen retention approach-that seen in the icteric cases, yet blood-urea findings e always been suggestively close to the upper limits normality for young people; and my figures have n higher than those recorded by Buzzard and Wylie. ave seen levels of 50 mg. per 100 ml. and higher in st of the cases. This examination was, however, de two and sometimes three days earlier than in Oxford series. It seems possible that nitrogen ention is a very early feature, and as I have written where,[1] I feel that "this is by far the most important gle laboratory finding" in the early stages. In nchester it was arranged that Dr. C. H. Wrigley, the norary pathologist, should estimate the urea content the C.S.F. whenever pleocytosis with normal chlorides s found; this led to a correct diagnosis in several early cases. In no case was there an excess of polymorphs in the C.S.F.; indeed, the cells have been almost entirely lymphocytes, and case 1 from Oxford with 88% polymorphs must be unusual.

During what has surely been the most tempting summer for bathers in a generation I have seen no cases of Weil's disease in Germany, and I have wondered if the same brilliant sunshine which led possible victims into the water also cut short the life of the young leptospira, which is known to dislike direct sunlight. I understand that no cases have been diagnosed in Winchester this summer—an experience unusual in recent years. I recall that the period July 27 to Sept. 13, 1946, during which all the Oxford cases were seen, was characterised by peculiarly British "summer" weather.

KENNETH ROBERTSON.

94th (Hamburg) British Military Hospital, B.A.O.R.

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[1] Robertson, K. M. *Brit. med. J.* 1946, ii, 810.

REVOLT FROM THE BEDPAN

SIR,—Stimulated by your advice and encouragement I designed, with the engineer of this hospital, a chair for use in taking patients to the W.C.; it closely resembles that used for eight years in the Central Hospital, Orebro, which is described by Professor Bohmansson and Dr. Malmros in your issue of Oct. 4.

These chairs have now been used for several months, and I can endorse the views of your contributors on their extreme usefulness. The work of the nurses is reduced and a distasteful task almost eliminated from the ward. Patients greatly prefer to be taken to the W.C. in these chairs and to defæcate in decent seclusion and in a comfortable and effective position; and the effort is much less than that involved in the use of the bedpan. Patients with advanced tuberculosis can use the chair with advantage.

The valuable suggestion of your contributors should be widely adopted in hospitals. Most advances in treatment seem to add more work to overburdened staffs; it is refreshing to meet one which diminishes the amount of work to be done and at the same time greatly improves the comfort and welfare of patients.

County Sanatorium, Clare Hall, South Mimms, Barnet.

F. A. H. SIMMONDS
Medical Director.

SIR,—Having read with interest the article by Professor Bohmansson and Dr. Malmros, I should like to submit what I believe to be an advance on their suggestion. I have devised a bed which is located over a water-closet pan, and can be manipulated by the patient. The bed has a flap which can be raised to make an opening for the water-closet, and the whole bed can be lowered or raised to allow the patient to sit in a normal position during defæcation. The bed can be operated without the presence or assistance of nurses, and it can be used without moving the patient from bed, thus covering the needs of the bulk of the chronic sick in public-assistance institutions. The cost of fitting the water-closet pans would soon be recovered by the saving of labour, and the offensive odour from bedpans would be eliminated.

Drawings for this bed are in the hands of a firm of hospital-bed manufacturers (Messrs. Whitfields), and it is hoped that a prototype will shortly be in operation.

Boston, Lincs. W. G. BOOTH.

CONVALESCENT HOMES

SIR,—As a patient recently returned from a convalescent home, perhaps my experience may guide those trying to bring about improvements. I was taken to the home from a London hospital, and since it was the first time, after a severe major operation, that I had been dressed and out of the hospital ward, I arrived almost in a state of collapse. The front door was opened by a domestic servant who, without greeting, reprimanded me for being late. I had expected to go straight to bed, but the front door having been shut on my son who had brought me, I was asked to follow her upstairs. I looked at the formidable flight with dismay but managed to crawl unaided to the landing, where I had to stand and wait while the maid unpacked my case. Having been shown my bed in a dormitory for ten, I was asked to come downstairs and see the matron. On

preserves his equanimity, fearful of expressing any disagreement, accepting even the most preposterous nonsense. I would like to see one, invited, let us say, to hear loud bronchial breathing, protesting irritably and vehemently, "No I don't, I'll be d—d if I do." He ought certainly to pass, whatever his performance in general; he would be the right stuff for a good doctor.

* * *

Bus-drivers in New York have an incredible job, for there are no conductors. The two doors at the entrance and exit are opened by the driver pressing a button. The passenger gets on at the driver's end and drops a nickel or a dime into a machine rather like a coffee-grinder. If he intends to transfer to another bus, or return before 4 P.M., he gets a ticket from the driver —otherwise no tickets are needed, for there is only one fare whatever the distance. When all have paid their fares, the driver closes the doors, puts his foot down hard, and off you go. Fluid flywheels make for smooth starting. As the bus proceeds the driver turns a handle and starts the coffee-grinder, which churns up and counts the money. The driver picks the coins out at the bottom of the churn and stacks them in a rack, so he can give change to those foolish enough to need it. He then probably has to count extra coins, odd transfer tickets, &c., and make an entry in his log. At the next stop he calls the name of the street, opens the doors, watches the new passengers deposit their coins, issues tickets, closes the doors, watches the traffic and the traffic lights, and starts off again. It really is an amazing act. It seems remarkable that so much should be put on the shoulders of one man, but they tell me he is well paid for it. I missed the humour and courtesy of the London bus conductor, but one cannot blame the New York driver if he keeps strictly to the job on hand.

* * *

Mr. Raffazzia was my first patient on my first firm, and we took each other very seriously. Ever since then he has haunted the hospital. Indeed, he says St. Malaprop's is his second home. It scarcely seems possible to walk through Outpatients without seeing him brooding in some queue. One careless glance and I am trapped: with gentle sweaty fingers he holds my sleeve and talks . . .

Teetering nervously on one foot I gasp: "I really can't stay—I'm late—I've got a lecture—I must go—they're waiting for me in the ward—I'm due in the theatre." All useless cries. He fixes me with the mild milky stare of cataract, and asks eagerly: "Do you remember that day when Nurse Broadbeam dropped the tray?"

For weeks now he has been pestering me to see his daughter. He's very worried about Lucrezia. She's in love with Enrico, and yet won't marry him—says she'd rather have a weekend at Brighton. "It seems so immoral," laments Mr. Raffazzia, "and I'm sure it would do her good to talk it over with a Lady Doctor." "But I'm not qualified." "Never mind," he goes on remorselessly, "you ought to be."

So the other day I had coffee with Lucrezia. She explained that she didn't mind a bit of fun. But marriage? No! She wasn't going to lose her privacy not for anyone. "But what do you do in your privacy?" I asked unhappily. "Surely you could get used to having a husband around, especially as you love Enrico—why must you always be alone in your room?" For the first time she looked embarrassed. After a moment's hesitation she leant across the table and whispered: "I eat biscuits in bed."

* * *

He had been telling me about the model jet-plane. Now he looked at the rusty automatic machine and went into his state of abstraction. At last he came out of it. "Grandpa," said he, "when you were young could you *really* get chocolate out of a thing like that?" "Yes," I replied. "And matches?" "Yes." "For a penny?" "Yes." "Without being registered or having a book?" "Yes." "I *should* have liked it then." "But you wouldn't have had a model jet-plane." "I wouldn't have wanted it," he said; and I felt more hopeful.

Letters to the Editor

A CHRISTMAS APPEAL

SIR,—Christmas comes but once a year, and comes should bring good cheer. I therefore to your readers to help those who have to look to for whatever extra comforts may come their way.

The beneficiaries of the Royal Medical Fund are either aged or infirm practitioners, or wives, widows, or children, and but for the grace any one of us, or our families, might be in like . I hope subscribers to the fund will send an donation to make this Christmas a little less grim. I earnestly ask those who are not subscr show their sympathy for their less fortunate col not only by sending Christmas gifts, but by b regular supporters of the fund.

Contributions and subscriptions should be sent secretary of the Royal Medical Benevolent Fund, 1 House, Manor Fields, Putney, London, S.W.15, marked "Christmas Gifts."

ALFRED WEBB-JOHNSON
President, Royal Medical Benevolent F

INCIDENCE OF POLIOMYELITIS

SIR,—In your note of Sept. 20 (p. 448) you sugge implication that the true incidence of poliomy at the present time is probably much below, and no more than half, the weekly notification figures. recent experience in Leeds supports this view.

The monthly notifications have steadily risen 1 in April to 3 in May, 6 in June, 15 in July, 19 in and 25 in September, suggesting a continued incidence. A closer analysis of the figures however, that whereas in April, May, and June notifications were true cases, in July, August, September out of 59 notifications there were only accepted cases, the remaining 26 requiring revisio diagnosis. During the last week of September t were 11 notifications, but only 3 of these are now rega as definite cases.

The increasing awareness of poliomyelitis has resulted in a greater number of abortive cases diagnosed. For instance, whereas in June all 6 cases showed definite paralysis, in September only of the 15 accepted cases had paralysis, the 9 being of the abortive type.

The diagnosis of poliomyelitis in the early stages often difficult if not impossible, and doctors have responded to the appeal to isolate and notify suspicion; this has inevitably meant revision of in a substantial proportion of cases. If such as have been obtained in Leeds are common any assessment of the progress of the epidemic on notification figures must be highly fallacious. It however, seem to be a fair assumption that the ep is declining quicker than the notification figures imply.

J. F. WARIN
Leeds. Deputy Medical Officer of Health.

*** Our correspondent presents useful evidence t the cases notified have included a rising number which the provisional diagnosis of poliomyelitis erroneous. It should not be deduced from this, howe that the epidemic has attacked fewer people than number notified. Probably the large majority of of poliomyelitis are not clinically recognisable as and therefore escape notification altogether.—ED. L.

SOCIAL MEDICINE

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Teetering nervously on one foot I gasp: "I really can't stay—I'm late—I've got a lecture—I must go—they're waiting for me in the ward—I'm due in the theatre." All useless cries. He fixes me with the mild milky stare of cataract, and asks eagerly: "Do you remember that day when Nurse Broadbeam dropped the tray?"

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Teetering nervously on one foot I gasp: "I really can't stay—I'm late—I've got a lecture—I must go—they're waiting for me in the ward—I'm due in the theatre." All useless cries. He fixes me with the mild milky stare of cataract, and asks eagerly: "Do you remember that day when Nurse Broadbeam dropped the tray?"

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The beneficiaries of the Royal Medical Ben Fund are either aged or infirm practitioners, or wives, widows, or children, and but for the grace *any one of us, or our families,* might be in like n . I hope subscribers to the fund will send an donation to make this Christmas a little less bl grim. I earnestly ask those who are not subscri show their sympathy for their less fortunate co not only by sending Christmas gifts, but by b regular supporters of the fund.

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South Mimms, Barnet.

F. A. H. SIMMONDS
Medical Director.

SIR,—Having read with interest the article by Professor Bohmansson and Dr. Malmros, I should like to submit what I believe to be an advance on their suggestion. I have devised a bed which is located over a water-closet pan, and can be manipulated by the patient. The bed has a flap which can be raised to make an opening for the water-closet, and the whole bed can be lowered or raised to allow the patient to sit in a normal position during defæcation. The bed can be operated without the presence or assistance of nurses, and it can be used without moving the patient from bed, thus covering the needs of the bulk of the chronic sick in public-assistance institutions. The cost of fitting the water-closet pans would soon be recovered by the saving of labour, and the offensive odour from bedpans would be eliminated.

Drawings for this bed are in the hands of a firm of hospital-bed manufacturers (Messrs. Whitfields), and it is hoped that a prototype will shortly be in operation.

Boston, Lincs.

W. G. BOOTH.

CONVALESCENT HOMES

SIR,—As a patient recently returned from a convalescent home, perhaps my experience may guide those trying to bring about improvements. I was taken to the home from a London hospital, and since it was the first time, after a severe major operation, that I had been dressed and out of the hospital ward, I arrived almost in a state of collapse. The front door was opened by a domestic servant who, without greeting, reprimanded me for being late. I had expected to go straight to bed, but the front door having been shut on my son who had brought me, I was asked to follow her upstairs. I looked at the formidable flight with dismay but managed to crawl unaided to the landing, where I had to stand and wait while the maid unpacked my case. Having been shown my bed in a dormitory for ten, I was asked to come downstairs and see the matron. On

entering her office I sat for the first time, and was again asked to explain my lateness. The arrangements for travelling had, in fact, been made by the hospital. After signing a book, I was told a list of rules, from which I discovered that I must rise at 7.30 A.M. and go to bed at 8.30 P.M. Breakfast was at 8.30 A.M. followed by prayers after which we had to return to the dormitory to make our beds. We were not given our post until this was over, and were not allowed to return to the dormitory again till bed-time. I protested that I was not well enough to be up and dressed all those hours, but was told that if patients wanted to rest they could lie on couches in the sitting-room; but there were only three couches for twelve patients, and one could not always expect to have one of them. We took turns in washing up the dishes after meals. No difference in treatment was made for patients arriving in a state of great weakness and those who had been there several weeks. The food was plain but good, though there were no special diets or extra milk for anyone, whatever their complaints. There was no nursing, and we only saw a doctor once, for two minutes, while he signed our papers. Visitors were not allowed in the house but were asked to go to the back-garden gate to wait for their relations; this seemed particularly ironic to me after reading an article on Broadmoor where I gather the prisoners can be seen on visiting days taking tea with their friends under the shady trees in the prison grounds!

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[1] Robertson, K. M. *Brit. med. J.* 1946, ii, 810.

I stuck it for two weeks and then left to stay with a kindly landlady in another seaside town, but most of the patients were working women who could not afford to do that. It seems that those who can afford to pay for expensive homes are waited on hand and foot, while the poor—who all too soon are coping with heavy housework and queueing—are regimented back into health almost as if they were mentally deficient or delinquent, and too often in an atmosphere of charity.

There was certainly no intention of being cruel or unkind in this home. It was just sheer lack of imagination. The house was pleasant, nicely furnished, and within a few minutes' walk of the sea. The matron, who meant well enough, warned us on the first day that we were expected to settle in happily with no grumbles and no tears, as she would rather have an empty bed than an unhappy patient. It was quite impossible to relax in such an atmosphere, and the more sensitive patients showed signs of strain which never left them during their stay there.

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THE METRIC SYSTEM IN MEDICINE

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May I point out that, where dangerous drugs are concerned, such practice is illegal in this country? Under the Dangerous Drugs Act the *total* amount of the drug must be clearly prescribed.

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The symptoms may come on after a meal, but seem to cycles; that is to say, one time I would have them alwa breakfast, another time always after tea, and so on. got three or four attacks a week, and then go a week any. They come on immediately after a meal, and convinced that if I lie down or rest half an hour after a I don't get an attack. Once an attack is over I am fit and can do anything, until the next meal.

The nature of the food taken seems to have no i on the attacks. In fact, I got a slight attack imm after taking glucose for the purposes of performing a sugar curve. The curve rose to 200 mg. per 100 ml minutes, was 100 mg. in 70 minutes, and finally fell to in 130 minutes. But, as I say, an attack started 10 minutes of taking the glucose, when my blood-s 181 mg.

I really cannot see that any of the suggested e tions of this condition apply to my own case. add that my age is 60, my blood-pressure is quite and I have no pain or discomfort whatever refe the stomach. The gastrectomy was performed chronic gastric ulcer which had recurred several and which did not respond to medical treatment.

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SIR,—In your leading article of May 31 you disc a recent paper of mine.[1] You properly stated "anyone who sets out to 'debunk' some estab method of preventing disease assumes a certain re bility." I have no desire to evade responsibili anything I have written, in that paper or any but I certainly question the use of "established reference to the prophylactic use of iodine.

You gave your readers a good and detailed acc my paper, although you did not agree with me. does not permit a recapitulation of those of my arg that you discussed and rejected. Your readers judge between us on the basis of your summary your remarks, referring to the original paper for actual evidence.

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Post hoc, ergo propter hoc is the oldest of the fall The history of goitre is replete with instances of redu in severity, at least as marked as any that have claimed to follow the use of iodine, that were obse without any known change in the intake of iodine without the slightest reason for supposing that t had been any. Two such instances were mentioned the paper under discussion and a reference was given a previous report containing many more.[5]

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Royal Infirmary, Manchester. M. C. G. ISRAËLS.

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SIR,—Mr. Finnemore lays down in his article (Oct. 11) that "All preparations for internal administration should be written for the single dose . . . the number of doses then being stated."

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The symptoms may come on after a meal, but seem cycles; that is to say, one time I would have them al breakfast, another time always after tea, and so on. got three or four attacks a week, and then go a week any. They come on immediately after a meal, and convinced that if I lie down or rest half an hour after I don't get an attack. Once an attack is over I am fit and can do anything, until the next meal.

The nature of the food taken seems to have no on the attacks. In fact, I got a slight attack im after taking glucose for the purposes of performing a sugar curve. The curve rose to 200 mg. per 100 ml. minutes, was 100 mg. in 70 minutes, and finally fell to in 130 minutes. But, as I say, an attack started 10 minutes of taking the glucose, when my blood-s 181 mg.

I really cannot see that any of the suggested e tions of this condition apply to my own case. add that my age is 60, my blood-pressure is quite n and I have no pain or discomfort whatever refe the stomach. The gastrectomy was performed chronic gastric ulcer which had recurred several and which did not respond to medical treatment.

IODINE AND GOITRE

SIR,—In your leading article of May 31 you di a recent paper of mine.[1] You properly stated "anyone who sets out to 'debunk' some estab method of preventing disease assumes a certain bility." I have no desire to evade responsibili anything I have written, in that paper or any but I certainly question the use of "establish reference to the prophylactic use of iodine.

You gave your readers a good and detailed acc my paper, although you did not agree with me. does not permit a recapitulation of those of my arg that you discussed and rejected. Your readers judge between us on the basis of your summary your remarks, referring to the original paper for actual evidence.

There were, however, a few considerations that did not mention. In the first place, locally p foods play only a small part in the feeding of the cities of the U.S.A. Most of the food comes from same distant sources. If the published data are approximately correct, the amount of iodine fur by the drinking water and by the local produce c be very different in such cities as Cleveland (goit and New York (non-goitrous). The leading Contin protagonist of the "iodine-lack" hypothesis, Fellenberg, conceded in 1938[2] that he was unab find a relation between the iodine content of the and the occurrence of goitre in one community. report has been severely neglected by proponents of iodine-lack hypothesis.

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Stocks, P. *Quart. J. Med.* 1927–28, 21, 223.

[1] Paul, J. R., in Cecil's Textbook of Medicine, London and Philadelphia, 1947, p. 60.

entering her office I sat for the first time, and was again asked to explain my lateness. The arrangements for travelling had, in fact, been made by the hospital. After signing a book, I was told a list of rules, from which I discovered that I must rise at 7.30 A.M. and go to bed at 8.30 P.M. Breakfast was at 8.30 A.M. followed by prayers after which we had to return to the dormitory to make our beds. We were not given our post until this was over, and were not allowed to return to the dormitory again till bed-time. I protested that I was not well enough to be up and dressed all those hours, but was told that if patients wanted to rest they could lie on couches in the sitting-room; but there were only three couches for twelve patients, and one could not always expect to have one of them. We took turns in washing up the dishes after meals. No difference in treatment was made for patients arriving in a state of great weakness and those who had been there several weeks. The food was plain but good, though there were no special diets or extra milk for anyone, whatever their complaints. There was no nursing, and we only saw a doctor once, for two minutes, while he signed our papers. Visitors were not allowed in the house but were asked to go to the back-garden gate to wait for their relations; this seemed particularly ironic to me after reading an article on Broadmoor where I gather the prisoners can be seen on visiting days taking tea with their friends under the shady trees in the prison grounds!

I stuck it for two weeks and then left to stay with a kindly landlady in another seaside town, but most of the patients were working women who could not afford to do that. It seems that those who can afford to pay for expensive homes are waited on hand and foot, while the poor—who all too soon are coping with heavy housework and queueing—are regimented back into health almost as if they were mentally deficient or delinquent, and too often in an atmosphere of charity.

There was certainly no intention of being cruel or unkind in this home. It was just sheer lack of imagination. The house was pleasant, nicely furnished, and within a few minutes' walk of the sea. The matron, who meant well enough, warned us on the first day that we were expected to settle in happily with no grumbles and no tears, as she would rather have an empty bed than an unhappy patient. It was quite impossible to relax in such an atmosphere, and the more sensitive patients showed signs of strain which never left them during their stay there.

A. PATIENT.

THE METRIC SYSTEM IN MEDICINE

SIR,—Mr. Finnemore lays down in his article (Oct. 11) that "All preparations for internal administration should be written for the single dose . . . the number of doses then being stated."

May I point out that, where dangerous drugs are concerned, such practice is illegal in this country? Under the Dangerous Drugs Act the *total* amount of the drug must be clearly prescribed.

London, W.6. G. E. BREEN.

SYMPTOMS FOLLOWING GASTRECTOMY

SIR,—I am more than interested in the recent views on symptoms following partial gastrectomy. Without going into the previous literature I refer more especially to the article of Gilbert and Dunlop in the *British Medical Journal* of Aug. 30, and the article by Barnes, with an accompanying editorial, in your last issue. I suffer from somewhat similar symptoms myself.

These started a fortnight after a partial gastrectomy, during a somewhat stormy convalescence. After taking a glass of milk, in bed of course, I had an immediate sensation of extreme exhaustion and tiredness, with a consciousness of the heart's action. The really salient feature was the feeling of exhaustion. The symptoms lasted about half an hour, and as soon as I was no longer conscious of the heart's action I felt perfectly normal. The pulse-rate rose from about 70 to a little over 90, with an occasional extra-systole. This was over a year ago and since then I have had fairly frequent similar attacks, always with exactly similar onset; first I have a vague sinking feeling in the pit of the stomach; next I am conscious of the heart's action; and then I feeling of extreme exhaustion.

The symptoms may come on after a meal, but seem cycles; that is to say, one time I would have them alw breakfast, another time always after tea, and so on. I got three or four attacks a week, and then go a week any. They come on immediately after a meal, and convinced that if I lie down or rest half an hour after I don't get an attack. Once an attack is over I am fit and can do anything, until the next meal.

The nature of the food taken seems to have no on the attacks. In fact, I got a slight attack imm after taking glucose for the purposes of performing a sugar curve. The curve rose to 200 mg. per 100 ml minutes, was 100 mg. in 70 minutes, and finally fell to in 130 minutes. But, as I say, an attack started 10 minutes of taking the glucose, when my blood-s 181 mg.

I really cannot see that any of the suggested e tions of this condition apply to my own case. add that my age is 60, my blood-pressure is quite and I have no pain or discomfort whatever refe the stomach. The gastrectomy was performed chronic gastric ulcer which had recurred several and which did not respond to medical treatment.

M.

IODINE AND GOITRE

SIR,—In your leading article of May 31 you disc a recent paper of mine.[1] You properly stated "anyone who sets out to 'debunk' some estab method of preventing disease assumes a certain resp bility." I have no desire to evade responsibilit anything I have written, in that paper or any but I certainly question the use of "established reference to the prophylactic use of iodine.

You gave your readers a good and detailed acco my paper, although you did not agree with me. does not permit a recapitulation of those of my argu that you discussed and rejected. Your readers judge between us on the basis of your summary your remarks, referring to the original paper for actual evidence.

There were, however, a few considerations that did not mention. In the first place, locally prod foods play only a small part in the feeding of the cities of the U.S.A. Most of the food comes from same distant sources. If the published data are approximately correct, the amount of iodine furn by the drinking water and by the local produce be very different in such cities as Cleveland (goi and New York (non-goitrous). The leading Conti protagonist of the "iodine-lack" hypothesis, Fellenberg, conceded in 1938 [2] that he was una find a relation between the iodine content of the and the occurrence of goitre in one community. report has been severely neglected by proponents of iodine-lack hypothesis.

Even though it be conceded that this hypoth false, it might still be true that the administrati iodine should have prophylactic value, just as q and mepacine are useful in the prevention of m Unfortunately, the evidence for the value of iod not satisfactory. You did not mention the fact only two of those who reported beneficial results trolled their observations in any way, nor did you to the two reports [3,4] of an *increase* in the inciden goitre after the use of iodine.

Post hoc, ergo propter hoc is the oldest of the fall The history of goitre is replete with instances of redu in severity, at least as marked as any that have claimed to follow the use of iodine, that were ob without any known change in the intake of iodine without the slightest reason for supposing that had been any. Two such instances were mention the paper under discussion and a reference was give a previous report containing many more.[5]

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1. Greenwald, I. *J. clin. Endocrin.* 1946, 6, 708.
2. von Fellenberg, T. *Mitt. Lebensm. Hyg., Bern*, 1938, 29,
3. Shore, R. A., Andrew, R. L. New Zealand, Dept. of and Industrial Research and Dept. of Health Bulleti p. 45.
4. Ash, W. M. *J. St. Med.* 1926, 34, 627.
5. Greenwald, I. *Bull. Hist. Med.* 1945, 17, 229.

o advise on measures to prevent spread of infection, t this does not mean she will take over the duties of sanitary inspector.

It will also be the duty of the local health authority provide a home nursing service ; and there are great s to be filled here. Many large well-organised district sing associations adjoin small and impoverished ones, some areas have none. At the start most local health horities will need to make full use of existing services, viding financial support, extra equipment, and transt where these are needed. The services must be lt up so that the family doctor can count on getting aid of the district nurse with as little delay as sible. A strong case can be made, Dr. Banks gests, for placing health visiting, home nursing, and trict midwifery all under one superintendent, who keep in close touch with general practitioners in her a and see that their needs are met.

When arranging aftercare for patients discharged from pital, local health authorities will see that the home ditions are suitable for their reception, and that their ilies are given advice on their care and comfort. provision of home helps is not going to be easy, but Banks believes it can be achieved. The chief need a competent enthusiastic organiser who will get to ow the homes in her area and will herself recruit and ervise the home helps.

Ambulance services are an important item : no excuse be made for failure to provide an ambulance for a e of accident or sudden illness. Local health authori s will work out arrangements most suited to their as, some using existing voluntary organisations, ers combining the various hospital ambulance services the big cities and making them available for surnding areas, others coördinating their organisation h the fire-brigade services. This service, perhaps ve all others under the Act, must be efficient.

Finally the development of health centres must be nned, different kinds of centre being tried before any iform type is considered.

Public Health in Scotland

The report of the Department of Health for Scotland[1] the eighteen months between July, 1945, and ecember, 1946, reveals that, of the 552 men who tered the medical schools in October, 1946, 302 had charged their liability to national service ; while of 2 women entrants, 37 had seen service. Shortage of rses is no less acute in Scotland than in England ; though e number of nurses on the State register increased eadily from 14,228 in 1942 to 17,630 in 1946, and spite some increase in recruitment, the gap between mand and supply is still rapidly widening, for in 1946 ere were 7000 more hospital beds than in 1938. As ewhere, the shortage is greatest in sanatoria and ental hospitals where the nursing staff is about 30 % elow requirements.

The number of persons entitled to benefit under ational Health Insurance rose from 2,047,000 in 1938 o 2,270,000 in 1946 ; the cost per head has almost oubled and now stands at £1 1*s*. 3*d*. The rise in the apitation fee paid to doctors—from 9*s*. to 15*s*.—is thus ot as great as the rise in the cost of other services.

The general health of Scotland at the close of the ar was good. In 1945 the death-rate was 13·2 ; while n 1946 the death-rate was 13·1, the birth-rate 20·3—he highest for 20 years—and the infantile mortality-ate 53·8, which is the lowest on record. The maternal ortality-rate—2·2 and also the lowest ever recorded—has allen steadily to less than one-third of what it was in 1930. Since 1941 when stillbirth became registrable in Scotland, the rate has fallen from 40 to 32 per 1000 total births ; and the neonatal mortality-rate has fallen in the same period from 39·9 to 29 9. These two rates must always be taken together, for the distinction between stillbirth and live birth is legal, not biological.

Notifiable diseases in the period covered by the report were low in incidence and lower still in fatality : notifications of diphtheria fell from 15,069 in 1940 to 4988 in 1946 ; measles and whooping-cough are not generally notifiable in Scotland, but mortality from both diseases show the greatest fall of recent years. Appendicitis is another disease in which mortality has fallen ; it is not certain whether this is due to fall in incidence or to fall in fatality-rate ; but there is some evidence that it is due to the latter through the introduction of chemotherapy.

The incidence of tuberculosis causes some uneasiness. The mortality-rate, which by 1938 had fallen to 69 per 100,000 population, rose steadily to 84 in 1941 ; and the rates for the four succeeding years were 82, 83, 82, and 79. On December 31, 1945, the total number of people in Scotland known to be suffering from tuberculosis was 35,116. Notifications during that year totalled 8477 : 5846 pulmonary and 945 non-pulmonary over 15 years of age, and 721 pulmonary and 965 non-pulmonary under 15 years of age. Deaths numbered 3803 : 2932 pulmonary and 871 non-pulmonary.

Venereal disease, which rose steeply on the outbreak of war, started to decline in 1943. New cases recognised at the clinics in 1945 just exceeded 10,000, of which two-thirds were in males ; but cases of syphilis were equally divided between the two sexes. Patients who attended the clinics and were found not to have venereal disease numbered nearly 8000, and of the females about 50 % were found free ; this suggests that the publicity campaign is succeeding.

The important Water (Scotland) Act, 1946, requires that every new house must have an inside water-supply. Though Scotland had more houses inhabited at the end than at the beginning of the war, the position was worse than that in England. Up to the end of 1946 sites had been approved for 205,703 permanent and 31,226 temporary houses ; but only 5879 permanent and 12,556 temporary houses had been completed.

Poliomyelitis and Polioencephalitis

In the week ended Oct. 4 there was a further slight decline in the notifications of poliomyelitis to 402 (from 441) and of polioencephalitis to 27 (from 32). As was to be expected, the decline since the peak figure of 662 notifications of poliomyelitis in the week ended Sept. 6 has been much slower than the rise had been. It seems probable therefore that a relatively high incidence may persist at any rate throughout the rest of this year. If there is a relatively high winter incidence it will be possible to compare the epidemiological behaviour of the disease in summer and in winter. The rise and fall of the notifications for the last eight weeks is depicted in the table below.

Week ended	No. of cases notified		Percentage increase or decrease in poliomyelitis on preceding week
	Poliomyelitis	Polio-encephalitis	
Aug. 16 ..	646	45	+13·5
,, 23 ..	626	50	− 3·1
,, 30 ..	612	45	− 2·2
Sept. 6 ..	662	46	+ 8·1
,, 13 ..	572	42	−13·5
,, 20 ..	571	23	− 0·2
,, 27 ..	442	32	−22·6
Oct. 4 ..	402	27	− 9·05

In the county of London there were 8 more notifications of poliomyelitis (38 from 30) and 2 less of polioencephalitis (3 from 5). So far this year the deaths ascribed to poliomyelitis and polioencephalitis together in London have numbered 36. This compares favourably with the number of deaths ascribed to whooping-cough (68) and to road traffic accidents (247).

Perhaps the most noteworthy decline in notifications of poliomyelitis this week was in the West Riding of Yorkshire, where the figure fell to 18 from 34.

Infectious Disease in England and Wales

WEEK ENDED OCT. 4

Notifications.—Smallpox, 0 ; scarlet fever, 1086 ; whooping-cough, 1086 ; diphtheria, 218 ; paratyphoid, 16 ; typhoid, 12 ; measles (excluding rubella), 1256 ; pneumonia (primary or influenzal), 330 ; cerebrospinal fever, 46 ; poliomyelitis, 402 ; polioencephalitis, 27 ; encephalitis lethargica, 1 ; dysentery, 97 ; puerperal pyrexia, 134 ; ophthalmia neonatorum, 46. No case of cholera, plague, or typhus was notified during the week.

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[1] Report of the Department of Health for Scotland. July, 1945—December, 1946. H.M. Stationery Office. 3*s*. 6*d*.

twice daily—where poliomyelitis has made an appearance. The practice, in such circumstances, of a momentary plunge into antiseptic before placing the thermometer in yet another mouth is to be viewed with apprehension. Nor is the danger special to poliomyelitis: in the case of other virus infections that dwell in the mouth—e.g., those of influenza, the common cold, measles, mumps, and herpes—a similar risk may be incurred; while in your columns on July 19 Mr. Green and Dr. Penfold effectively displayed the possibilities of bacterial contamination.

The best plan surely would be to take temperatures in the axilla rather than the mouth.

London, W.1. MICHAEL ALBURY.

STILBAMIDINE IN MULTIPLE MYELOMA

SIR,—Dr. Napier, in his letter of Sept. 27, draws attention to the late facial neuropathy that frequently follows a course of injections of stilbamidine. Many regard this distressing sequela as a contra-indication to the use of the drug in kala-azar, except in antimony-resistant cases. Even in such cases, its use is no longer necessary now that pentamidine has been shown to be quite as effective (if somewhat slower in its action), provided that it be given in a dosage higher than that originally used by the Calcutta workers.

The manufacturers of stilbamidine would, before now, have withdrawn that drug but for the discovery of its limited value in myelomatosis, in which it often effects early relief of intolerable pain and a partial recovery that may be maintained for many months.

It is to be hoped that Dr. Napier's warning regarding the toxicity of stilbamidine will prevent the further use of that compound in kala-azar, but it would be unfortunate were it to dissuade doctors from prescribing it for a still more serious disease, in which it appears pentamidine may be substituted successfully in only a minority of cases.

May & Baker Ltd., Dagenham. ROBERT FORGAN.

A CAUSE OF FAILURE IN SYMPATHECTOMY ?

SIR,—Your leading article on Sept. 27 referred to an investigation carried out by me.[1] In that study the work of Simmons and Sheehan[2] was confirmed. By ulnar-nerve block it was found that no active sympathetic fibres are present in the main nerves of the upper extremity in the early weeks following either cervicothoracic ganglionectomy or preganglionic section (the Telford operation). I further showed that any sympathetic activity which returned later could be temporarily abolished by procaine block of the thoracic portion of the sympathetic chain, without causing a Horner's syndrome or any sensory or motor changes in the extremity. These findings indicate that the return of sympathetic activity in the hand after operation is not due to the activity of undivided sympathetic fibres lying wholly in the 8th cervical and 1st thoracic spinal nerves or to activity in the small ganglia lying in relation to the spinal nerves of the brachial plexus, as suggested by Skoog.[3]

Regeneration is the only explanation of these observations. This has often been demonstrated in the sympathetic chains of cats and dogs, but its acceptance as the explanation of returned sympathetic activity in man has been slow. Admittedly, it is hard to visualise how the fibres find their way back past the barriers imposed at operation, but they have been shown to have an uncanny power of overcoming obstacles in animals. For conclusive proof of regeneration in man I recently dissected at post-mortem examination the sympathetic chains of a patient who had bilateral lumbar and left cervicothoracic ganglionectomy carried out fifteen years ago, the 2nd, 3rd, and 4th lumbar ganglia and the left cervicothoracic and 2nd thoracic ganglia being removed.

At the time of operation the patient, a female then aged 50, suffered from severe attacks of Raynaud's syndrome in the hands and feet. After the cervicothoracic ganglionectomy there was a well-marked Horner's syndrome which persisted till death, and the left hand was warm, pink, and dry. The condition relapsed, however, about a year after operation. The foot also showed a good result for tw and then gradual relapse.

At post mortem the chains were found to be with no gaps in either lumbar or cervicothoracic regi the mid-lumbar zone the cords were slender and cont ganglia, but were connected to the spinal nerves b communicantes. In the cervicothoracic region ganglion was present in the site of the normal cervico ganglion, and there were numerous rami commu from it to the lower spinal nerves of the brachial There was, in fact, little difference between the operat unoperated sides, except that there was scar tissue ro chain on the former. Regeneration had thus taken very completely in this case.

The persistence of the Horner's syndrome has claimed by some to indicate that regeneration d occur, but in my experience it is the ptosis which and not the miosis. The lasting ptosis can be ex by degeneration of the part of the levator pal superioris supplied by the sympathetic, after its d tion; although the nerve supply may grow bac muscle has lost its power of recovery.

Regeneration occurs frequently after sympath but it is usually very incomplete, and there is no that the great majority of suitable cases are perm benefited by sympathectomy.

I wish to express my thanks to Mr. F. R. Brown, of D for kindly supplying details of the operations and of clinical course. H. A. HAXT

Neurovascular Clinic, Manchester Royal Infirmary.

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1. Haxton, H. A. *Brit. J. Surg.* 1947, 35, 69.
2. Simmons, H. T., Sheehan, D. *Ibid*, 1939, 27, 234.
3. Skoog, T. *Lancet*, Sept. 27, 1947, p. 457.

Public Health

The Third Part

THE third part of the National Health Service dealing with the duties of the new local authorities, has given rise to much discussion and misgivings. Dr. A. L. Banks,[1] of the Ministry of H has lately reviewed some of the points raised.

The responsibilities laid on the new authorities at first sight appear to be merely extensions of the disconnected powers of the past; but this, he sho is not so. For example, the sections relating to midwifery service, the care of mothers and yo children, health visiting, home nursing, immunis ambulance services, and health centres are all de to make the local health authority provide, for p in their homes, the sort of care needed to supple the clinical care given by general practitioners hospitals. The midwifery service will prove par larly difficult to organise, and it is now agreed that ideal will be a team in each area under the ge supervision of an obstetric consultant attached to hospital. The teams will consist of domiciliary midwi and of general practitioners with special experience midwifery, together with the appropriate medi officers of the present local-authority maternity servi He noted that in arranging for the general care expectant and nursing mothers, and of children und the age of five, the local health authority must en continuous medical care for both mother and child, it will be necessary to arrange that medical records continuous, extending from infancy into school adult life.

The position of health visitors has caused so uneasiness; they are to "give advice" on the care expectant and nursing mothers, young children, people suffering from illness, and also on meas necessary to prevent the spread of infection. Dr. Banks explained, is not to be interpreted as infringement of the duties of the family doctor; and instanced the case of a household where the mother is a late stage of pregnancy, one of the young children whooping-cough and possibly early bronchopneumo and an elderly somewhat senile relative lurks in background. Here the health visitor, in agreement the general practitioner, will arrange for a home help, advise the mother on the care of the children, and the best way to deal with the aged relative. She mbers of the Association of Industrial Medical Officers. m the time of its formation in 1935, he guided it through early turbulent years characteristic of the develop- nt of any virile society. Moreover, he was responsible the drafting of a new constitution which, only too lly, he will not see in practice. All those engaged in day-to-day work in factories will vouch for his out- nding qualities of friendship, his great wisdom, and sure dance. His capacity for giving a sound opinion in ew words was perhaps unequalled by anyone in the d of industrial medicine in our time. He was largely ponsible for the high degree of collaboration between Factory Department of the Ministry of Labour and tional Service and the industrial medical officer, ollaboration which proved of the greatest benefit h to the department and to industry."

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[1] Inaugural address to the summer school of the Women Health Officers Association, 1947.

r. S. H. Wilkes, senior chemical inspector in the tory Department, adds: "No-one without medical wledge would presume to discuss Dr. Bridge's work industrial medicine. But that work necessarily uired him to coöperate with colleagues whose qualifica- ns were in fields other than medicine, and his coöpera- n there deserves the highest praise. Harmony ongst a group of specialists in different, but overlap- g, fields can be maintained only by the exercise of sual sympathy, tact, and good-fellowship. Dr. dge possessed those qualities in an unusual degree, that is why he was so successful as a leader of diverse ms. Always ready to give advice and encourage- nt directly, unconsciously, he was also always giving m indirectly by his example of enthusiasm, of zeal, , at the proper times, of restraint."

Appointments

PP, P. A., M.R.C.S.: M.O., Malaya, Colonial Service.

ELL, R. A., M.A., M.B. Aberd., D.P.H.: asst. county M.O., Staffs, and M.O.H., Willenhall.

EN, ELCHON, M.D. Camb., M.R.C.P.: pædiatrician, Whipp's Cross Hospital, London.

RER, HENRY, M.D. Prague, D.P.H.: pathologist, Doncaster Royal Infirmary.

LEOD, J. G., M.B. Edin., M.R.C.P.E.: asst. physician, public health department, Edinburgh.

e Hospital for Sick Children, Great Ormond Street, London:

BURNARD, E. D., M.B.N.Z., M.R.C.P.: house-physician.

DAVIES, P. M., M.B. Lond., D.P.H., D.M.R.: asst. radiologist.

GREEN, DORA, B.SC., M.R.C.S.: house-surgeon, ear, nose, and throat department.

MCROBERT, CATHERINE, M.B. Madras: house-surgeon.

PILCHER, M. F., M.B. Lond.: orthopædic registrar.

STEVENSON, MAUDE, M.B. Belf.: asst. resident medical officer, Tadworth Court.

WELLER, S. D. V., M.B. Lond.: house-physician.

e Canadian Red Cross Memorial Hospital, Taplow:

BYWATERS, E. G. L., M.B. Lond., M.R.C.P.: director of research unit on juvenile rheumatism.

GLYNN, L. E., B.SC., M.D. Lond., M.R.C.P.: director of department of pathology.

t Education Committee School Health Service:

Asst. County M.O.H.:

ASQUITH, RAYMOND, M.B. Lond., D.C.H.

MCCALL, A. M., M.R.C.S.

TAYLOR, BARBARA, M.R.C.S., D.P.H.

ty of Plymouth Municipal Hospitals:

ALCOCK, N. S., M.D. Edin., M.R.C.P.: neurologist.

WHITLOCK, F. A., M.B. Camb., M.R.C.P.: dermatologist.

Births, Marriages, and Deaths

BIRTHS

CTON.—On Oct. 5, at Croydon, the wife of Dr. Hugh Acton, M.B.E.—a daughter.

LARKE.—On Oct. 8, the wife of Dr. E. G. W. Clarke—a daughter.

DAVIES.—On July 20, to Patience Barclay, M.R.C.P., wife of Arthur Davies—a son.

MOORE.—On Oct. 11, at Manchester, the wife of Dr. W. K. S. Moore—a son.

STOKES.—On Oct. 3, in London, the wife of Dr. J. F. Stokes—a son.

MARRIAGES

MITCHELL—LYELL.—On Oct. 7, at Bolton-le-Sands, Robert Imrie Mitchell, M.B.E., lieut.-colonel, R.A.M.C., to Marion Lyell.

THOMAS—ANDERSON.—On Oct. 8, at Northwood, Harold Ernest Thomas, M.B., to Elizabeth Jean Anderson.

DEATHS

BRADBROOKE.—On Oct. 5, at Horsham, Hugh Nash Bradbrooke, M.A., D.M. Oxfd, M.R.C.P., D.P.M.

COBB.—On Oct. 8, William Grahame Cobb, D.S.O., M.B. Edin., aged 69.

KIRK.—On Oct. 9, Charles Joseph Kirk, M.B. Glasg.

SCOTT.—On Oct. 6, in London, Edward Spencer Scott, B.A., M.D. Camb.

Notes and News

RESETTLING THE DISABLED

HITHERTO hospitals have used the form R.D.1 to notify the Ministry of Labour of patients about to be discharged with residual disability. The Ministry of Health announces in a circular (no. 154/47) that in future this will be used only for Service cases medically boarded at E.M.S. hospitals; otherwise it is to be replaced by a new and simpler form, D.P.55. The circular calls for closer liaison between hospital authorities and the local officers of the Ministry of Labour. Hospitals are urged to acquaint patients with the opportunities that may be found under the Disabled Persons (Employment) Act; and disablement resettlement officers will be on call for visits to hospitals at intervals of not less than three months. At some hospitals medical interviewing committees are to be set up for the purpose of providing resettlement officers with expert medical guidance.

CARE OF BABIES IN THE TROPICS

Dr. John Gibbens has written a capable little pamphlet [1] on the problems which face the young mother in the tropics. His tone is reassuring, but he warns her against likely dangers and teaches her how to become a sanitary inspector, on a small scale, in her own home, how to prevent contamination of food, how to make dangerous foods safe, how to get rid of flies and mosquitoes, and how to arrange the baby's day so as to protect him from heat and yet give him his airings. The notes on milk and milk foods are specially full and competent, and there is also plenty of guidance about the child's clothing and rest, and the care of the skin. The advice on inoculation and on the importance of calling the doctor early in case of illness should be closely followed.

University of Cambridge

During August and September the title of the degrees of M.B., B.CHIR. was conferred on J. M. Cockrell, J. Crossley, H. A. Jaques, M. R. Simpson, and S. G. Wills. The title of the degree of M.B. was also conferred on M. Sutcliffe.

University of Edinburgh

Dr. A. P. Meiklejohn has been appointed lecturer in nutrition in the department of medicine.

Royal College of Obstetricians and Gynæcologists

On Oct. 3 the following were admitted to the fellowship:

G. S. Brown, G. A. Davies, G. P. FitzGerald, A. M. Johns, F. G. McGuinness, Ronald McRobert, R. C. Thomas.

The following were admitted to the membership:

H. B. Bagshaw, G. H. Bancroft-Livingston, Isabella R. Bishop, J. T. S.-Brown, Gwendoline E. Cockrem, J. McD. Corston, G. A. Craig, K. J. R. Cuthbert, G. L. Daly, R. W. Danziger, B. C. Dastur, Josephine A. Davidson, N. E. C. de la Hunt, W. P. G. Dickson, Ian Donald, I. A. Donaldson, Sara M. Field-Richards, T. B. FitzGerald, I. T. Fraser, A. M. Giles, A. McM. Graham, E. F. B. Hamilton, A. J. Hardy, Lois E. Hurter, D. W. James, D. H. Lees, Max Lipsitz, G. I. Louisson, William Love, C. J. MacKinlay, J. T. Mair, Parvati Malkani, Eileen C. Miller, W. G. Mills, P. R. Mitchell, J. D. Murdoch, Mary L. Neville, E. R. Ormerod, H. G. Page, Nancy Perry, E. E. Philipp, J. G. Pritchard, Eric Rawlings, Elizabeth M. Rose, D. A. Fletcher Shaw, D. J. N. Smith, R. A. R. Taylor, James Walker.

Parliamentary Appointment

Mr. Herbert Morrison, Lord President of the Council, has appointed Dr. Stephen Taylor, M.P., to be his parliamentary private secretary.

Ministry of Food

Mr. Norman Wright, D.SC., has been appointed chief scientific adviser to the Minister of Food in succession to Sir Jack Drummond, F.R.S. Dr. Wright has been seconded from his post as director of the Hannah Dairy Research Institute for the duration of his new appointment.

Moyne Institute of Preventive Medicine

As a memorial to the late Lord Moyne, his family are to build and equip an institute of preventive medicine, in Trinity College, Dublin. The institute will provide accommodation for teaching and research in bacteriology and immunology and will also house the new department of social medicine which the college authorities have decided to establish.

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1. The Care of Babies and Young Children in the Tropics. National Association of Maternity and Child Welfare Centres, 5, Tavistock Place, London, W.C.1. Pp. 15. 1s.

Deaths.—In 126 great towns there were 3 (1) deaths from enteric fever, 1 (0) from scarlet fever, 1 (0) from measles, 4 (0) from diphtheria, 9 (3) from whooping-cough, 85 (7) from diarrhœa and enteritis under two years, and 5 (1) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 204 (corresponding to a rate of 22 per thousand total births), including 30 in London.

Obituary

ERIK LYSHOLM

Prof. Erik Lysholm, the eminent Swedish radiologist, died in Stockholm on Sept. 26.

The son of a Swedish army officer and of a Scottish mother, he was born in Stockholm in 1891 and educated at Uppsala University. In the early 'twenties he took up radiology in Stockholm, where he worked for the remainder of his life, mainly at the Serafimer Hospital. Stockholm at that time provided suitable soil for Lysholm's growth. When he began the study of radiology that specialty had developed further in Sweden than in any other country. This was largely due to the energy and ability of Prof. Gösta Forssell, the "grand old man" of Swedish radiology. Forssell had an aptitude for picking able pupils and Erik Lysholm was the most able of them all.

Lysholm's first work was to place the radiography of the skull on a sound basis. Good work had already been done in this sphere, notably by Schüller of Vienna, and others had given their names to various special techniques; but there was no standard method of investigation. Furthermore, the quality of skull X-ray films left much to be desired. Lysholm solved these problems with the aid of his mechanical ability and by association with his friend, the engineer, Georg Schonander. The Lysholm precision skull X-ray apparatus has gradually evolved during the last twenty years and is now so good that it is difficult to imagine improvements. A more important contribution to radiography from the fundamental physical aspect was the Lysholm grid. This grid—designed to eliminate scattered X-radiation and thus improve the quality of X-ray pictures—was like many great inventions simple enough in construction, but needed a man of Lysholm's powers to design it. Sometimes known also as the Schonander grid or Swedish grid, it is used in X-ray departments throughout the world.

Neither the skull apparatus nor the grid give any picture of Lysholm's capacity as a doctor. It was always his dictum that radiology should be a form of living morbid anatomy, and the potential truth of this dictum cannot be better illustrated than by his work in neuroradiology. Ventriculography and encephalography had been used for some ten years before Lysholm set to work in studying the possible applications. In the 'twenties brain tumours could be "lateralised," but after working for some ten years on the subject, in association with Olivecrona the neurosurgeon, Lysholm showed that nearly all brain tumours could be exactly localised radiographically, that their size and shape could be displayed, and that often the pathology could be predicted. In 1937 he published his famous monograph, *The Ventriculogram*, based on nearly 500 confirmed cases.

His work in neuroradiology was so outstanding that other lesser advances he made tend to be obscured. For instance, the outlining of the pancreas by filling the stomach with gas was his idea. The accurate measurement of the heart volume was worked out by him some ten years ago, and no better method has been devised since. In later years his main interests were in cineradiology and the use of radioactive isotopes in radiology.

Part of Lysholm's genius was an ability to inspire and stimulate his associates. Many papers from his X-ray department do not bear his name, and in many others he appears only as part author. But his brain was behind the work. Radiologists visited him from all over the world and carried his methods home with them. Though he was by nature shy and modest, his charm and quick wit endeared him to all. After Forssell's retirement from active work some y he directed the Serafimer school of radiology w efficiency in the routine X-ray investigation of combined with scientific advancement, is a model for radiological world.

He leaves a widow, but no children.

HAROLD COURTNEY GAGE

M.R.C.S., F.F.R.

Dr. H. Courtney Gage, director of the radi department at St. Mary's Hospital, London, di Oct. 4 within a few days of his 62nd birthday.

Early in the first world war, while serving with Essex Yeomanry, Courtney Gage was wounded invalided out of the Army. Before 1914 he had as a radiographer with Sir James Mackenzie Dav and he soon returned to France as a captain i American Red Cross to take charge of the radio work at Ris Orangis and at two large French hospitals. His original techniques for the investi of spinal injuries and localisation of foreign bodies appeared in the *Journal de Radiologie*, but in 19 republished the second method in this country *monograph.*

After the war he began his medical studies at Mary's Hospital with the intention of speciali radiology, and when he qualified in 1924 he had be him unrivalled technical experience. Two years he was elected assistant radiologist to St. Mary's and 1935 he was appointed director of the department. was also elected to the staffs of the Hampstead Ge Hospital and St. Luke's Hostel.

Gage's modesty led him perhaps to exaggerate handicap which his deafness would have prove presiding over business, and he preferred to serv specialty as an advisor and counsellor. He w member of the councils of the British Institut Radiology, of the section of radiology of the Royal Soc of Medicine, of the Medical Defence Union, and of British X-ray and Radium Protection Committee. also served as editor of the *British Journal of Radi* and in 1943 when he retired from the chair the insti made him an honorary member. A founder fellow the Faculty of Radiologists, he was the first exam in diagnostic radiology for its fellowship. During late war Gage did much to foster the developmen mass miniature radiography, and for his services to Norwegian forces in this country he was appointe knight of the Royal Order of St. Olaf.

"The stimulus of Gage's unlimited enthusiasm," wri J. A. B., "was infectious, both in radiology and in many hobbies (chief of which were music and pho graphy), and to help his friends he would spare neit time nor pains but gave freely of his vast experie and his many original ideas for which he would acc no credit. As a host he was delightful and genero and with his boyish good humour made each gather a memorable occasion. His almost uncanny wisdom radiology gave the impression that he looked not but through a film and saw behind it the patient." T. H. pays tribute to his gentleness of manner and unchanging kindness, and adds: "Always ready help, Gage was genuinely proud when he was appea to by colleagues either for advice or assistance—no-o enjoyed having his brains picked more than he di and no-one regarded it as a higher privilege to he than he. If honesty of mind, kindness, and patie represent the highest attributes of character Gage m be placed in the front: with these, his quiet assura and wonderful grasp of his specialty made him a m whom no-one could meet without feeling both affecti and respect."

DR. J. C. BRIDGE

A. J. A. writes: "As a very junior and inexperien industrial medical officer, I met Dr. Bridge early in 19 and we formed a friendship at our first meeting whi not only lasted but became stronger as the years pas His profound knowledge of English industry, of indu trial medicine and the law was always at the dispo of all industrial medical officers and indeed of indust nurses throughout the country. One of the first honor

MEDICINE, SCIENCE, AND LEARNING *

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M.D. Manc., M.S. Lond., F.R.C.S , F.A.C.S.
PROFESSOR OF ORTHOPÆDIC SURGERY,
UNIVERSITY OF MANCHESTER

THE practice of medicine is now engaged in extending horizon and jurisdiction from the individual, and his nediate needs as an isolate, to the circumstances of social and industrial environment. Such considera-ns at once bring up the important question whether not those who have chosen to follow the vocation of dicine will find themselves adequately equipped meet the new demands of the age which lies before m. The responsibilities which society has come place upon the doctor, as guide, philosopher, and nd in his community, cannot be fulfilled by the r of mere technical skill; nor in fact has craftsman- been the sole or even the main contribution of profession to past generations. I believe that we say with due humility that the profession of medicine by long tradition, at once liberal, scientific, and med. This is not to say that in every practising doctor can yet see both the scholar and the scientist. But does mean that such a man is conscious of the fact it he belongs to a profession which regards such ibutes as its rightful heritage.

THE LIBERAL TRADITION

The tradition of medicine as an independent, self-ning guild, with its own special code of ethics, ne of its most cherished possessions. It is based a sense of sharing in what we feel to be a continuous orical process, extending over a span of more than 00 years from the age of Greek science to the present y. This deeply rooted Hippocratic tradition is in ge part responsible for the individualistic attitude of average doctor, and for his feeling of personal freedom m some of the restraints of society, as exemplified his insistence on the need for the preservation of the ctor-patient relationship, and his instinctive challenge the Law when it conflicts with the Hippocratic code. e these liberal virtues it may be asked? But we are ncerned not with examples of the behaviour of dividuals under certain provocations, but with the tellectual and ethical standards set before a profession ideals to which all are expected to strive to attain.

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Bertrand Russell, in a whimsical and lucid moment of over-simplification, has distinguished two categories of humans as comprising our modern civilisation—those who move pieces of matter about on the face of the earth, and those who order them to do it. We may wonder where the liberal professions come into this drab picture of the managerial revolution. But we should all agree that human societies owe much to the liberal professions, among which I have been bold enough to place medicine. The debt has been amply repaid, for in the past such professions have been accorded a position of special privilege. In a rapidly changing world, where for a brief interlude in the history of man traditional ethical and social values are in the melting-pot, we may ask what privileges a liberal profession can reasonably demand in the future. For the profession of medicine the answer is simple—intellectual freedom and a large measure of self-government. These are not unreasonable demands; they should not be the special possession of an élite preoccupied with its own survival. They are in fact essential to the "good life" in every one of the various groups which make up the mosaic pattern of a true democratic society. It is our duty to proclaim that we intend to preserve such freedoms at all cost.

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Royal Society of Arts

The following Cantor lectures have been arranged for January and February: Dr. C. H. Andrewes, F.R.S., Progress in the Fight against the Common Cold (Jan. 26); Prof. A. C. Frazer, Metabolism of Fats (Feb. 2); and Sir Jack Drummond, D.SC., F.R.S., Fats in the Life of the Nation (Feb. 9). The lectures will all be held at 4.30 P.M. at the house of the society, John Adam Street, London, W.C.2.

Central Midwives Board

Prof. F. E. Tylecote has been elected a member board on the nomination of the Association of M Corporations.

Society of Chemical Industry

A meeting of the nutrition panel will be held at Burl House, Piccadilly, London, W.1, at 6.30 P.M., on We Oct. 29. Prof. Alexander Haddow and Mr. L. A. Elson, will read a paper on Food and Cancer.

CORRIGENDUM.—With regard to his article of (p. 553) on the metric system in medicine, Mr. Finnemore writes: "The abbreviations I recomme my MS. were kilogram, *kgm.*; gramme, *gm.*; m *mgm.*; microgram, *microgm.*; and micromil, *microml.* not advise the use of the Greek letter μ for micro, as I it might lead to mistakes."

Diary of the Week

OCT. 19 TO 25

Monday, 20th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
6.15 P.M. Dr. Robert Cope: Anæsthesia for Babie Children.
SOCIETY OF APOTHECARIES OF LONDON, Black Friars Lane, E.
5 P.M. Dr. Andrew Wilson: Thyrotoxicosis and Thiourac
WESTMINSTER HOSPITAL, Horseferry Road, S.W.1
5 P.M. (Meyerstein lecture theatre.) Sound film on Detection of Unsuspected Tuberculosis in Hospital patients; clinico-pathological demonstration of Gene Amyloidosis in Pulmonary Tuberculosis.

Tuesday, 21st

ROYAL COLLEGE OF SURGEONS
6.15 P.M. Dr. V. F. Hall: Postanæsthetic Treatment.
ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
5 P.M. *Experimental Medicine.* Dr. J. Trueta, Prof. Franklin: Renal Circulation.
8.15 P.M. *Pathology.* Dr. A. B. Rosher: *H. influenzæ* Pathogenicity.
SOCIETY OF APOTHECARIES
5 P.M. Prof. B. G. Maegraith: Modern Therapy in Tro Medicine.
UNIVERSITY COLLEGE, Gower Street, W.C.1
5.15 P.M. (Department of Physiology.) Dr. Bernard Transmission of Excitation in Nerve and Muscle. (of six lectures.)
LONDON SCHOOL OF DERMATOLOGY, 5, Lisle Street, W.C.2
5 P.M. Dr. F. R. Bettley: Eczema.
SOCIETY FOR THE STUDY OF ADDICTION
4 P.M. (11, Chandos Street, W.1.) Dr. A. E. Carver: Alcoh from the Psychosomatic Point of View.
EUGENICS SOCIETY
5.30 P.M. (Burlington House, Piccadilly, W.1.) Mr. R Bramwell, LL.B.: Galton's Hereditary Genius and Three following Generations since 1869.

Wednesday, 22nd

ROYAL COLLEGE OF SURGEONS
5 P.M. Mr. H. F. Lunn: Anatomy of Inguinal Hernia. (and Gale lecture.)
SOCIETY OF APOTHECARIES
5 P.M. Dr. W. S. C. Copeman: Therapeutics of the Rheu Diseases.

Thursday, 23rd

ROYAL SOCIETY OF MEDICINE
8 P.M. *Urology.* Mr. W. W. Galbraith: Modern Trends Prostatic Surgery. (Presidential address.)
SOCIETY OF APOTHECARIES
5 P.M. Dr. James Craigie, F.R.S.: Virus Diseases—Immunol (First of two lectures.)
SOCIETY OF MEDICAL OFFICERS OF HEALTH
6 P.M. (B.M.A. House, Tavistock Square, W.C.1.) Dr. Frede Hall: Economics of Public Health. (Presidential addr
HONYMAN GILLESPIE LECTURE
4.30 P.M. (Edinburgh Royal Infirmary.) Prof. John McMich Heart-failure of Pulmonary Origin.

Friday, 24th

ROYAL COLLEGE OF SURGEONS
5 P.M. Mr. H. F. Lunn: Pelvis and the Erect Posture. (Ar demonstration.)
LONDON CHEST HOSPITAL, Victoria Park, E.2
5 P.M. Dr. Bertram Jones: Some Types of Pneumonia.
UNIVERSITY OF EDINBURGH
5 P.M. (Anatomy lecture theatre.) Prof. Neil Hamilton Fairl F.R.S.: Chemotherapy in Malaria. (Cameron lecture.)

Saturday, 25th

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES
2.30 P.M. (11, Chandos Street, W.1.) Dr. C. S. Nicol: Gonor rhœa in the Female with Special Reference to Rectal Infection.
NUTRITION SOCIETY
10.30 A.M. (London School of Hygiene, Keppel Street, W.C.1 Conference on British Needs and Resources of Calories, Protein, and Calcium.

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M.D. Manc., M.S. Lond., F.R.C.S., F.A.C.S
PROFESSOR OF ORTHOPÆDIC SURGERY,
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Society of Chemical Industry

A meeting of the nutrition panel will be held at Burli House, Piccadilly, London, W.1, at 6.30 P.M., on W Oct. 29. Prof. Alexander Haddow and Mr. L. A. Elson, will read a paper on Food and Cancer.

CORRIGENDUM.—With regard to his article of (p. 553) on the metric system in medicine, Mr. Finnemore writes: "The abbreviations I recomme my MS. were kilogram, *kgm.*; gramme, *gm.*; n *mgm.*; microgram, *microgm.*; and micromil, *microml.* not advise the use of the Greek letter µ for micro, as I *it might lead to mistakes.*"

Diary of the Week

OCT. 19 TO 25

Monday, 20th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
6.15 P.M. Dr. Robert Cope: Anæsthesia for Babies Children.
SOCIETY OF APOTHECARIES OF LONDON, Black Friars Lane, E.C
5 P.M. Dr. Andrew Wilson: Thyrotoxicosis and Thiourac
WESTMINSTER HOSPITAL, Horseferry Road, S.W.1
5 P.M. (Meyerstein lecture theatre.) Sound film on Detection of Unsuspected Tuberculosis in Hospital patients; clinico-pathological demonstration of Gener Amyloidosis in Pulmonary Tuberculosis.

Tuesday, 21st

ROYAL COLLEGE OF SURGEONS
6.15 P.M. Dr. V. F. Hall: Postanæsthetic Treatment.
ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
5 P.M. *Experimental Medicine.* Dr. J. Trueta, Prof. Franklin: Renal Circulation.
8.15 P.M. *Pathology.* Dr. A. B. Rosher: *H. influenzæ* Pathogenicity.
SOCIETY OF APOTHECARIES
5 P.M. Prof. B. G. Maegraith: Modern Therapy in Tr Medicine.
UNIVERSITY COLLEGE, Gower Street, W.C.1
5.15 P.M. (Department of Physiology.) Dr. Bernard Transmission of Excitation in Nerve and Muscle. (of six lectures.)
LONDON SCHOOL OF DERMATOLOGY, 5, Lisle Street, W.C.2
5 P.M. Dr. F. R. Bettley: Eczema.
SOCIETY FOR THE STUDY OF ADDICTION
4 P.M. (11, Chandos Street, W.1.) Dr. A. E. Carver: Alcoh from the Psychosomatic Point of View.
EUGENICS SOCIETY
5.30 P.M. (Burlington House, Piccadilly, W.1.) Mr. B. Bramwell, LL.B.: Galton's Hereditary Genius and Three following Generations since 1869.

Wednesday, 22nd

ROYAL COLLEGE OF SURGEONS
5 P.M. Mr. H. F. Lunn: Anatomy of Inguinal Hernia. (and Gale lecture.)
SOCIETY OF APOTHECARIES
5 P.M. Dr. W. S. C. Copeman: Therapeutics of the Rheum Diseases.

Thursday, 23rd

ROYAL SOCIETY OF MEDICINE
8 P.M. *Urology.* Mr. W. W. Galbraith: Modern Trends Prostatic Surgery. (Presidential address.)
SOCIETY OF APOTHECARIES
5 P.M. Dr. James Craigie, F.R.S.: Virus *Diseases*—Immunol (First of two lectures.)
SOCIETY OF MEDICAL OFFICERS OF HEALTH
6 P.M. (B.M.A. House, Tavistock Square, W.C.1.) Dr. Frede Hall: Economics of Public Health. (Presidential ad
HONYMAN GILLESPIE LECTURE
4.30 P.M. (Edinburgh Royal Infirmary.) Prof. John McMich Heart-failure of Pulmonary Origin.

Friday, 24th

ROYAL COLLEGE OF SURGEONS
5 P.M. Mr. H. F. Lunn: Pelvis and the Erect Posture. (A demonstration.)
LONDON CHEST HOSPITAL, Victoria Park, E.2
5 P.M. Dr. Bertram Jones: Some Types of Pneumonia.
UNIVERSITY OF EDINBURGH
5 P.M. (Anatomy lecture theatre.) Prof. Neil Hamilton Fairl F.R.S.: Chemotherapy in Malaria. (Cameron lecture.)

Saturday, 25th

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES
2.30 P.M. (11, Chandos Street, W.1.) Dr. C. S. Nicol: Gonor rhœa in the Female with Special Reference to Rectal Infection.
NUTRITION SOCIETY
10.30 A.M. (London School of Hygiene, Keppel Street, W.C.1 Conference on British Needs and Resources of Calories Protein, and Calcium.

EDICINE, SCIENCE, AND LEARNING*

HARRY PLATT
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HE practice of medicine is now engaged in extending iorizon and jurisdiction from the individual, and his iediate needs as an isolate, to the circumstances of social and industrial environment. Such considera-s at once bring up the important question whether ot those who have chosen to follow the vocation of licine will find themselves adequately equipped neet the new demands of the age which lies before n. The responsibilities which society has come place *upon the doctor, as guide, philosopher, and* id in his community, cannot be fulfilled by the r of mere technical skill; nor in fact has craftsman- been the sole or even the main contribution of profession to past generations. I believe that we say with due humility that the profession of medicine by long tradition, at once liberal, scientific, and hed. *This is not to say that in every practising doctor* can yet see both the scholar and the scientist. But loes mean that such a man is conscious of the fact t he belongs to a profession which regards such ibutes as its rightful heritage.

THE LIBERAL TRADITION

he tradition of medicine as an independent, self- ning guild, with its own special code of ethics, e of its most cherished possessions. It is based a sense of sharing in what we feel to be a continuous orical process, extending over a span of more than 0 years from the age of Greek science to the present . This deeply rooted Hippocratic tradition is in e part responsible for the individualistic attitude of average doctor, and for his feeling of personal freedom m some of the restraints of society, as exemplified his insistence on the need for the preservation of the tor-patient relationship, and his instinctive challenge the Law when it conflicts with the Hippocratic code. these liberal virtues it may be asked? But we are ncerned not with examples of the behaviour of ividuals under certain provocations, but with the ellectual and ethical standards set before a profession ideals to which all are expected to strive to attain.

Walshe (1945), one of the most profound thinkers in itish medicine, has recently come to the conclusion— uctantly I suspect—that medicine is a useful rather an a liberal profession, a view which was also held by lfred Trotter, the philosopher-surgeon. Walshe has ken as his yard-stick Cardinal Newman's definition of eral knowledge as, among other attributes, "refusing be informed (as it is called) by any end." I find myself n this occasion unconvinced by Walshe's argument. he utilitarian or instrumental rôle of medicine is surely bvious enough, but this description of one of its functions oes not represent the total contribution which medicine s a liberal profession has to offer to the life of the com- unity. The claim of medicine to be regarded as one f the liberal professions cannot be decided on intellectual rounds alone. It is on wider issues that we must be udged. Such are the existence of a corporate sense f values; the acceptance of a historic ethical code hich has fostered a demand for intellectual liberty and elf-government; and, not least, the empirical tradition ith its tolerance of new ideas and its ultimate rejection f all dogmatic systems. These, in my judgment, are the liberal virtues on which we confidently base our claim to recognition.

ESSENTIAL FREEDOMS

I have referred to the sense of independence and freedom which for many generations both the doctor as an individual and the profession in its corporate form have come to regard as a natural right. This feeling of membership of a society within society—comparable to the independent 17th-century Puritan society of Grace within the wider society of the State—rests largely on the fact that our right to enjoy our own code of ethics and self-government has not in the past been seriously challenged. But, in the opinion of many, that challenge is implicit in the political climate of Europe today, in which we see the peoples of many nations feverishly and often blindly seeking economic shelter within the framework of collectivist techniques masquerading as ideologies. I myself do not feel unduly pessimistic in this matter. I have great confidence in the influence of a long corporate tradition; and I am impressed by the power of ideas as resistance movements. During the past few years the scientists of the western world have reacted vigorously to the potential threat to their own freedom of thought and action. The tumult—at times rather shrill—of the battle of a free science versus planned science and technology for the moment has died down. But from this conflict there has emerged the important notion of scientists as an independent and self-governing group with an ethical code of their own choosing—a code designed to stand as a perpetual response to the eroding challenge of authoritative doctrines.

Bertrand Russell, in a whimsical and lucid moment of over-simplification, has distinguished two categories of humans as comprising our modern civilisation—those who move pieces of matter about on the face of the earth, and those who order them to do it. We may wonder where the liberal professions come into this drab picture of the managerial revolution. But we should all agree that human societies owe much to the liberal professions, among which I have been bold enough to place medicine. The debt has been amply repaid, for in the past such professions have been accorded a position of special privilege. In a rapidly changing world, where for a brief interlude in the history of man traditional ethical and social values are in the melting-pot, we may ask what privileges a liberal profession can reasonably demand in the future. For the profession of medicine the answer is simple—intellectual freedom and a large measure of self-government. These are not unreasonable demands; they should not be the special possession of an élite preoccupied with its own survival. They are in fact essential to the "good life" in every one of the various groups which make up the mosaic pattern of a true democratic society. It is our duty to proclaim that we intend to preserve such freedoms at all cost.

THE SCIENTIFIC TRADITION

It is a commonplace that the history of the natural sciences throughout the ages, from the era of the flowering of Greek thought down to the latter part of the 19th century, is also the history of medicine. Although the two streams of intellectual activity have pursued an independent existence, they have long been closely intermingled. The contributions of medicine to science and of science to medicine have provided a theme of absorbing interest for many distinguished scholars in our profession—a theme which recurs again in the ceremonial orations of our Royal Colleges. It has been said that Aristotle regarded medicine as a branch of natural science, but Hippocrates, though doubtless influenced by the intellectual climate of his time, was the first great exponent of the clinical method and thus made secure the foundations of medicine as an independent art. For more than 2000 years, medicine, though it has maintained its identity, has been intimately linked to the natural sciences. It is thus not surprising that the art of medicine, with its attachment to the great empirical tradition, should bear the imprint of the scientific method.

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* Inaugural address at the opening of the winter session of the Welsh National School of Medicine on Sept. 30, 1947.

It is customary to speak, however, of the art and science of medicine as two separate activities or systems; and the belief still lingers that a fundamental distinction can be drawn between the so-called practical doctor and the medical scientist. It was Disraeli who said that the quality of a practical man is that he makes the same mistakes as his grandfather. And Harvey Cushing often quoted Abraham Flexner's dictum that the chief difference between the practical and the scientific doctor is that the latter is less likely to lose his patient. Therefore though medicine still remains an art, to be taught by precept and example, even for the practical doctor it must be continuously informed by the methodology of science.

CLINICAL SCIENCE

One of the outstanding contributions of British medicine during the last thirty years has been the creation, under the inspiration and leadership of the late Sir Thomas Lewis, of a school of clinical scientists trained to study the phenomena of disease by the precise methods of the physiological laboratory. As Lewis (1933) pointed out in his Harveian Oration, the practice of clinical science was a return to the method of Harvey himself, who combined clinical observations with animal experiments. It was Lewis's view that, given the liberty to pursue knowledge for its own sake, the clinical scientists would lead the medical scientists in the future. But it was not his wish to see a break away from medicine and the emergence of a separate discipline—indeed of a separate art. If this were to happen it would leave the standards of medicine at the mercy of the so-called practical man denied the inspiration which comes from a feeling of fellowship in the world of science and learning. In this renaissance of clinical science as an integral part of medicine we see how deeply rooted is the scientific tradition of our calling.

It is, therefore, not difficult to trace the origin of the scientific tradition in medicine, and to see in the activities of the practising clinician glimpses of the scientific method, defined long ago by Karl Pearson (1892) lucidly but not euphoniously as "the accurate classification of facts and observation of their correlation and sequence." The practical doctor would be a poor thing if he were ignorant of the scientific approach to the problems of diagnosis and prognosis which confront him.

For the educated practitioner of the future, if freed from much of the drudgery of his traditional handicraft by the provision of technical assistance, and given time to observe, to record, and to use the instrument of his mind in a patient search for a synthesis of ideas, there looms a unique opportunity of enriching our knowledge concerning the phenomena of health and disease. This should be particularly true of the country doctor, who is in many respects still the flower of our profession. The great examples of James Mackenzie in the past, and of William Pickles in the present generation, should surely inspire many followers.

But we may ask whether the modern education and training of the student of medicine is designed to produce, or at least foster the emergence of, future Mackenzies. Theoretically it would seem impossible today for a student to reach the stage of clinical studies lacking a clear understanding of the meaning of the historical and scientific methods. But it is by no means certain that teachers in the preclinical sciences, as a body, feel any special responsibility for the scientific and cultural outlook of the future doctor. Many are content with the presentation of facts in an attractive setting. There are notable exceptions, of course, and it is a delight to the clinical teacher to meet the student fresh from such inf brimful of factual knowledge which the young m acquires with such ease, but already aware of significance of wide generalisations. If the prec teachers fail in this task, how can the part-time c teacher, whose episodic function is to present an en new mass of brute facts, make good such a deficiency

A PHILOSOPHY OF MEDICINE

It might be maintained that the enjoyment of a association with science, and the habitual use of so the techniques of the scientific method, merely medicine to claim the status of an applied scienc that there the matter rests. Some would be co with this judgment, for it suggests at least an hono estate in the community. But to the questing sp those in our profession who are blessed—or perh times even cursed—by what Almroth Wright de as a "pain in the mind," this is not the ultimate of a learned profession. Walshe has deplored the occupation with the collection of facts which now to be the outstanding activity of medicine and ancillary experimental sciences. He emphasises need for a period devoted to interpretation and synth —a return to an age of reason. Only in this way do Walshe consider it will be possible at some future ti to construct a coherent science and art of medicin a true philosophy of medicine, resting securely on body of general principles of wide validity. He believ that such generalisations should come from the rea of clinical studies, as they have done in the past in fields of neurology and cardiology.

A fascinating task thus lies before us which repre a much-needed challenge to the tendency to rest com cently on the empirical tradition and to be content a far too narrow conception of the application of scientific method in the study of the phenomena disease. Since the days of Galen's great essay Medical Experience (*circa* A.D. 150), both the practi and the scientific men of medicine have fought shy general principles formulated by the exercise of th intellect alone. This instinctive and powerful resistanc to rationalism in medicine has no doubt been promp by the knowledge that the enunciation of so-called gene principles has often in the past led to the setting up dogmatic systems of thought and practice. The wor of Harvey have sounded a note of warning for 300 years "I profess to learn and to teach anatomy, not fro books but from dissection, not from the positions philosophers but from the fabric of nature." A John Hunter, that master of observation and exp ment—himself a man of little learning and untouch by the intellectual splendour of the age in which he li —had no doubt where he stood in this matter: " man who judges from general principles only, sho ignorance; few things are so simple as to come who within a general principle." Be that as it may, practical men of the modern age have not been slow by the aid of some mysterious intellectual process, elevating technique to the level of principles. In t distortion of the art of reasoning, often disguised outpourings of emotional prose, members of my o craft, the surgeons, have been and continue to be t chief offenders.

The task of creating a science and philosophy medicine is the responsibility of our profession alone. We cannot expect to delegate our abstract thinking the scientists and humanists. We teachers in medicin must strive to inculcate in our students that attitude mind described by Whitehead as "an interest in the relation of general principles to irreducible and stubborn facts." I am confident that, by reason of its long intellectual and scientific tradition, the profession of medicine will continue to produce and foster those inkers—few though they may be—whose primary ntributions will lie in the integration of knowledge.

THE LEARNED TRADITION

In every generation our profession has contained en distinguished by their wide learning who have ercised an influence on our intellectual aims out of proportion to their numbers. This was perhaps more ue of the generations immediately behind us when a manistic education was accepted as the natural proach to the study of medicine, and before the modern amination system had encouraged precocious specialisa- n. It is, however, no part of my present purpose to ell on the contributions to our ethos of a few men of standing learning. In a profession which maintains ively appreciation of the true value of hero worship ch men are not easily forgotten. I am concerned ther to consider the means whereby we can ensure that liberal education is an essential part of the equip- nt of all who choose to engage in the practice of medi- e: and to discuss how far it is possible to regard dicine itself as one of the cultural disciplines of a iversity education.

Judged by modern standards, the four subjects of the vanced education of the Middle Ages—astronomy, ometry, arithmetic, and music—seem to be an affair extreme simplicity. But every educated man of that me was expected to be well versed in at least one anch of physical science. Thus science established elf as part of the content of a liberal education long o. Indeed, as Sir Richard Livingstone (1947) has ntly reminded us, the modern distinction between ce and humanism would have been meaningless to e Greeks. The humanists and scientists are, however, longer in serious conflict regarding the essential content a liberal education. All are agreed that a liberal educa- on, with its emphasis on the value of balanced scholar- ip, is the proper avenue of approach to all the specialised orms of learning. Sir Richard Livingstone would anslate this notion into practice by a reform of the cholarship system whereby complete specialism in the tage of education which follows the school certificate ould be prohibited. Broadly speaking this means that he humanists would be required to receive a basic ducation in science, and the scientists would spend some me in humanistic studies as a major subject. But this, o Sir Richard, would be but a partial solution of the rger problem of making certain that the essence of liberal education would permeate the years of specialist udies in the universities. He has looked for a cultural iscipline which would form a bond between the under- raduates in all faculties, and this he finds in the ompulsory study of philosophy. Other distinguished cholars and educationists who have thought deeply on this important matter may have other solutions to offer, which may differ perhaps in detail but are unlikely to differ in principle.

LIBERAL EDUCATION AS AN APPROACH TO MEDICINE

Such notions should find warm support from the teachers of medicine; for under our present system the would-be medical student is effectively segregated as a “ specialist ” at a comparatively tender age. To the average boy or girl, the successful storming of the portal of entry to one of the older universities through the 1st M.B., or to “ Redbrick ” through the higher certificate, involves a period of intensive ingestion of a large mass of factual information in the basic sciences which leaves scanty time for any other form of intellectual activity. It is, of course, true that there are compensating influences at work. Inherited tastes, and the outlook nurtured by the traditions and background of a cultivated home life, are powerful antidotes to the deadening effect of a predominantly technological discipline. These advantages are, however, the possession of a fortunate minority. It is our duty to ensure that such influences continue to be represented in the aspirants to a learned profession. But we must continue to face the fact that today medicine is largely recruited from a group of young people whose “general” education finishes between the age of 15 and 16 or even earlier. The classical scholar who, at the age of 18, feels the urge to enter the profession of medicine is confronted by the formidable obstacles of a delaying action. He and others like him do not fit into the rigid scheme of a narrow portal of entry. Looking back to my own student days, my most brilliant contemporary, who is now one of the outstanding scholars in British medicine, made his first acquaintance with a test-tube and a laboratory bench on the day he entered the medical school.

It is important that we should do more than pay lip service to the idea that a liberal education is the essential prologue to the study of medicine, and that the portals of entry should be kept wide open. As a self-governing profession we have the power to embark on educational reforms, but the pace of our administrative machinery is in keeping with the modern age, and ideas issue slowly into action. When we ask how throughout the six long years of undergraduate education the student of medicine can be made to feel that he is not only being trained for a high vocation but is engaged in the pursuit of learning for its own sake, we find a situation full of difficulties. In so far as the teaching of medicine is increasingly based on the methodology of science, and the generalisations of science are regarded as having a cultural value of their own, the intellectual foundations of our art appear to be well secured. But the scientists are demanding a wider content of education for themselves, and it should not be difficult, as Sir Richard Livingstone has shown, for the universities to meet their needs. But he would be a bold man who, at this juncture, attempted to introduce into the intensive and overcrowded curriculum of the student of medicine *compulsory* courses of study in “ cultural ” subjects.

We are driven to the conclusion that for the preservation of the intellectual standards of our profession we cannot look to any single comprehensive plan. The intellectual tradition is there to be nurtured and reinterpreted to each succeeding generation. The impact of teachers who are men of wide learning on the receptive minds of students with a liberal education behind them will ensure that the flame of scholarship is something more than a mere flicker. Medicine, in its widest sense, must therefore strive continually to become a cultural discipline in its own right within the larger pattern of university education.

MEDICINE IN THE UNIVERSITIES

Fears have been expressed that the impending invasion of the universities by larger numbers of medical students will tend to undermine still further the humanist traditions already threatened by the predominance of the science faculties. Some feel that medicine should therefore be confined within the walls of its own technological institutions. If this came to pass it would be a disaster both for medicine and the universities. The universities have a dual responsibility in this matter. They have first of all inherited from the independent schools of medicine, which they absorbed in the 19th century, the function of providing a vocational training for the medical student. In this they are fulfilling a humanitarian function not unworthy of their highest traditions, for they are concerned with the quality of that large and important group of university graduates who are destined to serve the community as family doctors. These are the men and women whose life work has been so well described in the words of one of the pioneer medical women in the United States of America—

"*to cure sometimes, to relieve often, and to comfort always*" (Withington 1945). The second responsibility of the universities towards physic—which be it remembered was one of the three faculties of the medieval universities—is to see to it that the medical graduates are in truth members of a learned profession. It is said that, on degree days, the great President Eliot of Harvard always addressed the graduands in the following formula: "Gentlemen, today I welcome you to the great company of educated men." It may be true that his audience always contained a goodly proportion of young men whose intellectual activities were shortly to be displayed in the affairs of the stock market. But the message was clear, and it is this message that we as doctors want from the universities. The student of medicine, just as much as every other undergraduate, needs the education which only a university can give—that integration of the manifold aspects of knowledge and experience which teaches the art of living.

Medicine must therefore remain within the university societies of scholars and students, not only as a means of preserving and enhancing its intellectual traditions but in order that as one form of liberal learning it may make its own contribution to the common pool of university scholarship.

From time to time it has been suggested that the scientific and intellectual aims of medicine would be best served by the creation in each university of an honours school to provide for the handful of brilliant students who are to be found in every year. In another version of the same theme it is suggested that one complete university medical school might be set aside for this purpose. At first glance the idea is most attractive. But I am one of those who regard the deliberate creation of an élite within the profession as fraught with grave danger to the standards of medicine. There are two main objections to such a policy. First, it would perpetuate the false disjunction between the practical man and the scientific doctor of which I have already spoken, and the profession as a whole would soon cease to merit the titles of scientific and learned. Secondly, under the spell of the present trend in the teaching of medicine, an honours school would merely provide an opportunity for the presentation of an additional mass of factual information. No; the mark of a learned profession is that it sets the ideal of scholarship as the common goal of all its members. In medicine we must stand or fall on our corporate traditions and aims.

THE UNIVERSITY HOSPITAL

So far I have dealt with the theme of medicine in its university setting in broad outline only. But we have to remind ourselves that, during three critical years, the student of medicine spends a large part of his working day in a teaching hospital. Here for the first time he comes under the full influence of the humanitarian traditions which give him a sense of vocation. But the hospital is also an institution in which the study and practice of handicraft tends to dominate the scene. The student is now called on to become a man of action, and he is taught the important lesson that this is one of the attributes of the "good doctor." Such a background is an appropriate setting for an education in the art of medicine. It is not surprising however that the atmosphere of the teaching hospital tends to be either intellectually neutral or is at times strongly tinged with anti-intellectualism. But the essential scholarship of medicine need not wither away in such an environment if clinical teachers are selected for the quality of their learning. How can this be ensured?

Under the traditional hospital system of Great Britain the influence of the universities on the intellectual standards of clinical teaching has, with notable exceptions, [illegible] indirect and often negligible. Nearly fifty years have elapsed since the first true university was established in an English-speaking country may recall the words of William Osler on this mom event: "*The opening of the Johns Hopkins H in 1889 marked a new departure in medical ed in the United States of America. It was not the h itself . . . it was not the men . . . it was the organis* We still await the advent of a *university hosp* Great Britain; and by this I mean one in wh *clinical pattern of staffing* as well as the appointm the entire staff is the *responsibility of the uni* alone. To those of us who have cherished the i the university hospital for many years, the mendations of the Goodenough Committee i respect brought a sense of deep frustration. Th in the report of the "inevitability of gradua does not satisfy our impatience. Nor does the co tion of the governing bodies of the teaching hosp laid down in the New Health Act, where the representation of the university is but a fifth total members, seem to bring nearer the consumm of our heart's desire.

In Great Britain *there is strong opposition* to the concept of a university hospital, an opposition if ever based on first-hand experience of the work the system in other countries. Nevertheless I convinced that the transformation of the te hospitals of Great Britain into true university ho would do more than any other single act of ref medical education to ensure that our successor indeed be members of a liberal, scientific, and l profession.

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ACUTE SUPPURATIVE TENOSYNOVI TREATED WITH SYSTEMIC PENICI

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M.B. St. And.
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INFECTIONS of the hand following minor injury long been recognised as an important cause of perm disablement and of serious loss of industrial time. reduction of this wastage should become possible the increased production of penicillin.

Acute suppurative tenosynovitis is probably the damaging of the hand infections, and at this hosp is seen largely as an industrial complaint. To tes effectiveness of intramuscular penicillin in this con an investigation was carried out on all the cases tr during 1946 by one of the four surgeons (S. H. The clinical diagnosis was confirmed in each ca operation; 10 of the 13 cases were frankly purule operation, but the minimal criterion for inclusion the presence of an excess of clear fluid in the s at operation. This occurred in 1 case *secondar* a *pulp infection*, and culture subsequently yi *Staph. aureus.*

In 9 cases there was a history of minor injury, a 8 of these the injury had been incurred in the cou the patient's work. The injuries ranged from a comp fracture of the terminal phalanx to apparently t atches and swarf injuries. In 3 cases there were ical primary tendon-sheath infections, the remainder ng complications of either finger-pulp infections (8 es) or superficial abscesses (2 cases).

The infecting organism in all 3 of the primary tendon-ath infections was *Strep. pyogenes*. In the secondary es the predominant organism was *Staph. aureus* either ne or in mixed culture with other organisms, *Strep. genes* being associated with it in 3 cases.

TREATMENT

The treatment was uniform as far as the clinical ndition would permit. The three main principles hered to were minimal incision, systemic penicillin, d early active movements.

As soon as the diagnosis was made, the sheath was sed in the palm to relieve tension. Where there was uperficial abscess in the finger communicating with sheath it was opened at that point also.

Intramuscular penicillin was given immediately after ration in three-hourly doses of 12,500 units and tinued until 1,000,000 units had been given in ten s. By this time the patients were usually fit for charge and outpatient surveillance. There was one ception to this plan of treatment: this patient received y a five-day course of 100,000 units daily and was scharged on the sixth day.

It was apparent in the cases treated early in the series at movement caused little distress; so the patients re encouraged to exercise their fingers on the day er operation.

CONTROLS

In view of the encouraging results with local penicillin ported by Florey and Williams (1944) it was not sidered justifiable to deprive any patients of penicillin r control purposes. To gain a standard of comparison e clinical records of 13 unselected cases of tendon-eath infection treated at this hospital during 1943 in re-penicillin days were investigated. They differed om the present series not only in regard to chemo-erapy but also in the method of surgical approach. ulphonamides were used in a proportion of these cases ithout any appreciable effect on the end-result. These ases can in no wise be regarded as controls, but their e is justified in that they give a measure of the results f acute tendon-sheath infection before penicillin was used.

RESULTS

The end-results of treatment were divided into four ategories:

(1) "Full" indicating full function and including 2 cases here there was a very slight limitation of full extension at he distal interphalangeal joint.

(2) "Fair" indicating fair movement and a useful finger ough the range was limited.

(3) "Stiff" indicating a stiff finger but not so useless as o warrant amputation.

(4) "Amputation"—those requiring amputation.

The results were as follows:

1946	*Full*	*Fair*	*Stiff*	*Amputation*	*Not known*
Penicillin ..	8	2	1	1	1*
1943					
No penicillin	0	2	2	9	0

* While still under outpatient observation at this hospital this patient, who also had tabes dorsalis, was admitted to another hospital with pneumonia and subsequently died.

In no case in the present series was the function of the rest of the hand impaired, though this was a common occurrence before pencillin was used.

Among the patients who recovered full movement the time required for this to take place varied from 3 weeks to 3 months, without any apparent reason.

Complications and Healing-time

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DISCUSSION

The effectiveness of repeated intramuscular injection of penicillin is well established by these results. Instead of being in serious danger of losing finger and even life, the patient with acute suppurative tenosynovitis should now have an excellent chance of regaining a fully functional finger. The results are an improvement on those reported by Florey and Williams (1944) using local penicillin and are of the same order as those reported by Curr (1945), who administered penicillin by continuous intramuscular drip giving, in a five-day course, a total dosage of 500,000 units. Pilcher (1946) reported 3 cases treated by repeated injection of large doses of penicillin and obtained full functional recovery in each case.

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Infections of the hand following minor injury hav long been recognised as an important cause of permanent disablement and of serious loss of industrial time. Th reduction of this wastage should become possible wit the increased production of penicillin.

Acute suppurative tenosynovitis is probably the mo damaging of the hand infections, and at this hospital i is seen largely as an industrial complaint. To test the effectiveness of intramuscular penicillin in this condition an investigation was carried out on all the cases treated during 1946 by one of the four surgeons (S. H. H.). The clinical diagnosis was confirmed in each case at operation; 10 of the 13 cases were frankly purulent at operation, but the minimal criterion for inclusion wa the presence of an excess of clear fluid in the sheath at operation. This occurred in 1 case secondary to a pulp infection, and culture subsequently yielded *Staph. aureus.*

In 9 cases there was a history of minor injury, and in 8 of these the injury had been incurred in the course of the patient's work. The injuries ranged from a compound fracture of the terminal phalanx to apparently trivial uches and swarf injuries. In 3 cases there were ical primary tendon-sheath infections, the remainder ng complications of either finger-pulp infections (8 es) or superficial abscesses (2 cases).

The infecting organism in all 3 of the primary tendon-ath infections was *Strep. pyogenes*. In the secondary es the predominant organism was *Staph. aureus* either ne or in mixed culture with other organisms, *Strep. genes* being associated with it in 3 cases.

TREATMENT

The treatment was uniform as far as the clinical dition would permit. The three main principles ered to were minimal incision, systemic penicillin, d early active movements.

s soon as the diagnosis was made, the sheath was ed in the palm to relieve tension. Where there was uperficial abscess in the finger communicating with sheath it was opened at that point also.

ntramuscular penicillin was given immediately after ration in three-hourly doses of 12,500 units and tinued until 1,000,000 units had been given in ten ys. By this time the patients were usually fit for charge and outpatient surveillance. There was one ception to this plan of treatment: this patient received ly a five-day course of 100,000 units daily and was charged on the sixth day.

It was apparent in the cases treated early in the series at movement caused little distress; so the patients re encouraged to exercise their fingers on the day er operation.

CONTROLS

n view of the encouraging results with local penicillin rted by Florey and Williams (1944) it was not sidered justifiable to deprive any patients of penicillin r control purposes. To gain a standard of comparison e clinical records of 13 unselected cases of tendon-eath infection treated at this hospital during 1943 in re-penicillin days were investigated. They differed om the present series not only in regard to chemo-erapy but also in the method of surgical approach. ulphonamides were used in a proportion of these cases ithout any appreciable effect on the end-result. These ses can in no wise be regarded as controls, but their e is justified in that they give a measure of the results f acute tendon-sheath infection before penicillin was used.

RESULTS

The end-results of treatment were divided into four ategories:

(1) "Full" indicating full function and including 2 cases here there was a very slight limitation of full extension at he distal interphalangeal joint.

(2) "Fair" indicating fair movement and a useful finger ough the range was limited.

(3) "Stiff" indicating a stiff finger but not so useless as o warrant amputation.

(4) "Amputation"—those requiring amputation.

The results were as follows:

	Full	*Fair*	*Stiff*	*Amputation*	*Not known*
1946					
Penicillin ..	8	2	1	1	1*
1943					
No penicillin	0	2	2	9	0

* While still under outpatient observation at this hospital this patient, who also had tabes dorsalis, was admitted to another hospital with pneumonia and subsequently died.

In no case in the present series was the function of the rest of the hand impaired, though this was a common ccurrence before pencillin was used.

Among the patients who recovered full movement the time required for this to take place varied from 3 weeks to 3 months, without any apparent reason.

Complications and Healing-time

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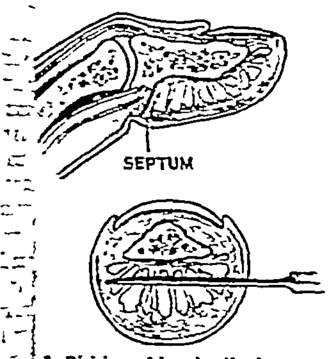

2—Division of longitudinal septa.

SUSPECTED BONY FELON

This group. into which 20 of our cases fell. is not adequately defined or appreciated by English writers. It is essentially a clinical diagnosis; for, though most infected pulp spaces show diffuse osteoporosis of the terminal phalanx within a few days, radio- hical evidence of bony erosion is not apparent for 10–12 s, or perhaps several weeks, after the primary infection. this category bony infection is already present but lographic evidence lacking. If the correct treatment not pursued before radiological confirmation of bony osis, much valuable time is lost and an easily con- llable infection progresses to disastrous destruction. e factors arousing clinical suspicion of an established e infection without demonstrable radiographic dence are (1) length of history, (2) amount of tissue osis, and (3) previous inadequate incision.

(1) If a sinus or an open wound, spontaneous or post- onal, has been discharging for a week or ten days shows no unmistakable evidence of healing, it is emely likely that there is an underlying bone infection. bead of thin seropus appearing on light expression is pecially significant.

(2) The amount of tissue necrosis is clinically shown y the club-like swelling of the pulp space, a bogginess hich has replaced the early tenseness, or a threatened metimes obvious) central sinus, especially towards the p. This last sign, described by Klapp (cited by Iselin 40) is most reliable. The spread of infection to the cumungual region or to the distal interphalangeal joint pathognomonic. At operation massive sloughing of the ft tissue is important evidence. Investigation of e phalangeal periosteum at the time of operation is nadvisable, since this may cause a breach in the reviously intact periosteum and introduce organisms to the unin- cted bone.

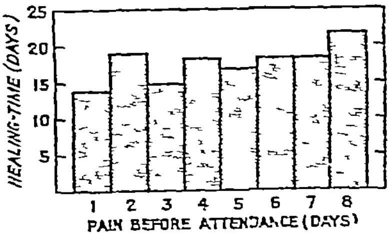

Fig. 3—Duration of pain and average time of healing in simple felon.

(3) If the finger has been treated by inadequate incision—e.g., idline and short lateral incisions—without giving adequate drainage and has continued to be tense and painful after a short temporary relief, an osteitis is an almost inevitable sequel. Six of the cases in our series demonstrated this point. The character or position of the original pain (cf. Iselin 1940, Cutler 1942) seems to be of no importance, and in two cases of severe systemic disease (one case of mitral stenosis and one case of diabetes) the finger healed within the average time. A warning is necessary about the common phlyctenular type of infection. These cases are worthy of investigation under adequate anæsthesia and should not merely be nicked under local ethyl chloride. Too often a narrow track leads into the pulp space proper and, after temporary relief following the superficial incision, an acute felon develops.

Controls.—No controls were used, because the diagnosis of this category of felon is one of suspicion only and the number of cases (20) was insufficient to be reliable as statistical evidence.

Treatment and Results.—The principles of surgical treatment are the same as for the simple felon: adequate drainage of the soft parts, avoidance of secondary infection, and rest. To these must be added antibiotic therapy. The sulphonamides, in our opinion, are of minimal value, since the usual organism is the *Staph. aureus* and their action is vitiated by the ever-present pus or sloughs. It is at this stage, before the formation of sequestra or massive bony necrosis, that penicillin is so valuable. The dosage of 100,000 units b.d. has in our experience proved adequate, provided it is exhibited long enough—i.e., 10–21 days, according to the progress of the disease. By this means minimal damage is incurred by the phalanx, the bone is quickly re-formed, and the finger is healed comparatively soon, usually within four weeks. Serial radiograms taken at intervals of 3 or 4 days would often show "mouse-nibbling" of the osteoporotic phalanx; but, in place of the unremitting progress of the disease to subtotal or total necrosis of the phalanx, the erosion is halted and the bone recalcified in a few weeks, usually without any demonstrable sequestra. Radiotherapy as advocated by Baker (1947) was not used, but it should be worth while in the treatment of bone infection due to organisms of low penicillin-sensitivity.

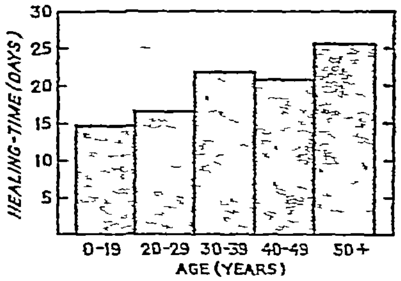

Fig. 4—Age of patient and average time of healing in simple felon.

It is difficult to gather significant statistical evidence for the value of surgery with penicillin in this group of early bone infection: but since the two groups of simple felon and suspected felon were clearly distinguished and treated as such in our cases, well-established destructive osteitis has been eliminated.

ESTABLISHED BONY FELON

At any large hand clinic some cases must appear with well-established bone infection demonstrable by radiography. The diagnosis is never in doubt: the decalcified osteoporotic phalanx shows focal necrosis, most commonly on the palmar surface of the tip of the phalanx or at the waist of the bone. The former seems to be the more self-limiting type of infection, though it may spread proximally and give a subtotal or total necrosis of the whole bone. The central diaphyseal infection—i.e., at the waist of the bone—tends to spread more rapidly along the medulla and rarely terminates without sequestrating the whole of the diaphysis. In both types the narrow rim of the epiphysis usually survives. The osteoporosis which is constantly seen before the destructive osteitis is probably due to the hyperæmia resulting from infection of the soft tissue. The tendency for the erosion to start distally seems to support the theory of lymphatic spread rather than ischæmic necrosis due to thrombosis of the diaphyseal arterial supply as propounded by Kanavel (1925). If the latter were true, the radiographical appearance should be one of increased density of sequestra as contrasted with the more osteoporotic surrounding viable bone. We never saw this.

Controls.—We reviewed 30 cases treated, before this series, conservatively without intramuscular penicillin and

The results indicate a reversal of the prognosis of acute tendon-sheath infections in that 8 of the penicillin-treated cases proceeded to full functional recovery, whereas 9 of the "untreated" cases required amputation.

The reduction in the duration of disability is striking.

The use of systemic penicillin in conjunction with minimal surgery is advocated in the treatment of acute suppurative tenosynovitis of the finger.

We wish to thank Dr. J. R. Squire, director of the Medical Research Council Industrial Medicine Research Unit, Birmingham Accident Hospital, for his advice on the preparation of this report, and Mr. W. Gissane, clinical director at the hospital, for permission to use the case-records.

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PENICILLIN IN PULP-SPACE INFECTIONS OF THE FINGER

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R. P. JEPSON M.B. Manc.

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THE importance of organised early and adequate care of the infected finger has been repeatedly emphasised by many authors (Kanavel 1925, Bunnell 1944, Iselin 1940, and Koch 1937); but little has been published since the advent and general use of penicillin.

To assess the value of penicillin in pulp-space infection we studied 100 consecutive cases in the outpatient hand clinic of a general hospital. Personnel and methods were standardised, and all incisions were made by either B. N. C. or H. B. The cases fell naturally into three groups and are analysed separately: early simple felon (69 cases), suspected bony felon (20 cases), and established bony felon (11 cases).

SIMPLE FELON

Diagnosis.—The diagnosis is rarely in doubt: a throbbing pain has been present for a few hours or some weeks; and the affected pulp space is tender and swollen and shows the cardinal sign, a loss of the normal pulp elasticity to the examiner's touch.

Treatment.—We have no experience of the conservative treatments using short-wave diathermy or plaster-of-paris, with or without penicillin, since we believe them to be at variance with established surgical principles. The absence of published work advocating their adoption is noteworthy. The treatment is incision, preferably under a tourniquet with adequate general anæsthesia. Of the incisions generally used the crocodile-mouth type, looping from side to side over the tip of the pulp, may lead to severe skin sloughing and in any event a poor tactile surface. Weiner's (1940) posterior approach was not used by us but seems worthy of trial. The bilateral incision was unsatisfactory in our hands, some fingers having to be reopened later because of early pocketing.

The standard incision used by us was the lateral "hockey-stick," with the tip of the J approaching to within 3 mm. of the nail-skin junction, and the proximal limb ending some 5 mm. short of the ventral flexor crease, the septa of the pulp being divided with a narrow scalpel across to the subcutaneous tissues of the opposite side (fig. 1). This allows adequate decompression of the pulp space, brings into view, for division, all the longitudinal septa across to the other side of the pulp (fig. 2), and leaves a satisfactory cosmetic and tactile surface postoperatively. No attempt was made to excise the infected soft tissues as described by Iselin (1940). The heavy corrugated rubber drain, with its tendency to pressure necrosis, was discarded in favour of a thin of rubber glove, which was left in for 12–18 hours.

The need to avoid soaks, moist dressings, and septic baths in the postoperative period has emphasised by Bailey (1941). It is surprising to see methods being advised by other authors (Edwards Macey 1940). This treatment encourages seco *infection and leads to swollen œdematous* exaggerating the normal inflammatory œdema interfering with the drainage of the part. It is difficult to persuade patients against soaking, since are impressed by the amount of pus exuding at each The soaks are, however, the cause of the pus, not the

Our routine was infrequent (every 3 or 4 days) d of a thin layer of soft-paraffin gauze over a light of penicillin powder surrounded by a dry gauze d *This causes no pain on removal, discourages* seco infection, and has sufficient absorptive power f small amount of exudate. A splint for a day or so a triangular bandage sling were used according to amount of local reaction. Short-wave diathermy adopted postoperatively as a form of dry heat gives at least a psychological fillip to the patient. value is difficult to assess but at least it does no and it establishes contact between the patient and physiotherapist which can be maintained in the last days for the supervision of finger movements.

The average time from first attendance at the clin to discharge with a healed epithelised finger was 17 day *the minimum was 7 days and the maximum* 6 wee

In an effort to analyse the factors involved in prolonging this morbidity, the following variants were studied.

Bacteriology.—Of the 100 cases of all types of felon, simple, suspected, and established, 99 grew a pure culture of *Staph. aureus*, coagulase-positive and penicillin-sensitive. The unique exception was a finger, already incised before the patient began to attend the clin which grew a *Strep. hæmolyticus.* The virulence of t organism could not be estimated, and the tissue resistan of different patients was unknown.

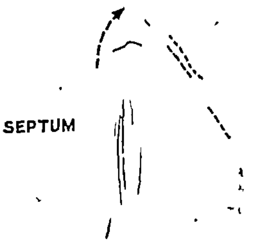

Fig. 1—Hockey-stick incisio

Duration of Pain before Incision.—This is summari in fig. 3. Other factors being equal, the duration of was of no prognostic importance. It seems that hyperacute infection, with its excessive pain and lik complicating sequelæ, brings the patient early for tr ment. The milder infection, with its more tolera pain, is borne longer by the patient, and these t variables cancel themselves out.

Finger Involved.—The thumb and forefinger were t most commonly affected; but there was no signific difference in time of healing, whichever digit was involv

Ætiology.—A third of the patients could give no h of the cause of the infection. The rest accused pinpric traumatic blisters, fishbones, &c. No cases of hum bite were seen. There was no appreciable difference in the healing-time in these groups.

Age of Patient.—As one might have suspected, t young healed more quickly than the old. The difference, which was not great, is summarised in fig. 4.

Penicillin Therapy.—It was hoped that a three-da course of penicillin would reduce the morbidity period, and alternative cases were selected without discrimination for such treatment. *The dosage was 100,000 units by* intramuscular injection twice a day in the outpatient clinic. This is probably a low dosage, but economy, the difficulties of outpatient therapy, and the lack of a *satisfactory oily preparation made this unavoidable.*

ected out with scalpel and scissors. Drainage was ntained by packing the wound open for 48 hours with e impregnated in the first three groups with penicillin lm 100 units per g., and in the fourth group with ile soft paraffin.

he criterion of cure in every case was a dry epithelised nd, and every patient was discharged to full-time loyment with complete functional recovery.

group I 40 patients were treated as described above were given intramuscular penicillin in oil and wax 250,000 units daily until the wound discharge serosanguineous. The local dressing of penicillin m on sterile gauze was changed every second day l wound discharge was serosanguineous, and thereafter gauze until healed. In this group wound swabs were n at operation, and the type and penicillin-sensitivity e infecting organism determined. Since the organisms almost invariably penicillin-sensitive *Staph. aureus* on only two occasions penicillin-sensitive *Strep. lyticus,* wound swabs were not taken in subsequent ps.

ood-penicillin levels 24 hours after injection were mined in this group, and in no case was the level tantly bacteriostatic. No attempt was made to attain nstant bacteriostatic level in the blood by spaced ctions, because the local reaction at the site of tion caused patients to refuse further injections. main reason for not recommending spaced injections the realisation, at this point in the investigation, those who refused further injections healed just as ly as those who continued with the injections.

e treatment of the 47 cases in group II was exactly group I, except that the dosage of penicillin in oil beeswax was reduced to 125,000 units daily until wound discharge was serosanguineous.

roup III consisted of 61 cases treated with intra-cular sodium-penicillin aqueous solution 200,000 s daily until the wound discharge was serosanguine-. Local dressings, &c., were exactly the same as in ups I and II.

n group IV, consisting of 112 cases, all patients had same operative treatment as in the previous three ups, but no penicillin was administered parenterally used as a local dressing. After operation, a sterile t paraffin gauze pack was inserted into the wound changed every second day, until the wound discharge serosanguineous. Thereafter the local dressing was ile gauze.

RESULTS

he accompanying table shows that there is no reduction of the length of disability when acute infections of hand are treated with penicillin. This is due to the t that the infections are localised and pus is present ore the patient reports to his doctor. Only 7 cases e seen early enough to justify an attempt to abort infection with parenteral penicillin. In only 3 of e 7 was the attempt successful: these were subcutane- infections of the dorsal and palmar aspects of the gers The 4 failures were in 3 pulp infections and 1 bcutaneous abscess.

It is impossible to abort pulp infections with parenteral enicillin. The tension in a pulp infection interferes with e blood-supply of the pulp; and, unless the tension relieved by incision, thrombosis takes place in the lp anastomosis, with tissue necrosis and subsequent s formation. In 4 cases of pulp infection where no s was found at operation I was confident they would ve progressed to pus formation had the tension in the lp not been relieved by early incision. The healing ter tension was relieved was rapid, and the patient was ischarged to full-time employment in about 4–6 days.

The best treatment for threatening pulp infections is rly lateral incisions; no time should be wasted in omenting the finger. The benefit derived from relief of tension in the enclosed compartment of the pulp space far outweighs the harm of operation trauma. In the 4 cases mentioned there was no dissemination of infection.

RESULTS OF DIFFERENT TREATMENTS OF ACUTE HAND INFECTIONS

Type of infection	Control cases *from* past records		Groups *									
			I		II		III		I, II, and III		IV	
	No. of cases	Av. length of disability (days)	No. of cases	Av. length of disability (days)	No. of cases	Av. length of disability (days)	No. of cases	Av. length of disability (days)	No. of cases	Av. length of disability (days)	No. of cases	Av. length of disability (days)
Pulp infections	63	45	15	21 9	18	17·4	28	17·4	61	18·9	42	15·4
Subcutaneous abscesses	70	21·5	17	18 2	15	11·4	13	11·7	45	14·7	23	13 9
Paronychia and onychia	54	19	4	24	11	11·4	17	12·7	32	17·1	41	14
Palmar space	5	30	2	18	2	15	1	14	5	15 7	3	14
Thenar space	8	17	2	15 5	1	21	2	18	5	18·1	3	11
Totals..	200	26 5	40	19 5	47	16 5	61	14 8	148	16 9	112	13 7

* For the different treatments of the groups see text.

The effect of parenteral penicillin in the successful cases was much lessening of the pain in 24 hours, the patient being able to sleep the night after the first injection. The condition entirely settled after the third daily injection, the total dosage of penicillin in oil and beeswax being 750,000 units in each case.

In the unsuccessful cases there was less amelioration of pain and swelling, and after three days' treatment, though the throbbing pain had subsided to a dull ache with an occasional stab of pain on movement, it was evident from tenderness to palpation and softening at the centre of the indurated area that pus had formed and that its evacuation was essential. All failures had a total of 750,000 units of penicillin in oil and beeswax each, given in three days.

Postoperative Penicillin.—No beneficial effects were noted from the parenteral administration of penicillin postoperatively. In group IV there was the same relief of pain and diminution of swelling postoperatively as in group I. Lymphangitis and lymphadenitis settled almost as rapidly in group IV as in group I. In no case in group IV was there an extension of infection or abscess formation due to suppuration of an enlarged gland. A patient treated for an acute infection of the hand, first in group I and again in group IV, thanked me for not giving him injections for his second pulp infection. He said that in the first instance the cure was as bad as the disease, for he had a large local reaction at the site of injection of penicillin in oil and beeswax.

Penicillin in Oil and Beeswax.—The adverse effects of penicillin in oil and beeswax were a major concern in the treatment of patients. Many patients refused further injections after a local reaction to penicillin in oil and beeswax at the site of a previous injection. The reactions to penicillin in oil and beeswax were of two main types, general and local. In this series there were 3 general and 8 local reactions.

All the general reactions were of an urticarial type with a macular rash all over the body. The cutaneous manifestations were preceded by vertigo and shivering, and anorexia and a feeling of nausea persisted 24 hours after the first appearance of urticaria. On administration of 1 in 1000 adrenaline and cessation of penicillin the patient recovered and the rash faded rapidly. Subsewith soaks, local dressings, short-wave diathermy, &c., and found the healing-time to average 14 weeks.

Treatment and Results.—The treatment of the established case of osteitis has been the subject of considerable debate. Kanavel and König (cited by Iselin 1940) have advised early and radical excision of the affected bone, even before sequestra become defined. The distal part of the phalanx is resected with reflexion of the periosteum towards the base. This attempt to limit and eradicate osteitis by surgical attack has, in our experience, been disastrous. As Koch (1937) points out:

> "Unless sequestration has actually taken place, one cannot determine by inspection, even in a bloodless field, where necrosis of the bone ends, where the protective wall of inflammatory reaction begins."

In three cases previous to and not included in this series we attempted to shorten the course of the disease by incision into the pulp space and removal of the affected part of the phalanx proximal to the lesion visible in the radiogram. We were grossly mistaken. The pulp tissue, already deficient from the soft-tissue necrosis, is left unsupported after the removal of the distal half of the phalanx, with the result that the palmar skin becomes apposed to the nailbed. A course of penicillin had been given for 48 hours preoperatively and was maintained for a week postoperatively. This controlled the infection, and serial radiograms showed no further focus in the remaining proximal segment, though crescents of cortex detached from the removed phalanx could be seen adherent to the underlying nailbed. The pulp spaces, however, showed a remarkable reluctance to form granulation tissue and remained collapsed and empty sacs, which filled from time to time with a few beads of pus. *These three cases took an average of 5 months* to heal and even then were left with poor pulp pads and deficient tactile sensation.

After this experience we adopted a more conservative attitude. Adequate drainage of the pulp space was established by a hockey-stick incision and secondary infection avoided by infrequent dressings on the line of the technique described above. A long course of penicillin was instituted, 100,000 units b.d. intramuscularly for at least 2 weeks. Serial radiograms were taken at intervals of 5–7 days and the course of the bone necrosis was followed. When, and only when, sequestra became clearly demarcated was the wound, if necessary, reopened and the necrotic detached fragments removed. Often no sequestrectomy was required, the loose necrotic bone being absorbed by the invading granulation tissue. The results were most encouraging; every finger so treated healed within 8 weeks; and, though the pulp pad was usually thin, the finger was both *cosmetically and functionally adequate.* Even if an arthritis of the distal interphalangeal joint had already developed, treatment on these lines was still maintained. Our two cases with a subtotal terminal phalangeal osteitis and purulent arthritis of the distal interphalangeal joint recovered 50% of the joint movement and an adequate pulp pad. If a paronychia runs concurrently with the bony felon, this will need an additional dorsal incision. No other complications were seen in this series.

SUMMARY

Pulp-space infections are divided into (1) simple felons, (2) suspected bony felons, and (3) established bony felons.

Simple felons and suspected bony felons were incised with a lateral hockey-stick incision, and all the longitudinal septa of the pulp were divided. The pulp space was then drained. Soaks, moist dressings, and antiseptic baths were avoided. Instead, a light film of penicillin powder was applied, covered with a thin layer of soft-paraffin gauze and a dry gauze dressing.

The average time of recovery for simple felons was 17 days—minimum 7 days, maximum 6 weeks.

Of 100 cases of all three types of felon 99 grew a culture of *Staph. aureus.* The remaining finger, had previously been incised, grew *Strep. hæmol*

Alternate cases of the 69 simple felons were treated with intramuscular penicillin 100,000 units daily for three days, without any significant effect.

In suspected bony felon, before the develop *radiographically* visible lesions of the bone, intram penicillin 100,000 units twice daily was most val if administered long enough—i.e., for 10–21 days.

In established bony felon the removal of pulp necrotic bone proved disastrous. Adequate and infrequent dressing, as already described, co with intramuscular penicillin 100,000 units twice for at least 2 weeks, gave most encouraging Usually no late sequestrectomy was needed, the n bone having been absorbed. Every finger so t healed in 8 weeks.

Our thanks are due to Prof. A. M. Boyd, under supervision this study has been made, and to the radiol pathological, and physiotherapy departments of Manchester Royal Infirmary for their technical assistan

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USE OF PENICILLIN IN ACUTE INFECTIONS OF THE HAND

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It is claimed that the administration of penicillin all types of acute infections of the hand reduces t length of disability and the amount of perman disablement and improves *the result* from an æsthe viewpoint. Consequently an account of my experien with penicillin in such cases among outpatients of Dund Royal Infirmary may be of interest.

A series of 260 unselected cases of acute infections the hand were treated in the outpatient department four different methods. The cases were mostly p infections, subcutaneous abscesses, onychias, and p onychias, there being only 16 cases of infected palmar thenar space. All tendon-sheath infections were admitt to the wards and are not included in this series. The c when first seen, were usually sufficiently advanced f pus to have formed; only 7 were seen before pus h formed. Most were localised, but a fair percentage h lymphangitis and lymphadenitis.

To assess the results a comparison is made with 2 cases of acute hand infections from past records of t surgical outpatient department. These "*control*" ca were operated on by various doctors and the treatment as proportionately varied.

TREATMENT

The cases are divided into four main groups, which, however, do not contain equal numbers of cases, since the change of treatment was not governed by the number *of cases treated but by the results obtained,* the patient's comfort and welfare being the first consideration. All operations were performed under gas-oxygen and 'Trilene' anæsthesia, and in every case a bloodless field was obtained by the use of a sphygmomanometer cuff *at 200 mm. Hg. At operation* adequate incisions were *made to allow free escape of pus,* and all sloughs were ously treated cases of amœbiasis readmitted for review ot included. Under the heading "chronic intestinal asis" are included cases presenting with symptoms than acute diarrhœa. "Clinical dysentery" includes with blood and mucus but no amœbæ found, and stool re and sigmoidoscopy negative.

vergent figures have appeared from time to time the relative incidence of bacillary and amœbic tery. Manson-Bahr (1943) attributes this incon- cy to two factors: the faulty identification of mœba histolytica (E.H.); and the incomplete bacterio- al examination of stools. If, however, the diagnosis œbic dysentery is confined to those cases in which ely motile amœbæ containing red blood-cells are d in the stools, and if, also, routine stool culture and idoscopy are carried out in all cases of diarrhœa hich the slightest doubt about the diagnosis exists, pears that these two factors do not offer an adequate nation. It was on such criteria that the figures above were obtained. I suggest a more likely for the gross variations in statistics: that the tion of the two diseases depends entirely on the nce or absence of any major epidemic of bacillary tery during the period under review. In Ceylon g the year there was no epidemic of bacillary tery in the R.A.F., a fact largely attributable to bviation of the fly menace coincident with the duction of D.D.T. and the high standard of hygiene the services throughout the island.

se figures are therefore submitted as an accurate arison of endemic types of dysentery in Ceylon. such they reveal a startlingly high percentage of dysentery, higher than recorded by other writers the war. Leishman and Kelsall (1944) found that in 4 of all diarrhœa patients admitted to hos- was amœbic in origin, and Marriott (1945) showed incidence of amœbiasis in such cases. Payne) found that 56% of all cases of dysentery admitted base hospital were due to amœbiasis. However, Colonial Office Reports (1929) (quoted by Manson- r 1943) give the incidence of amœbic dysentery 3% in a survey of 5900 cases of dysentery in the population of Ceylon.

e problem of amœbiasis, then, is enormous and be simply summarised thus: that every second ent admitted to hospital with diarrhœa has amœbic entery. When this is viewed in conjunction with the essing articles on the failure of therapy in chronic biasis (Lamb and Royston 1945, Morton 1945) becomes alarming, and the importance of the correct y diagnosis and efficient treatment of amœbiasis omes the all-important responsibility of every doctor reas.

ACTION OF SULPHONAMIDES

The efficacy of sulphonamides in the treatment of illary dysentery is so well established that it has come the custom in many hospitals overseas to use se drugs as a diagnostic test in cases of dysentery on e assumption that cases which respond rapidly are illary in origin, whereas those in which the symptoms ist are probably amœbic. That this axiom might be llacious was first suspected in the following cases.

Case 1.—A leading aircraftman was admitted with acute rhœa with blood and mucus. The report on the first ol sent for examination read "Typical bacillary exudate. o E.H. seen." Treatment with sulphapyridine was started receipt of the report in the ward. Next day he had proved, having passed only 3 stools in the twenty hours er treatment began as against 12 in the previous twenty- r hours. A stool submitted on this day contained many tive E.H. In view of this apparent paradox the sulpha- ridine was continued and further stools were sent for amination, but thereafter all stools were formed and no E.H. were found. A full course of anti-amœbic treatment was en given. Unfortunately no sigmoidoscopy was done in this case until treatment was completed, when no abnormality was found.

TABLE I—EFFECT OF SULPHONAMIDES IN AMŒBIC DYSENTERY

Case no.	Before treatment: Stools: No. in 24 hrs.	Nature and findings	Blood	Mucus	E.H.	Treatment given	Response to treatment: No. of stools passed each 24 hours after treatment began: 1st	2nd	3rd	4th	5th	Day on which stools examined became negative for E.H.
1	5	Fluid	+	+	++	S-pyr. 22 g.	5	5	2	0	Em	? (+ on 3rd)
2	4	Fluid	+	+	++	S-pyr. 22 g.	4	2	0	0	Em	? (+ on 2nd; no stool available 3rd and 4th)
3*	20	No fæcal matter	+	+	+	S-pyr. 14 g.	4	0	1	Em	..	3rd
4	8	Fluid	+	+	+++	S-pyr. 14 g.	8	4	5	Em	..	? (+ on 4th)
5*	12	No fæcal matter	+	+	+	S-pyr. 22 g.	8	1	0	0	Em	? (no stool available after 2nd)
6	4	Fluid	0	0	+	S-pyr. 15 g.	2	0	0	1	Em	4th
7	6	No fæcal matter	+	+	+	S-dia. 23 g.	6	3	2	Em	..	2nd
8	14	Fluid	–	+	++	S-gua. 70 g.	11	3	1	1	Em	3rd
9†	5	Fluid	–	+	++	S-gua. 100 g.	8	6	4	3	3	4th
10	6	No fæcal matter	+	+	+++	S-pyr. 6 g. S-dia. 15 g.	7	4	4	Em	..	3rd

S-pyr. = sulphapyridine; S-dia. = sulphadiazine; S-gua. = sulphaguanidine, Em = emetine started.

* Sigmoidoscopy before start of emetine therapy showed acute amœbic ulcers.

† This patient normally had his bowels open three times daily.

Case 2.—A sergeant had had, ten days before admission, acute diarrhœa, passing 10–20 stools daily with blood and mucus. Admitted to sick quarters, he was treated with castor oil, with no improvement. He was then given sulphaguanidine 26 g. in two days, at the end of which time his diarrhœa had improved, and he was transferred to hospital for further treatment. During the first twenty-four hours in hospital he passed one formed stool and felt so fit that he resented further investigation; but this one stool contained vegetative E.H., and sigmoidoscopy next day showed many circumscribed submucosal hæmorrhages and a few shallow ulcers.

Case 3.—A leading aircraftman was admitted with diarrhœa of four days' duration. No E.H. was found in the first specimen, and a full course of sulphaguanidine (100 g.) was given. The response was immediate, and stools became normal within forty-eight hours of treatment. Routine sigmoidoscopy at the end of the course showed typical "pin-point" amœbic lesions.

These observations suggested that the sulphonamides at least mask the symptoms of acute amœbiasis and may indeed have had an amœbicidal action. It was therefore decided to give a short preliminary course of various sulphonamides in proved cases of acute amœbic dysentery and to observe the response. The results of the 10 cases so treated are summarised in table I.

It was clear from these cases that, with one exception (case 4) whose condition deteriorated during treatment, a well-marked clinical improvement took place with a diminution of the number, and a return to normal in the nature, of the stools. Of the 9 cases that responded, 6 (nos. 3, 6, 7, 8, 9, and 10) showed a negative stool from the second to fourth days, in 2 (nos. 2 and 5) no stools were available after the second day, and in 1 (no. 1) *quent administration of sodium penicillin in aqua to* 1 patient did not evoke either a local or a general reaction.

Minimal local reactions developed in most patients who received penicillin in oil and beeswax. There were usually slight erythema and deep induration round the needle wound. The degree of reaction in the 8 cases noted varied from a minimal area of erythema and induration of 3 in. by 2 in. to a maximal area of the whole arm and hand swollen and œdematous. The main subjective symptoms were a burning sensation and intense itching. One patient had a local reaction in both arms simultaneously, and the incapacity was such that she had to be dressed and fed. The reaction gradually settles in 8–11 days *on cessation of penicillin.*

End-results.—The end-results were similar in all groups. The cases with bone necrosis, necessitating sequestrectomy, occurred in all groups, and occurred only in cases which had been sent for treatment at a late stage, often after one or two attempts had been made to open the infected area under local anæsthesia. Before reporting, many of these patients had had a fairly intensive course of penicillin following the inadequate *incision in the hope that chemotherapy might mitigate* the consequences of inadequate surgery.

Modified Treatment.—Besides the present series of 260 cases, 16 patients were treated by modifying the method of local application of penicillin. In 10 cases of subcutaneous abscess 1 ml. of sodium penicillin in aqua, 200,000 units per ml., was injected into the tissues round the incision made for the evacuation of pus. The postoperative pain was severe and persisted four hours after operation, necessitating sedative treatment. Healing was not accelerated by such treatment. An attempt was made to clear up chronic paronychias by infiltration of the nail-fold with sodium penicillin in aqua, 20,000 units per ml. In only 1 case was this attempted without an anæsthetic, but the pain caused was so great that the operation had to be abandoned after 0·25 ml. had been infiltrated. In 5 cases 1 ml. of sodium penicillin in aqua, *20,000 units per ml.*, was injected into the nail-fold under general anæsthesia: 3 cases cleared and the condition was cured in five days; and 2 cases came to operation for removal of the nail loosened and undermined by pus. The postoperative pain was severe and lasted an average of twelve hours, the patient being unable to sleep the night following operation without a sedative.

The principle of the Bunyan bag was applied to the dressing *of large superficial infections of the fingers.* After incision and drainage, a sterile rubber finger-cot was rolled over the finger and fixed with adhesive to the base of the finger, and 2 ml. of sodium penicillin in aqua, 10,000 units per ml., was *introduced* under the adhesive band, with a syringe and needle, to flood the finger-cot. A gauze dressing was bandaged lightly over the rubber finger-cot and left undisturbed for two days. The wound, on removal of the dressing, was clean and *healing, though the skin round it was macerated. Healing* took place rapidly thereafter with sterile gauze dressings. This method of dressing caused no pain and had the advantage of causing a slight passive hyperæmia of the part, as in Bier's method of treatment of acute inflammation.

Penicillin-sulphathiazole Powder.—The use of penicillin-sulphathiazole powder as a postoperative dressing is to be condemned. The powder and wound exudate form a combination as hard as stone, which effectively cements over the *incision made for the evacuation of pus.* Often this cast of wound exudate and penicillin-sulphathiazole powder had to be picked off the finger with forceps to allow evacuation of the pus trapped under it.

CONCLUSIONS

Penicillin is useful in the treatment of all acute infections of the hand *except pulp infections*, if they are seen and treated before pus has formed. After the formation of pus, and when there is necrosis of tissue and formation, the best treatment is adequate i.e., adequate incisions, with removal of all dissection, in a bloodless field under general

Penicillin in aqueous solution given either tively or postoperatively does not confer any benefit, except perhaps in cases with lymphangitis lymphadenitis.

Penicillin in oil and beeswax often increases the suffering.

As a local postoperative dressing, sterile soft gauze is as good as any, and better than most of It maintains drainage far better than does a ru and never obstructs drainage, since it can easily be from the wound. Since it does not adhere to the dressings are less painful; and when granula present they sustain no trauma at the time of

SUMMARY

A series of 148 cases of acute infections of the treated with local and parenteral penicillin by different methods is reviewed and compared wi cases treated with sterile dressings without

An attempt was made to abort 7 cases of acute tions of the hand with parenteral penicillin; in o cases was it successful.

No benefit was obtained from postoperative parent penicillin.

General or local reactions to penicillin in oil beeswax were troublesome in 8 out of 87 cases.

The results obtained in 16 cases of acute the hand treated by *local injection* of sodium p in aqueous solution are described.

A method whereby the principle of the B is adopted for the treatment of large su infections of the finger proved useful.

Penicillin-sulphathiazole powder as a postop dressing for acute infections of the hand is cond

I wish to thank Prof. R. C. Alexander and Dr. H. J. Gibson, *medical superintendent*, for permission to pu this article; Mr. W. G. Campbell for his help and encou ment in preparing this paper; and the honorary st surgical outpatient department, Dundee Royal Infirm for permission to treat their cases.

AMŒBIASIS IN CEYLON

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THE material for this paper has been drawn from year's experience in a R.A.F. mobile field hospital Ceylon between October, 1944, and September, 19 No cases outside the year have been included in t statistics, but 2 others are reported to demonstr clinical observations. The object of the paper is mai to show how high is the incidence of amœbiasis Ceylon, to point out a common misconception in management of undiagnosed diarrhœa, to suggest addition to the routine treatment of amœbiasis, and discuss the clinical picture of amœbic hepatitis.

INCIDENCE

The total number of admissions to the medical w of this hospital during the year was 635; of th 191 cases were classified as "dysenteric disorders and are analysed *as follows*:

Amœbic group		97	(50·8%)
Primary acute amœbic dysentery	62		
Acute relapse of amœbic dysentery	9		
Chronic intestinal amœbiasis	15		
Amœbic hepatitis	9		
Liver abscess	2		
Bacillary dysentery		15	(7·9%)
Clinical dysentery		14	(7·3%)
Non-specific diarrhœa		63	(32·9%)
Lambliasis		2	(1·1%)

ndemic dysentery, the practice of treating undiagnosed rhœa with these drugs should be condemned.

urther, there is some evidence that sulphonamides y be potent therapeutic agents in the treatment of œbiasis. When they are used in conjunction with tine, the immediate results are rapid, and no relapses e been experienced.

mœbic hepatitis presents a definite clinical picture may occur in the absence of a previous history of entery. Negative stool examination and a low leucoe-count do not rule out the diagnosis, and response metine is good.

wish to thank the Director-General of Medical Services, F., for permission to publish this paper Sister E. A. dland, P.M. R.A.F. N.S., for her coöperation in the supern of the cases, and Sergeant N. H. House and Leading raftman H. Gott, laboratory assistants, for their untiring in the examination of specimens.

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CONGENITAL FUNNEL CHEST

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NNEL chest was first described by Eggel in 1870 st (1887) recorded the condition in brothers and rs, Grünenthal (1888) in brothers, sisters, and an t, Smith (1886) in mother and daughter, and Vetlesen 6) in father and son. Thus it came to be regarded familial.

Peiper (1922) and Snyder and Curtis (1934) noted funnel st among three generations, and Klemperer (1888) ong four, suggesting that it can appear as a dominant racter. In the following cases there seemed no doubt t it was inherited as a dominant character.

A boy, aged 12 years, was noted on routine medical inspecn at school to have funnel chest Subsequently his ther and his younger brother were found to have an ntical condition All four brothers had had whooping gh when children but no other illnesses.

The mother said that, when she was a girl, both her other and her grandmother told her that they had a similar st, and she remembered seeing the same defect in her unger brother. She discovered the funnel chest in her own ldren shortly after their birth.

The condition in the three women was known to the late mily doctor, but no personal record of his observations uld be traced

The mother made inquiries among the three other branches the family, but the negative results were not necessarily ved on medical examination

The females through whom the defect has been transmitted serve definite familial features They are tall and spare hey are healthy and long lived There was no intermarriage blood relations

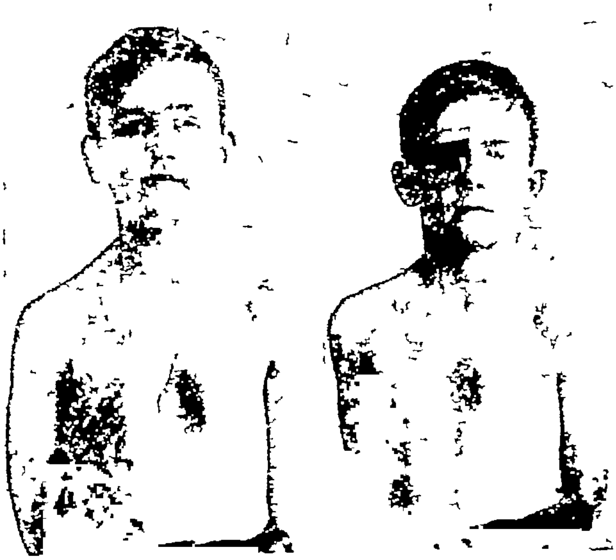


Fig. 2—Funnel chest in two brothers, whose mother also had funnel chest (see fig. 1).

The family pedigree is shown in fig. 1. The earlier details were checked from entries recorded on the flyleaf of the family Bible salvaged from the air-raid shelter.

On examination the two boys and their mother showed no other abnormality of skeleton, breast, musculature of the thoracic wall, hand, or arm. The deformity was that of a funnel chest. There was no clinical evidence of foramen or fissure of the sternum, but radiograms could not be obtained. The type and degree of deformity is shown in fig 2.

DISCUSSION

Funnel chest is by no means uncommon (among 1120 inspections 4 cases of similar severity were observed), but the incidence seems to vary in different districts.

The family history is usually difficult to investigate for the following reasons:

(1) Funnel chest is seldom known of outside the immediate family circle, being normally hidden by clothing.

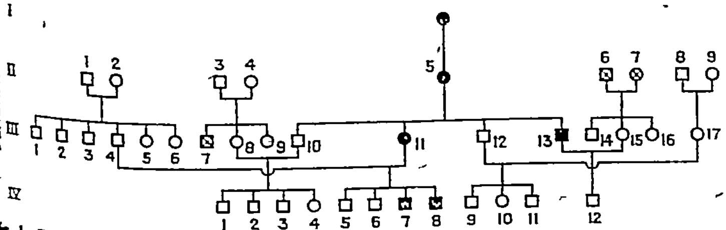
(2) It causes no symptoms and consequently is only met with casually. On this account also it tends to be omitted in clinical records

(3) It occurs in varying degrees of severity—several mild but definite cases have been noted in which the defect was completely missed by observant parents

(4) Like other inherited conditions, it is becoming more difficult to investigate, because more frequent travel leads to wider dispersal of families, and the general practitioner with his unique facilities for observation is becoming less a "family doctor"

It is believed that the condition is occasionally acquired, but normally is inherited as a dominant character with the unusual feature that a complete generation may be omitted owing to mild deformities being overlooked. Indeed it has been suggested that the defect may reach vanishing-point while the gene remains to become manifest in a subsequent generation.

It is generally assumed that the appearance of any such defect in lineal descent through three or more



g 1—Pedigree showing transmission of funnel chest (black symbols) as a dominant character. Symbols marked with a cross indicate persons in whom the presence or absence of funnel chest is not known.

NUMBERS OF AFFECTED AND UNAFFECTED OFFSPRING OF AFFECTED PARENTS

Affected parent	No. of affected children	No of children not affected
II 5	2	2
III 11	2	2
III. 13	—	1
Totals ..	4	5

the stool was positive for E.H. on the third day, but no stool was available afterwards.

The mode of action of the sulphonamides is uncertain. There is accumulating evidence that secondary bacterial infection of the bowel may precipitate an acute attack of amœbic dysentery and be responsible for chronicity in other cases; hence it is possible that the elimination of such infections by the sulphonamides is the reason for the symptomatic improvement. But the rapid disappearance of E.H. from the stools in 5 cases suggests that the drugs may be lethal to the amœbæ. Further research along these lines has been impossible here, and the temptation to treat a series of cases on prolonged courses of chemotherapy without recourse to emetine and to follow up these cases in hospital was not considered justifiable. However, two points emerge clearly: (1) the exhibition of sulphonamides to undiagnosed cases of diarrhœa will lead to some cases of amœbic dysentery being missed; and (2) sulphonamides are a further weapon in the anti-amœbic armoury.

After these cases were observed it became the custom to use a short course of chemotherapy together with emetine as initial treatment in acute amœbiasis, the following course being adopted:

Days 1–10	..	Emetine gr. 1
Days 1– 3	..	Sulphapyridine (or sulphathiazole) total 14–20 g.
Days 4–13	..	Carbasone gr. 4 b.d.
Days 14–20	..	Rest
Days 21–30	..	E.B.I. gr. 1–3 nightly (according to tolerance)

Altogether, 42 cases of acute amœbiasis were treated on these lines. Of those it was possible to follow up 15 at an interval of two to four months after discharge from hospital. The results of treatment and follow up were as follows:

	No. of cases
Cases treated	42
Stools returned to normal within 2 days	30
Stools returned to normal within 3 days	10
Stools returned to normal within 4 days	2
Intolerant to sulphonamides	2
Positive stools on discharge	—
Sigmoidoscopic evidence of disease on discharge	—
Cases reviewed 2–4 months later	15
Positive stools (3 examinations)	—
Sigmoidoscopic evidence of relapse	—
History of diarrhœa of more than 24 hours' duration since treatment	4

It is unwise to draw many conclusions from so few cases. But the results, both immediate and remote, of this treatment have been impressive, and it is hoped that those in a better position to treat large numbers of cases will consider this treatment worthy of further trial. For, if acute amœbiasis is curable, the problem of relapsing amœbiasis ceases to exist.

AMŒBIC HEPATITIS

The subject of amœbic hepatitis has been ably reviewed (*Lancet* 1944) and the importance of acute hepatitis emphasised. Acute amœbic hepatitis presents such a striking clinical picture that the condition may be confidently diagnosed in the absence of confirmation by stool or blood examination. The most striking feature is severe pain of sudden onset in the upper abdomen (either central or to the left or right of the midline). The pain, once established, is unremitting but may be intensified by deep breathing, sudden movement, or taking food. High fever is present, and the victim looks ill and "toxic." Careful examination reveals an enlarged and extremely tender soft liver. The presence or absence of leucocytosis is not important (see below). Response to emetine *is dramatic. The disease is commonly mistaken for a perforated viscus or* cholecystitis. The following case is a typical exam

TABLE II—ANALYSIS OF CASES OF AMŒBIC

Type of case	Case no.	Previous dysentery or severe diarrhœa	Leucocyte-count per c.mm.	Stool examination
Acute amœbic hepatitis	1	No	13,200	Neg.
	2	No	12,600	Active E.H.
	3	No	14,500	Active E.H.
Chronic amœbic hepatitis	4	Yes	4000	E.H. cysts
	5	No	5800	Neg.
	6	Yes	6300	Neg.
	7	Yes	13,400	Active E.H.
	8	Yes	5400	Neg.
Amœbic liver abscess	9	Yes	20,600	Active E.H.
	10*	Yes	7800	Neg.

* This airman died, before treatment was given, from the *of a liver abscess into the pericardium.* The confirmed at autopsy.

A flying-officer, who had been overseas for a year and no history of previous illnesses, had severe epigastric of sudden onset "like constant indigestion" for four before admission. Repeated vomiting did not relieve the On the day of admission the pain became much worse, and was admitted with a diagnosis of acute cholecystitis.

On admission he was febrile (103°F) and ill; he had a brown tongue, and there were scattered rhonchi througho chest. The whole of the right side of the abdomen w and the right upper rectus so firm as to give the impr of a hard abdominal mass. In the right flank and to th of the midline the liver was palpable, soft, and extr tender. The total white-cell count was 13,200 per c.mm., (10,800) being granulocytes. He was seen in conjunction a surgical colleague, and it was decided to start a cour emetine and await events. The response to this was im diate; the pain was less next day and disappeared on third day. He became afebrile on the fifth day, and liver was impalpable on the tenth. No E.H. or cysts found in the stools. He returned to full flying duties weeks after admission.

Chronic amœbic hepatitis is such a well-establi entity that no comments will be made on this subj beyond including cases in table II. These cases included in an attempt to elucidate three points: the leucocyte-count in amœbic hepatitis; (2) the p portion in which stool examination *is positive* for E. and (3) the proportion giving a previous history dysentery.

It is generally accepted that a leucocytosis is distinctive feature of amœbic hepatitis (Manson-B 1943), but only 5 of these cases had a count of ov 10,000, and others showed a moderate leucopeni Only 6 out of the 10 gave a previous history of diarrhœ and in 5 no E.H. or cysts were found in the stools. It my opinion that no reliance can be placed on the histo the white-cell count, or stool examination in the diagno of hepatic amœbiasis. They may give useful confirm tory evidence but are by no means essential to th diagnosis. This must be made on clinical grounds, a confirmation is readily forthcoming from the dramat response to emetine therapy.

SUMMARY

In Ceylon during the period 1944–45 half the ca admitted to a R.A.F. hospital with diarrhœa had amœb dysentery.

The exhibition of sulphonamides in cases of acu amœbic dysentery often causes well-marked clinic improvement and renders stool examination negati *for E.H. As amœbiasis is* by far the commonest ca racted with acetone-water produced little or no depres- of growth suggests the possibility that the poor wth with maize meal may not be due entirely to a ciency of some dietary essential as suggested by the k of Salmon (1947), but that additional factors may involved such as the imbalance of amino-acids in ze (cf. Krehl et al. 1946), or the presence of an actable toxamine (cf. Woolley 1946). Feeding eriments with crude acetone-water extracts and with tions derived therefrom failed to give us conclusive ults.

view of the possible effects of the intestinal flora on synthesis and destruction of nicotinic acid (Ellinger and manuelowa 1946) and of tryptophane, and hence on the irements of nicotinic acid by the animal, we have tried ng succinyl sulphathiazole (1%) to the control diet, ther with supplements of folic acid. Although the rats consistently well on this diet when nicotinic acid was d, without it they showed the same proportion with essed growth as on the simple 10 5% casein diet without bacteriostatic agent. Again indole-3-acetic acid had no tically significant effect on the proportion of rats with essed growth.

CONCLUSIONS

n our earlier note, we pointed out that indole-3- tic acid occurs in maize as a precursor and not as the free substance. Our present findings now make it seem very unlikely that the latter substance can be responsible as such for the apparently more constant "pellagragenic" activity possessed by maize. Apart from this, the principal impression left by our recent results and those of other workers is the erratic response of the rat, used as test-animal for work on nicotinic acid. The suspicion that microsynthesis may be of special importance as a disturbing factor is strengthened, and the variability of our findings with indole-3-acetic acid as an inhibitor of growth for rats is paralleled by those of Perlman and of Dubos and others working with various types of bacteria.

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Diet	Date	Without indole 3-acetic acid			With indole-3-acetic acid (15 mg./kg. diet)		
		No of rats	Average weekly gain in weight (g.)	No. with retarded growth	No. of rats	Average weekly gain in weight (g.)	No. with retarded growth
% casein	June, 1946.. ..	4	14 (10 to 18)	0	4	7 (5 to 11)	3
	July, 1946 .. .	—	—	—	4	6 (3 to 8)	4
	August, 1946 ..	4	15 (8 to 18)	0	8	13 (11 to 19)	3
	September, 1946 .	—	—	—	16	9 (−1 to 18)	9
	Total (1st series) ..	8	15	0	32	9	19
5% casein	November, 1946 ..	8	4 (−1 to 21)	5	16	8 (−5 to 30)	7
	December, 1946 ..	12	16 (6 to 23)	0	—	—	—
	January, 1947 ..	10	19 (3 to 25)	1	10	14 (1 to 24)	3
	March, 1947 ..	12	12 (−3 to 22)	4	6	18 (10 to 25)	0
5% casein+folic acid	March, 1947 ..	6	18 (15 to 22)	0	6	13 (0 to 21)	1
5% casein+folic acid+succinyl lphathiazole (1%)	March, 1947 ..	6	21 (19 to 24)	0	6	11 (−1 to 23)	2
	April, 1947 .	26	13 (1 to 24)	5	26	14 (0 to 26)	6
	Total (2nd series) ..	80	14	15	70	13	19
casein+40% maize	June, 1946.. ..	5	7 (−3 to 16)	5	—	—	—
	August, 1946 ..	4	5 (−12 to 12)	4	—	—	—
	Total (1st series) ..	9	6	9	—	—	—
casein+40% maize	October, 1946 ..	8	2 (−1 to 7)	8	—	—	—
	January, 1947 .	10	3 (−5 to 13)	8	—	—	—
	March, 1947 ..	6	5 (1 to 9)	4	—	—	—
	Total (2nd series) .	24	3	20	—	—	—
casein+40% acetone-extracted maize	August, 1946 ..	4	19 (18 to 23)	0	—	(60 mg /kg. diet) —	—
	October, 1946 .	—	—	—	4	14 (11 to 16)	0
	November, 1946 .	—	—	—	4	6 (−4 to 13)	2
	January, 1947 ..	10	18 (−2 to 33)	2	10	17 (9 to 31)	0
	Total (2nd series) ..	14	18	2	18	14	2

Notes to Table

1. Male piebald rats (Hartwell strain) are transferred from full diet to experimental powder diet when weighing 57–63 g. parate cages, food and water *ad lib*

2. "Average weekly gain in weight" is measured from the th to 35th day on the experimental diet. Growth is counted as "retarded" if the rat grows not more than 5 g in any 10-day period after the 14th day.

3 *Basal diet:* 3% cotton seed oil, 5% salt mixture, 0 15% tine, casein as shown above, and sucrose to 100 In diets containing yellow maize meal (unextracted or extracted), the oil, salts, and cystine content are reduced by 40%. The following vitamins are added to each kg. of diet: choline, 2 g., Ca pantothenate, 20 mg.; aneurine, 3 mg.; pyridoxine, 3 mg.; riboflavine, 3 mg ; biotin (free acid), 0 1 mg.; 'Radiostoleum' (+ 0 1% of 2 methyl,1,4-naphthoquinone), 8 drops; 5% tocopherol acetate, 1 drop on palettes 3 times weekly per rat; folic acid, 0·04 mg., when added, was given on palettes 3 times weekly.

generations is, in the absence of consanguinity, conclusive evidence of its dominant inheritance. The ratio of affected to unaffected members of the family should be 1: 1, or any deviation from this ratio should not be significant. In this family the ratio is 4 : 5, assuming that those members recorded as unaffected are in fact free from even a slight deformity (see table).

On the other hand, funnel chest, as it is usually met with in a population, rather resembles a recessive character, and it may be that the few pedigrees like the present one represent a rare but different mode of transmission.

SUMMARY

Six cases of funnel chest occurred in lineal descent through four generations in a single family in which there was no consanguineous marriage.

Three of the cases (personally observed) strongly suggest that the funnel chest was inherited as a dominant character.

I am indebted to Dr. J. R. Mitchell, school medical officer to Birmingham Education Committee, for permission to publish this case.

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"PELLAGRAGENIC" ACTION OF MAIZE

FURTHER EXPERIMENTS

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SINCE the publication of our preliminary report (1946) on the effect of indole-3-acetic acid on the growth of rats maintained on diets low in protein, nicotinic acid, and tryptophane, we have been continuing our trials, as shown in the accompanying table.

In our earlier experiments the control rats fed on the basal diet (containing 10·5% casein) grew well at an average rate of 15 g. per week, the range being from 8 to 18 g. Addition of nicotinic acid caused no significant increase. Other rats on the same basal diet plus 15 mg. of indole-3-acetic acid per kg. of diet showed a retardation of growth in 19 out of 32 cases, and this could be counteracted by either nicotinic acid or tryptophane.

Since then an irregular proportion of our control rats *on the basal diet,* varying from one experiment to another, have shown a depression of growth (15 rats out of 80) reversible by nicotinic acid or tryptophane, whereas formerly they grew well. There seems to be no correlation between this depression and litter, season, &c. Similar experiences of unexpectedly poor growth on the basal diets, which had previously proved satisfactory, have been reported by Krehl et al. (1947). In our later experiments, moreover, the proportion of rats on the indole-3-acetic acid diet showing a depression of growth (viz., 19 out of 70) is no longer significantly greater than in the control rats. Increasing the dose of indole-3-acetic acid failed to produce a more definite effect. Kreh let al., using two different strains of rats, also report that they obtained no difference in growth with indole-3-acetic acid.

In our recent experiments, rats fed on 40% maize diets do, however, still show, in nearly all cases, a depression of growth, curable by nicotinic acid or as was the case in our early tests. This diet approximately 10·5% protein. In the search for a toxic factor, the maize meal was extracted by a described by Berger and Avery (1944), which is to remove the indole-3-acetic acid precursor, and of an extraction with acetone-water at pH 10. This cedure also removes a protein fraction. The maize when given at the 40% level promoted a growth in our rats significantly better than that with the unextracted maize, in spite of the fact protein content of the diet had been further by the extraction. The growth with the extracted was equal to or better than that obtained with the 10·5% casein diet. Addition of indole-3-acetic (60 mg. per kg.) to the extracted-maize diet did not any retardation of growth.

COMMENTS

As mentioned above, the different behaviour control rats from that found previously is in line experiences of Krehl et al. (1947), who have that diets low in protein, which were formerly suff for adequate growth, now need, with the same of rats, to be supplemented with nicotinic acid. explanation of this apparently unpredictable behavi of the rats must await further study. In some of experiments the control rats still give consistently growth. Those with depressed growths are eve distributed between litters. There seems to be connexion with season. The strain is bred from a population.

One possible explanation which suggests account for the erratic responses observed by and other workers, would be that the prolonged synthetic diets in the laboratory may encourage a in the bacterial flora, by adaptation. It is ger accepted that a variable degree of bacterial the intestine may influence the body's economy nicotinic acid (and presumably in tryptophane, which its metabolism is connected). On this hypoth our failure now to find a significant depression of grow with the addition of indole-3-acetic acid to the might be connected with a change in the intestin flora.

It seems of significance in this connexion that Perlm (1940) has observed that indole-3-acetic acid has in a depressing effect on the organism *Strep. fæcalis* in vit reversible by nicotinic acid or tryptophane. The bacter is capable of adaptation to indole-3-acetic acid by rep transfers, and then ceases to be inhibited by it (Perlm private communication). Indole-3-acetic acid is of cou here to be regarded as an anti-tryptophane substance. Dub (1946) also reports inhibition of the growth of *Mycob tuberculosis, Strep. hæmolyticus, Strep. salivarius,* and *Shig paradysenteriæ* by indole-3-acetic acid, reversible by tryp phane. Handler (1947) on the other hand, found no eff on other organisms, *Strep. fæcalis, Lactobacillus arabinos Staph. aureus, Proteus vulgaris, Aerobacter aerogenes,* *Escherichia coli*, unless high concentrations of the indole acetic acid were employed; and similar findings for *E.* are reported by Raoul (1947). Yet another if somew different kind of example of a variable response to indole acetic acid is mentioned by Cohen and Fowler (1947), found that bacteriophage synthesis was stimulated by sample of indole-3-acetic acid, but they were unable to rep the effect with other samples.

Maize, we still find, produces a significant depress in growth, compared with that in our control rats on a casein diet containing the same total content protein. This agrees with the findings of Krehl et (1947). though here again a variable factor is appare as they now report that rats of the "Yale" str grow better on their niacin-unsupplemented corn-g ration than did the "Sprague-Dawley" strain of that they used earlier. Our finding that maize suggested that the onset of thrombosis may be told by estimations of fibrinogen B and of the thrombin-time, in conjunction with the body perature. Fibrinogen B, described by Lyons in trala. is an intermediate substance produced in the version of fibrinogen into fibrin. Thrombin consists wo components, neither of which will, alone, convert inogen into fibrin. The thrombin component A ts with fibrinogen to form the intermediate product inogen B, which normally passes rapidly into the in form. Mayes suggests that in the prethrombotic e the fibrinogen B fraction is greatly increased and t this increase is pathognomonic of incipient thrombis. Dr. Payling Wright has observed, however, that fibrinogen B always rises after operation: and proombin activity is increased even in the absence of onstrable thrombosis. She concludes that the only able method of detecting thrombosis is careful clinical ervation.

ostoperative blood changes are not only chemical: platelets increase from the fifth or sixth day and h a maximum about the tenth day, thereafter iding to normal by the end of the third week. The nt of the rise is directly correlated with the severity he tissue damage at operation. In 1942 Dr. Payling ght showed that after operation the platelets not y increase in numbers but become more adhesive, stickiness being maximal on or about the tenth day. appears that this effect is attributable to the new ing cells which enter the circulation in response to stimulus of trauma. The closely parallel course of mical and cytological changes suggests a common nulus; and it seems likely that the stimulus to the e-marrow is provided by products of tissue autolysis.

ots originate usually in the small plantar and calf : but the spread of the clot into the venous trunks well be influenced by the physical features in the veins. Formerly anatomists believed that Pout's ligament, by constricting the veins at the level of pelvic brim, played an important part in thrombosis. Payling Wright holds that this ligament is too erior and too lax to exert pressure. By running ster-of-paris into the veins of cadavers and dissecting t the cast she has demonstrated anteroposterior ttening of the vein as it passes into the pelvis: but is flattening is caused by the vein lying almost directly the bone as it passes from the leg to reach the sterior wall of the pelvis. The effect is best likened the kinking of a piece of rubber tubing drawn over e edge of a table. The cross-sectional area of the in at the narrowest point averages 28 sq. mm., compared with 36 and 39 sq. mm. 5 cm. below and above is point. The slowing of the blood and the nipping the clot at the area of narrowing may contribute to e formation of small emboli which break from the attached surface of the thrombus; and this may be he site of origin of repeated non-fatal emboli in femoral rombosis. The making of the venous casts brought o light the fact that whereas in the supine position here is little distortion of the vein except for the flatening, in Fowler's position the vein is bent almost to right-angle; this obstruction must promote the propaation of any thrombus forming in the peripheral veins f the leg.

The circulation-time from leg to carotid sinus slows rogressively up to the eighth or ninth day after operaion, when it becomes steady at the reduced velocity. It is assumed that this slowing depends upon stagnation n the legs since the arm-carotid time is altered less. Dr. Payling Wright is now testing this theory by injecting the radioactive sodium$_{24}$ into the dorsal veins of the foot, the gamma emanations being recorded by a shielded Geiger counter placed over the femoral vein in the groin. One case investigated in this way exemplified the value of foot movement as a pumping mechanism for stagnating blood. Sodium$_{24}$ was injected into the foot of a subject with severe varicose veins. By the end of a minute no radioactive sodium had reached the counter: at that moment the patient contracted his foot dorsally a little, and within 2 sec. a shower of gamma-rays was recorded.

Dr. **Magnus Haines** emphasised that thrombosis may be unaccompanied by symptoms or signs. The time of onset varies: thrombosis may start less than ten days before operation or later than three weeks afterwards; and necropsy shows that it may occur without operation, especially in those who have been some time in bed. The patient is usually over 40 years of age. Clinically, a subsequent pulmonary embolism may be misdiagnosed as pneumonia or basal collapse. Unfortunately clinical records of postoperative thrombosis are usually scanty. At the Chelsea Hospital for Women deaths after abdominal operations have steadily decreased during the past twenty years. Twenty years ago physiotherapy was introduced as part of the postoperative treatment; but the fall in deaths is not due simply to a diminished incidence of thrombosis.

Mr. **A. Dickson Wright** agreed that Fowler's position should be abandoned, except in special circumstances. The patient should sit up except at night and during his afternoon siesta. Among the factors predisposing to thrombosis are the retention of the patient in bed for several days before operation; preliminary starvation and purgation; and loss of blood at operation. A patient with a thrombophilic history should never be submitted to intravenous anæsthesia, pyelography, or cystography; and if operation is undertaken on such a patient it would be worth while to tie his femoral veins at the same time; ligation of these veins does not interfere with everyday activities. Thrombosis manifests itself in many different ways. It may reveal itself through pulmonary embolism; it may be first detected in varicose veins, and this, though it carries no danger of embolism, may be a portent of thrombosis elsewhere: a large loosely attached thrombus may form in one of the deep veins, and cause tenderness, and pain aggravated by dorsiflexion of the foot, and an increase in temperature or pulse-rate. For all these manifestations Mr. Dickson Wright advocates ligation of both femoral veins: once this is done, he argues, the worst is known. Massive femoral thrombosis—phlegmasia alba dolans—causes collapse by abstraction of fluid; and intravenous saline may be needed. Injection of the lumbar ganglia with 1–2% procaine, as recommended by Leriche, ends the arterial and venous spasm; and the cold clammy leg becomes warm. Dos Santos, of Lisbon, using phlebography, has proved the practicability of a planned operation for the abstraction of clots. Mr. Dickson Wright advocates heparin and dicoumarol in all cases of postoperative thrombosis.

Mr. **Leslie Williams** agreed with Mr. Dickson Wright that the initial dose of intravenous heparin should be 125 mg.; thereafter 100 mg. should be given every 4–5 hours except at night when 125 mg. is again injected. Heparin is continued until the delayed effect of dicoumarol appears; 300 mg. of dicoumarol is given on the first day and 200 mg. on the second day. The dose of this drug has to be checked against the prothrombin-time; the aim is to get this time just over twice the normal. Ligation of both femoral veins for thrombosis in one calf is classified by Mr. Williams as "blood-and-iron surgery."

Dr. **K. P. Ball** quoted figures for cases observed at the Central Middlesex Hospital: by the use of anticoagulants the recumbent period for thrombotic patients has been reduced from 45 to 8 days; and their total stay in hospital has been reduced to 3 weeks. Anticoagulants diminish the risk both of embolism and of after-effects.

Mr. **John Howkins** held that Trendelenburg's position may be a focus of trauma. Insufficient heed has been paid to the possibility of a clot originating at the site of operation—especially a second-cut operation or one at a septic site. In the promotion of thrombosis subtotal hysterectomy is a bigger offender than total. What kills the patient is not the clot—this does not occupy the whole lumen—but obstruction by spasm; and perhaps old-fashioned remedies such as papaverine should not be forgotten.

Another speaker was supported in his suggestion that some makes of heparin contain pyogenic substances and may even give rise to anaphylactoid reactions. If heparin causes pain when injected into the skin it will probably cause a reaction when given therapeutically.

Medical Societies

ROYAL SOCIETY OF MEDICINE

ON Oct. 7 Mr. GEORGE PERKINS delivered his presidential address to the section of orthopædics on

Flat-foot, or Instability of the Long Arch

No concept is more muddled in the surgeon's mind, he said, than that of flat-foot. Hordes of children with normal, if low, arches are still referred to outpatient departments from school clinics, with a needless waste of the time of physiotherapists and of overburdened mothers. The term "flat-foot" is misleading, for a high arch is as likely to cause symptoms as a low one; symptoms depend on the stability, not the height, of the arch. The bones of the foot are so shaped that when stress is transmitted through the centre of the subtaloid-midtarsal joint the arch withstands the body-weight without collapsing. It is the duty of the leg muscles to keep this joint in the neutral position, like the staywires of a mast, so that they themselves and the ligaments of the foot take little or none of the strain. But, should the composite joint begin to capsize, as it does if the axis of weight transmission starts to deviate, the stretched ligaments reflexly excite a muscular contraction which restores the status quo. The other essential for stability is the plantigrade position of the foot, with the heel and the heads of the first and fifth metatarsals all on the ground together. Children do not acquire a good reflex balancing mechanism until their second year, and often subside into planovalgus while learning. The reflex mechanism may not be acquired until the age of three or four years, or it may never be developed, so that the feet always collapse on standing.

In clinical examination, stability of the foot can be tested by noting the alignment of leg and foot. If a vertical line through the centre of the knee cuts, or falls outside, the second toe there is no planovalgus. Even if this line falls inside the second toe there may still be no flattening, for some people possess a talus with a neck directed abnormally outwards, so that the foot is externally rotated on the leg. The clue is to look from behind at the angle of the heel, which shows whether the subtaloid-midtarsal joint is capsized or not. The power of active restoration of the arch is shown by noting the new position of the knee-toe axis when standing on tiptoe. Mobility is tested in the ordinary way with the patient lying, and it is always possible to recognise valgus deformity by the prominence of the head of the talus between medial malleolus and navicular, in spite of the masking tendency of any forefoot varus which may be present.

From the point of view of causation and treatment, Mr. Perkins divides flat-foot into four main groups. The common mobile planovalgus due to faulty postural activity of muscle is normal under the age of two years. The routine practice of wedging the inside of the heel in children is fatuous, for no shoe grips a child's foot tightly enough to prevent it turning over into valgus. Boots are necessary, and should be used until the deformity disappears. Wedging the sole is harmful, for it induces a varus of the forefoot, besides making the sole too rigid for a good gait, and there seems to be no point in forward prolongation of the heel. Regarding physiotherapy, the classical inversion exercises overdevelop the *tibialis anterior* and *produce an inversion* of the forefoot which itself tends to cause a valgus of the heel. A much better exercise is to stand with the feet firmly planted on the ground and forcibly rotate the legs outwards at the ankle. In the second group of cases the tripod plantigrade arrangement has been upset in some way. If there is an equinus deformity which lifts the posterior pillar off the ground, this is compensated by a dorsiflexion at the subtaloid-midtarsal joint, but at the expense of some eversion and abduction and general instability. This valgus ex equino has long been known, and in a boy it is a simple matter to perform a subcutaneous elongation of the Achilles tendon. Because such an operation alters the shape of the calf, it seems wiser in a girl to anticipate the fashions of adolescence by simply raising the heel. The other cause of upset of tripod balance, rather neglected until recently, is varus the forefoot: if the first metatarsal head is the ground it can only be brought down by a pensatory valgus of the hindfoot. The cause of a varus is obscure; it may arise from a failure calf muscles or the tibialis anterior to keep pace growth of the bones in development. In tr *is necessary to manipulate the heel into varus forefoot into valgus, if need be with two wrenches, and fix the overcorrected position in* Finally, there is the rigid painful flat-foot of a severe forms of which Mr. Perkins fuses the sub midtarsal joint in the plantigrade position by the triple arthrodesis. Before doing this, it is worth a rigid arch-support, or stiffening the leather at inner border of the shoe, and some form of plastic may eventually be the solution.

DISCUSSION

Mr. SAYLE CREER paid tribute, as had Mr. I to the importance of Lambrinudi's work. He d with Mr. Perkins's view that the bones of the long uphold themselves, for his experiments with amputated limbs have shown that the foot flatt under a weight as soon as all the ligaments have divided. Therefore in some cases a surgical on the ligamentous soft tissues may be justified, is in certain cases of club-foot. He cited also numerous surgical techniques for treating a for varus by bringing down the first metatarsal head, Lambrinudi's procedure for what he called metat primus elevatus.

Sir THOMAS FAIRBANK stressed again the im as a causative factor of inversion of the forefoot hindfoot, and the difficulty of its correction. He raises the inside of the sole (though Sir Robert was in the habit of so doing), and, for capsizing in small children over two, favours a removable covered cork insole worn inside a boot. General and correct walking are more important than any exercises.

Mr. J. S. BATCHELOR thought that true flat-f a rare congenital condition. In the ordinary case is a simple, postural valgus deformity, to be treated children by wedging the heel and stiffening the in border of the sole. Many exercises only aggravate existing equinus deformity.

Mr. V. O. SNELL remarked that the pathology is oft considered upside down. The trouble is really internal rotation of the tibia on the foot, and cure is to walk with the toes turned in, so as re-educate the tibialis posterior, for it is fatigue of t muscle which allows the tibialis anterior to prod varus of the forefoot, and boots may exacerbate t tendency.

Mr. J. A. CHOLMELEY mentioned that shoes are oft too stiff nowadays and need vigorous bending to rest their flexibility.

Mr. PERKINS, winding up, agreed that there is a congenital flat-foot with the talus fixed in equinus a the other bones dorsiflexed. Spasmodic flat-foot is a true instability but a peroneal spasm reflex to arthritis of the subtaloid joint.

Postoperative Thrombosis

A meeting of the section of obstetrics was held Oct. 17, with Mr. A. J. MCNAIR, the president, in th chair.

Dr. HELEN PAYLING WRIGHT said that pulmonar embolism complicates one in about a hundred ma operations; and one out of every six cases of emboli is fatal. Thrombosis, which is almost twice as comm in females as in males, follows most commonly operati in which the abdominal cavity is opened and the pel viscera are explored.

After operation the plasma fibrinogen first diminish and then increases; and by the third or fourth day reaches nearly double the preoperative value. Similarl the prothrombin level, after an initial fall, ris achieve a maximum about the tenth day. Lately Mr.

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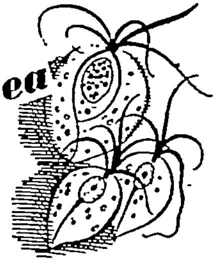

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Reviews of Books

Medicine

Vol. I. *The Patient and His Disease.* A. E. CLARK-KENNEDY, M.D. Camb., F.R.C.P. Edinburgh: E. & S. Livingstone. 1947. Pp. 383. 20*s.*

Dr. Clark-Kennedy's book is "intended to correlate the facts; and, by cutting across the conventional boundaries which separate one branch of medicine from another, emphasise the general principles underlying medicine as a whole." It is "intended to inculcate an attitude of mind . . . to prevent facts which could be deduced from principles being committed to memory unnecessarily . . . to provide a framework on which a knowledge of medicine can be built by self-education as experience widens."

It opens with a clear swift synopsis of what the universe looks like to the modern scientist-philosopher—everything from energy and matter, through life, evolution, and heredity up to consciousness and mind, all in forty pages. This is the patient's background. Then come two long chapters on symptoms and signs. The mental and the physical are both considered. A technique of history-taking and examination is sketched. The common symptoms are described, and their physiological mechanisms explained. Then they are lined up, looked at, classified, and pondered. There are those which are understandable on the basis of students' anatomy and physiology, and those, like tumours, which mean nothing to one who has not studied pathology. There are those expressing defect of structure or function, and those expressing excess, while a few like the extensor plantar response are reversions to primitive mechanisms. There are those which result directly from the impact of injury or disease upon the organism, and those which belong to the organism's living reaction to the impact, tending to its own preservation; yet these latter seem sometimes to be excessive. This is the first step towards seeing disease as one aspect of the interplay of organism and environment.

The next is a chapter entitled Heredity and Environment, which breathlessly describes human development, nutrition, and senescence, the forms of injury and disease according to their causes, drugs and poisons, micro-organisms, new growth, and the relation to health of mind, philosophy, and religion. It is almost purely descriptive, but it provides a basis for the two following chapters in which the phenomena of disease are closely analysed as reactions of the body-cum-mind to environmental change—whether "normal" changes like those of the weather or the personal relationships of everyday life, or "abnormal," like injury and disease—the reactions themselves varying according to the constitution of the body-cum-mind, influenced by its heredity, its age, and its experience.

The second volume, soon to appear, will be largely concerned with diagnosis and treatment. The book thus formed can hardly replace the standard textbooks—there will always be too many tidy-minded teachers to allow that. But the older student and the younger teacher will be attracted by the vigour of its style and its courageous attempt to stand on two feet and face the whole universe. Its author designed it, not as a new medicine, but as "a corrective long overdue in that dangerously over-complicated prescription which is administered to the would-be doctor in the present day"; and it should achieve much of the purpose for which it was written.

In this bold venture Dr. Clark-Kennedy's chief handicap is his attempt to be too comprehensive. He wishes to comprehend among his readers both the student, beginning medicine, and the established practitioner or teacher. He writes sometimes for one, sometimes for the other. He feels he must comprehend in his text all the main facts which form the content of the many branches of medicine he covers. Skilfully though he does it—and he has a genius for terse statement and provocative simplification—the facts pile up in places indigestibly, and obscure the generalisations. Nor are they always quite accurate, though that in the author's eye would be a minor matter; an occasional slip just emphasises his impatience to survey the whole territory of medicine and show that it does have a pattern of its own independent of the existing fields and this, in the main, he succeeds, though his pattern is doubtless not final. His plea that the should be described, should be accepted in general teachers and practitioners, and should constitute background of their teaching and their practice, powerful one.

Principles and Practice of War Surgery

(3rd ed.) J. TRUETA, M.D. Barcelona, HON. D.SC. surgeon E.M.S., Wingfield-Morris Orthopædic Oxford. London: Hamish Hamilton and W. 1946. Pp. 426. 42*s.*

THE value of Dr. Trueta's work lies in his synth known facts into a system for the treatment of wounds; and the appearance of the third edition book, at first sight ill timed since most of the have gone home, is useful in recording his views on injuries which present much the same in peace as in war. His five-point programme of surgery, wound cleansing, wound excision, and immobilisation is the theme running through book from its early chapters on the pathology of and infection to its later detailed consideration technique. It is not a complete treatise on surgery, because it does not deal with wounds of abdomen, chest, or head. It would teach a young only how to deal with cases which, in civil life, would considered orthopædic problems. But everyone embarks on traumatic surgery should read the and the illustrations are superb.

Ernährungsprobleme in Mangelzeiten

Die schweizerische Kriegsernährung 1939–46. FLEISCH, Ordinarius für Physiologie, Direktor Physiologischen Institutes an der Universität Lau Präsident der Eidgenössischen Kommission für ernährung. Basle: Schwabe. 1947. Pp. 518. Sw.

BEFORE the war the Swiss imported a large part of food. About half their calories came from abroad the major imports were wheat and sugar. It was inevitable therefore that, like the belligerent they should have difficulties over their food-sup during the war; and as the conflict went on round borders the screw of rationing gradually had to tightened up. Tea and coffee, the first to be ratio were followed in July, 1941, by fats and then eggs, milk, and meat. In the end the extraction bread was raised to 90% and nearly everything potatoes was rationed. Coupons had to be given up restaurant meals. There was no serious black ma and the general effects of rationing were not un those in this country. Bread was rationed however, and the country passed through a bad perio in the late spring of 1945 when the calories for the norm consumer fell to about 1800 per day, and the intake fat to 40 grammes per day and of protein to 54 g. p day. Like all countries forced to ration calories, th Swiss had special supplements for workers in variou categories, and they had, naturally, special allocation of certain foods for children. Invalids also, particularly diabetics, had special rations. The 90% extractio bread was found to suit sick persons very well.

This and much more is set out in the book, whose histori value will be considerable, particularly to the Swiss though it must always have interest for anyone versed in the theory and practice of rationing: nothing so complete about rationing and its effects seems to have been published elsewhere. The changes in weight and hæmoglobin in the general population, which seemed to be related to fluctuations in the rations, would be important if they could be confirmed and their causatio established.

New Ways of Treating Uræmia (London: J. & A. Churchill. 1947. Pp. 112. 10*s.* 6*d.*).—This is an Engli reprint of Dr. W. J. Kolff's original publication, "The Artificial Kidney,"[1] with some additional case-histories, and brief addenda on his experiences with peritoneal lavage, perfusion of isolated loops of gut, and high-caloric/low-protein diets in the treatment of uræmia. The book is chiefly concerned with artificial kidney technique.

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[1] *Lancet*, 1946, ii, 720, 726.

THE LANCET

LONDON: SATURDAY, OCT. 25, 1947

The Integration of Medicine

HE pile of human knowledge has grown prodigi- ly—mostly, it seems, in the last few thousand rs. In that time man's mind and brain have nged little, so that an individual's capacity to sp and use knowledge is now minute in com- ison with the knowledge at his disposal. That is reason why man's use of knowledge lags so far ind his accumulation of it. Since the knowledge uired for one task, such as making a motor-car, beyond one man's comprehension, it must be uired piecemeal by many men, and these must n develop a method of working together for its rdinated application. That group effort encounters otional difficulties as its greatest stumbling-block. t even the intellectual problem of the subdivision abour is not easy. The group needs its specialists, in the minute details of their narrow fields, its "generalists" who, seeing the pattern of the e task, can modify it to suit changing needs or ging techniques. The "generalist" must know ough of the specialist's field to influence and to influenced by him; the specialist must know ough outside his field to make him interested in s fellows and able to work with them. The mass- roduction motor manufacturers have developed a attern of functional relationships among their mployees that seems to dovetail very well. under e pressure of their overriding aim to make and sell rs at a profit. Their task was relatively easy; r the aim was simple, and the degree of success in ach part of the organisation, as well as in the whole tructure, was measurable in money. In most other arge-scale human activities the problem is the same —namely, to organise the work of large numbers of ndividuals, equipped with diverse knowledge and kill, into a coöperative effort; but where the aim is not capable of precise definition, and the progress towards it not amenable to arithmetical measurement, the difficulty is enhanced; and where it is further desired that every person taking part should feel his loyalty engaged, and his powers fully used, the problem becomes a major one.

Medicine in Britain is at grips with that problem today It has been discussed widely, and profitably, from political, social, economic, and administrative points of view. The first experimental structure is taking shape. So far, however, little has been written on the changes that will be necessary in the intellectual equipment and outlook of doctors, if they are to fulfil their rôles adequately and happily in that structure Is the knowledge we give them in the schools, and are the skimmings thereof that we sample in examinations, the most suitable for their purpose? We expect general practitioners to supervise the health of men, women, and children in all walks of life, and to advise them in matters of employment, recreation, and social and family relationships, as well as in things of the body only. We expect clinical specialists to undertake, alone or with the practitioner, the care of the whole patient for a time, not merely to replumb his stomach or give an opinion on his heart. We look to a service where the study and the well-being of a patient will oftener than in the past be the task of several doctors working together. Is the present training of the specialist calculated to make him fit in well in a team, or does it tend to make him superior in his own field and indifferent to all else—content for example to pronounce the patient's heart normal and not interested in the cause of her pain? Do our general practitioners have such a grasp of medicine as a whole that they can see the full possibilities of good for every patient, and can call in the specialist as an expert colleague rather than as a member of a superior order?

Questions of this kind have exercised the mind of Dr. CLARK-KENNEDY, who as a teaching fellow of a Cambridge college and dean of a London medical school has for many years played an active part in medical education. He has concluded that medicine is in serious danger from the dominance of specialism. Increasingly narrow specialists are not the best people to control the teaching of the undergraduate student. Their organisation is primarily determined by techniques, and by the numbers and needs of patients in hospitals or in practice. These subdivisions are inappropriate for teaching purposes, especially of the future general practitioner, who must always deal with man in the round. Yet teaching in the clinical period has unthinkingly followed the hospital organisation into specialties, with all too little coordination or coöperation between them. The textbooks have followed suit, and even the general physician no longer writes about general medicine. but at most edits a composite collection of specialists' monographs. So strongly does Dr. CLARK-KENNEDY deplore this threatened disintegration of medicine —which, incidentally, could be hastened by a mechanically organised national health service—that to try to counteract it he has set pen to paper in an effort to put all medicine between the covers of two volumes, the first of which is described in our review column this week. When complete his book should be the most unorthodox treatise on medicine that our generation has seen.

Not the least important feature of the author's pattern of medicine as a whole is his frank recognition that a doctor, dealing (as he must) with a patient's mind as well as with his body, introduces into the relationship his own philosophy of life—his own views on the relation of mind to body, on the scope of free will and moral responsibility, and on the nature and function of religion These things cannot be left at home, in any honest attempt at doing the doctor's task thoroughly. So the doctor would be wise to make up his mind about them, at least to the extent of a working hypothesis. Dr. CLARK-KENNEDY's own hypothesis is that mind exists in parallel with matter, that man's behaviour is influenced not solely by his genes and his environment but in some degree by his own free will, and that "it may still be best to retain the age-long conception of the real existence of the human soul."

A MEDICAL COMMONWEALTH

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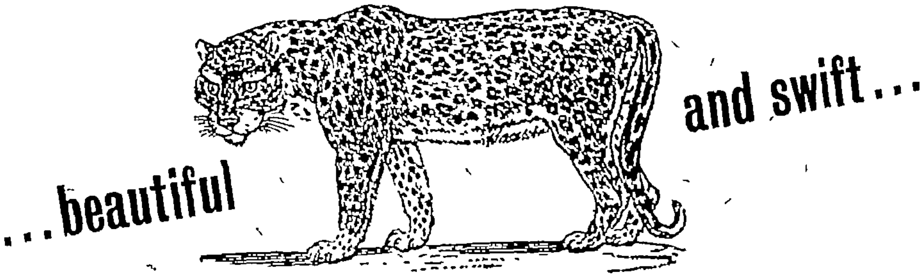

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may abort whitlows it will do so only if given fore the stage at which they are usually presented the doctor; most patients suffer in silence until s has formed, and no kind of chemotherapy can pplant the evacuation of pus. All the same. nicillin is a notable adjunct to surgery of the fingers: d when bone and tendon sheaths—both tissues th a poor resistance to bacterial invasion—have en invaded it may make the difference between normal and a crippled hand. It remains to be cided whether, as D'ABREU et al. suggest, penicillin ould be given intramuscularly for all types of hand d finger infection, or whether it is ineffective in lp infections except when the deeper tissues are volved. It should be easy to collect enough cases settle this point one way or the other, and the ladies which afflict the finger of our workpeople erve a first priority in medical research.

Complications in Feeding Experiments

THE days are passing when it was possible to say at the presence of a particular vitamin in the diet a man or animal prevents the corresponding ficiency disease, and conversely that the absence the vitamin necessarily leads to the development that disease. We now recognise various complicag factors, some of which prevent the organism from eloping the deficiency disease when the vitamin is ent, while others immobilise or inactivate the amin and so induce a conditioned deficiency or vert a potential into an actual deficiency. For ample, it is now clear that the prevention or duction of rickets in man or animal depends not ly on the amount of vitamin D in the diet but also the intake and balance of certain mineral elements, e presence of anticalcifying factors, the acidogenic operties of the diet, and so on. Again, the requirements of vitamin B_1 depend on the calorie intake; t fat is vitamin-B_1-sparing, and enough fat can event a deficiency in rats when the diet is devoid the vitamin. Another complicating factor is the currence of different forms of a given vitamin. itamin D_2 is roughly equivalent to D_3 for the rat human but not for the chick. The vitamin-A tivity of a food is not the same as its vitamin-A content; there are various provitamins A (carotenoids) which differ in potency, and the degree of absorption and utilisation of a particular provitamin A may vary from one food to another. Furthermore, the vitamins needed by man are not all needed by certain other animals—thus vitamin C is needed by man, but rats, farm animals, and nearly all other mammals do not need any in their diet because they can synthesise it in vivo.

In the case of several of the B vitamins, two complicating factors which have been coming into prominence are the possible influence of microsynthesis in the alimentary canal of the host and the influence of so-called anti-vitamins or "toxamins." A third factor, a still more troublesome factor to the investigator, is the variable response of the animal used for experiment: but this may be a reflection of variations in the alimentary microflora. These variable factors are well illustrated by recent observations on nicotinic-acid deficiency. Until a year or so ago only human subjects, dogs, and monkeys seemed suitable for studies on this vitamin. Rats, it was found, thrived when there was no nicotinic acid in their diet, presumably having synthesised it or obtained it from alimentary microfloral activity. It then appeared that the rat could be used for nicotinic-acid experiments, provided the diet was deficient in protein and particularly in tryptophane (an amino-acid which seems to be involved in nicotinic-acid deficiency). and that maize, which perhaps contained some anti-vitamin factor, was included in the diet.[1] Now, however, a further unexpected complication has arisen in these experiments, for several observers have reported a puzzling variability and lack of consistency in the behaviour of their animals. KREHL et al.[2] find that their control rats, which formerly grew satisfactorily on a non-maize, low-protein diet without nicotinic acid, no longer do so. A similar experience is recorded by Dr. KODICEK and colleagues in this issue. Moreover these Cambridge workers, who formerly found that indole-3-acetic acid, a substance structurally related to tryptophane, depressed growth in a proportion of their rats, no longer find a statistically significant difference from the controls. The most plausible explanation seems to be that some variable bacteriological factor is involved. This gains support from the independent observations of PERLMAN,[3] who found that indole-3-acetic acid, no doubt because of its ability to "block" tryptophane, antagonised the growth of *Streptococcus fæcalis*. This organism could however adapt itself to the indole-3-acetic acid. It seems likely that the erratic results obtained in animal experiments have a similar explanation. That is to say, micro-organisms under some circumstances can either destroy or synthesise nicotinic acid or other nutrients; whereas under changed conditions they may fail to do so. In keeping with this general picture are the results of DUBOS,[4] who finds that indole-3-acetic acid inhibits the growth of various other micro-organisms, and that the inhibition is reversed by tryptophane; whereas other workers,[5] using yet other micro-organisms, find that indole-3-acetic acid has no effect unless given in very high concentration.

It still remains uncertain whether the apparent pellagragenic activity of maize is due essentially to a toxamin—an anti-nicotinic-acid or an anti-tryptophane substance—or whether some other combination of factors is responsible, such as its low content of tryptophane and perhaps some other amino-acids. Other workers have reproduced the growth-depressing effects on rats without using maize at all,[6] as by the addition to the diet of gelatin, acid-hydrolysed casein, or an appropriate mixture of isolated amino-acids.[7] Probably each of these factors, then, can influence the "pellagragenic" properties of a diet—the deficiency of nicotinic acid, a deficiency or imbalance of certain amino-acids, the presence of a toxamin, and the type of bacterial activity in the gut. The action of bacteria is undoubtedly the most difficult to predict or control. Present uncertainties

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Septic Finger

THE chief of a surgical firm who insisted on treating infections of the fingers himself would provoke some astonishment. Yet ill-advised or faulty treatment of a severe infection of a finger may easily impair a man's working capacity for life. The hand is the tool on which most of mankind depend for their bread, but it still receives less than its due attention from experienced surgeons—hence the small amount of information published on the effects of penicillin on hand infections.

The great bulk of whitlows or felons (both of which are strictly speaking lesions of the fingers) and infections of the hand are caused by penicillin-sensitive staphylococci. So it was not surprising when FLOREY and WILLIAMS[1] found that local applications of penicillin would relieve pain, expedite recovery, and prevent complications in all types of whitlow. The papers we publish this week bear out their broad conclusions with one exception—both WEBSTER and BOLTON and colleagues found that penicillin makes little difference to the healing of simple pulp infections. Their controls and their penicillin-treated series healed in about the same time, even though the intramuscular administration they used is acknowledged to be more effective than the local applications which shortage of supplies forced on FLOREY and WILLIAMS. The pulp of the fingers, if properly treated, has a high natural resistance to infection. Once tension has been relieved by suitable incisions its vascularity ensures an abundance of fresh leucocytes and tissue fluids and only meddling will prevent healing in a reasonable time. But while WEBSTER found penicillin ineffective in all pulp infections, BOLTON and colleagues make a clinical distinction between uncomplicated pulp infections, whose cure is not hastened by penicillin, and "suspected bony *felons," in which penicillin is invaluable.* Into the latter class they put those pulp infections in which, though there is no X-ray evidence of bone infection, suppuration has continued for a long time, there is much necrosis of the soft tissues, or inadequate incisions have already been made without relieving symptoms. Without penicillin such cases progress to frank osteomyelitis of the phalanx, but with it the X-ray signs of osteomyelitis never appear or else appear and promptly regress. In their report of 7 cases of pulp infection treated at the Westminster Hospital with intramuscular penicillin, D'ABREU and colleagues[2] do not make such distinctions, but they report a reduction in average disability from 21 days in controls to 9 9 days; they gave the penicillin either in water or in beeswax-oil, in a dose of 150,000–300,000 units morning and evening for 2–4 days.

Finger infections are so important that it is worth while restating the principles of their treatment. All forms of hand surgery should be done under adequate anæsthesia. The ethyl-chloride spray, with its painful induction, its uncertain and fugitive analgesia, and its capacity for petrifying the tissues is worse than useless The surgeon must have sufficient time and tissues of normal texture on which to work. He must be able to see exactly what he is doing; and the requisite bloodless field is easily secured by applying a sphygm tourniquet. The incision for simple pulp should be a lateral one, not crossing the the finger-tip to lay the pulp open like a for a finger thus "kippered" will lose much precision as a tactile instrument. The incision however be deep enough to cut all the fibrous which divide the pulp up into compartments, may well be made from both sides The is as important as the operation, and the dressers carry it out should wear masks. Dressings not be frequent, should never be moist, and ensure rest for the finger in its normal po rest. Tulle gras, covered by dry gauze, backed plaster slab, and changed every fourth day these requirements. If there is doubt whet infection is spreading or has spread beyond the intramuscular penicillin is needed, and 100,000 twice a day is probably the minimum effective for routine outpatient use. It is doubtful heat is useful—it is certainly harmful if it is mo The hypertonic dressings seem to be falling out favour: sodium sulphate solution macerates the and magnesium sulphate paste is painful W infection has spread to the bone of the termi phalanx, healing is certain to take a long time, tho penicillin may well halve it. Penicillin must how be given for much longer than is usual with tissue infections, which is not surprising in the of experience with subacute osteomyelitis elsewh The surgical measures required when osteomye has supervened are much the same as with si pulp infections except that loose pieces of bon any size should be picked out. Excision of the d part of an infected phalanx before natural separat has occurred is a disastrous operation which leave deformed finger-tip and prevents that regeneration the phalangeal diaphysis (*after radiological eviden* of its complete disappearance) which was often se before penicillin and is now still more common

The most dramatic application of penicillin to t surgery of the fingers is in tendon-sheath infection Before the introduction of penicillin, infection of t tendon sheath usually meant that the patient wou be left with a stiff claw which he would gladly s amputated. CRUICKSHANK and HARRISON found th 13 unselected tendon-sheath infections in pre-penicill days led to 9 fingers being amputated and 2 left stiff now, with penicillin, they report only 1 amputatio and 1 stiff finger in 13 similar cases. D'ABREU et al mention one illuminating case of a nurse with a seve incipient tenosynovitis which was aborted in twenty-four hours by giving a single dose of 500,000 units Penicillin, it seems, has reversed the prognosis of thecal whitlows besides greatly hastening recovery Inpatient treatment, general anæsthesia, and a bloodless *field, however, are more important than ever* The sheath is opened in the palm through an incision which need only be large enough to relieve tension CRUICKSHANK and HARRISON advocate early movement; once the sheath has been decompressed movement is painless, and it must help to prevent the adhesions between the tendon and its sheath which are the main cause of stiffness.

In the hand, as elsewhere in the body, penicillin is not a substitute for properly planned surgery. Though may abort whitlows it will do so only if given ore the stage at which they are usually presented the doctor; most patients suffer in silence until has formed, and no kind of chemotherapy can plant the evacuation of pus. All the same, icillin is a notable adjunct to surgery of the fingers; when bone and tendon sheaths—both tissues h a poor resistance to bacterial invasion—have n invaded it may make the difference between ormal and a crippled hand. It remains to be ided whether, as D'ABREU et al. suggest, penicillin uld be given intramuscularly for all types of hand finger infection, or whether it is ineffective in p infections except when the deeper tissues are olved. It should be easy to collect enough cases settle this point one way or the other, and the ladies which afflict the finger of our workpeople erve a first priority in medical research.

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[1] Florey, M. E., Williams, R. E. O. *Lancet*, 1944, i, 73.

[2] d'Abreu, F., Flood, C. M., Hewitt, H. B. *Brit. med. J.* Oct. 18, 1947, p. 603.

Complications in Feeding Experiments

THE days are passing when it was possible to say it the presence of a particular vitamin in the diet a man or animal prevents the corresponding iciency disease, and conversely that the absence the vitamin necessarily leads to the development that disease. We now recognise various complicag factors, some of which prevent the organism from reloping the deficiency disease when the vitamin is ent, while others immobilise or inactivate the amin and so induce a conditioned deficiency or ivert a potential into an actual deficiency. For ample, it is now clear that the prevention or duction of rickets in man or animal depends not ly on the amount of vitamin D in the diet but also the intake and balance of certain mineral elements, presence of anticalcifying factors, the acidogenic operties of the diet, and so on. Again, the requirents of vitamin B_1 depend on the calorie intake; t fat is vitamin-B_1-sparing, and enough fat can event a deficiency in rats when the diet is devoid the vitamin. Another complicating factor is the currence of different forms of a given vitamin. tamin D_2 is roughly equivalent to D_3 for the rat human but not for the chick. The vitamin-A tivity of a food is not the same as its vitamin-A ntent; there are various provitamins A (carotenoïds) hich differ in potency, and the degree of absorption d utilisation of a particular provitamin A may ry from one food to another. Furthermore, the tamins needed by man are not all needed by certain her animals—thus vitamin C is needed by man, t rats, farm animals, and nearly all other mammals not need any in their diet because they can nthesise it in vivo.

In the case of several of the B vitamins, two mplicating factors which have been coming into rominence are the possible influence of micronthesis in the alimentary canal of the host and the ifluence of so-called anti-vitamins or "toxamins." third factor, a still more troublesome factor to the ivestigator, is the variable response of the animal ed for experiment, but this may be a reflection f variations in the alimentary microflora. These ariable factors are well illustrated by recent observaions on nicotinic-acid deficiency. Until a year or o ago only human subjects, dogs, and monkeys seemed suitable for studies on this vitamin. Rats, it was found, thrived when there was no nicotinic acid in their diet, presumably having synthesised it or obtained it from alimentary microfloral activity. It then appeared that the rat could be used for nicotinic-acid experiments, provided the diet was deficient in protein and particularly in tryptophane (an amino-acid which seems to be involved in nicotinic-acid deficiency), and that maize, which perhaps contained some anti-vitamin factor, was included in the diet.[1] Now, however, a further unexpected complication has arisen in these experiments, for several observers have reported a puzzling variability and lack of consistency in the behaviour of their animals KREHL et al.[2] find that their control rats, which formerly grew satisfactorily on a non-maize, low-protein diet without nicotinic acid, no longer do so. A similar experience is recorded by Dr. KODICEK and colleagues in this issue. Moreover these Cambridge workers, who formerly found that indole-3-acetic acid, a substance structurally related to tryptophane, depressed growth in a proportion of their rats, no longer find a statistically significant difference from the controls. The most plausible explanation seems to be that some variable bacteriological factor is involved This gains support from the independent observations of PERLMAN,[3] who found that indole-3-acetic acid, no doubt because of its ability to "block" tryptophane, antagonised the growth of *Streptococcus fæcalis.* This organism could however adapt itself to the indole-3-acetic acid. It seems likely that the erratic results obtained in animal experiments have a similar explanation. That is to say, micro-organisms under some circumstances can either destroy or synthesise nicotinic acid or other nutrients, whereas under changed conditions they may fail to do so. In keeping with this general picture are the results of DUBOS,[4] who finds that indole-3-acetic acid inhibits the growth of various other micro-organisms, and that the inhibition is reversed by tryptophane; whereas other workers,[5] using yet other micro-organisms, find that indole-3-acetic acid has no effect unless given in very high concentration.

It still remains uncertain whether the apparent pellagragenic activity of maize is due essentially to a toxamin—an anti-nicotinic-acid or an anti-tryptophane substance—or whether some other combination of factors is responsible, such as its low content of tryptophane and perhaps some other amino-acids. Other workers have reproduced the growth-depressing effects on rats without using maize at all,[6] as by the addition to the diet of gelatin, acid-hydrolysed casein, or an appropriate mixture of isolated amino-acids.[7] Probably each of these factors, then, can influence the "pellagragenic" properties of a diet—the deficiency of nicotinic acid, a deficiency or imbalance of certain amino-acids, the presence of a toxamin, and the type of bacterial activity in the gut. The action of bacteria is undoubtedly the most difficult to predict or control. Present uncertainties

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1. Krehl, W. A., Teply, L. J., Elvehjem, C. A. *Science*, 1945, 101, 283.
2. Krehl, W. A., Carvalho, A., Cowgill, G. R. *Fed. Proc.* 1947, 6, 413.
3. Perlman, D. *J. Bact.* 1946, 52, 601
4. Dubos, R. *Proc. Soc. exp. Biol., N.Y.* 1946, 63, 317.
5. Handler P. *J. Lab. clin. Med.* 1947, 32, 428. Raoul, Y. *Bull. Soc. Chim biol., Paris*, 1947, 29, 183.
6. Salmon, W. D. *J. Nutrit.* 1947, 33, 169.
7. Hundley, J. M. *Fed. Proc.* 1947, 6, 410.

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LEISURE FOR PRACTITIONERS

ORTLY after the annual representative meeting of British Medical Association a correspondent in the sh *Medical Journal* took the representatives to task se they had rejected a proposal from Paddington t in any National Health Service adequate provision be made for a rota of practitioners for duty at t, weekends, holidays, and during sickness." He rded this rejection as contrary to the trend of present on among practitioners. Actually, however, the sal was rejected because the representative body that arrangements of this kind are better made ly and spontaneously rather than by central decree. is a matter in which in fact local action is beginning ar fruit.

mingham produced one of the earliest schemes, h was designed to give insurance practitioners dom at weekends. From 3.30 P.M. on Saturday to A.M. on Monday the medical work needing to be e (at the Saturday evening surgery or by urgent ing) is concentrated in the hands of the duty practitioners, while the others are free to be at leisure. city area has been divided into sections suited to purpose, and all practitioners willing to accept r turn of responsibility are free to join in the ngements. Notices are posted in the surgeries giving ents the dates on which their own doctor will be out each, and the name of the doctor who will be acting him. A similar scheme at Bolton aims at giving ore freedom on the afternoons of Wednesday, day, and Sunday. According to press reports, on h of these afternoons and evenings there will be a rota four doctors (from among fifty practising in Bolton) ilable for emergency work. This seems at first sight rather small proportion to remain accessible, and it l be interesting to learn whether it proves sufficient.

Press cuttings from other parts of the country give fewer details, but are evidence of a growing desire on the part of practitioners to have their own arrangements established before the arrival of the appointed day. Much good can come of these experiments and we hope that more may soon be heard—perhaps at the coming Panel Conference—about their results in practice.

STERNUM AND HEART

DEPRESSION of the lower end of the sternum is fairly common, for Lang[1] noted it in 3·5% of children during their first year at school. On another page Sainsbury records a family in which 6 mild cases occurred in four generations—apparently as a dominant character. The effect of this defect on the position of the heart is apparently not always appreciated, seeing that Evans[2] recorded 16 examples in adults who were referred for a second opinion because of suspected heart disease. In 5 of these patients rheumatic heart disease had originally been diagnosed, while another 4 had been relegated to grade 3 or 4 by medical recruiting boards. Yet another, a lad of 19, had on the advice of his doctors discontinued work as a medical student and had subsequently been placed in grade 4 by three different medical boards after examinations which included a radiologist's report that the heart was greatly enlarged. When seen by Evans all 16 were found to be healthy, "handicapped only by the restriction imposed on them by a medical examination that had misinterpreted the clinical and radiological signs."

All these patients had depression of the lower sternum, which Evans divides into three types. The first type is the deepest, or "funnel," depression, of which there were 2 examples in Evans's series; the anteroposterior diameters of these patients' chests were $4^1/_2$ and 5 in. In the second type, the "cup" depression is somewhat shallower: Evans had 8 examples of this kind, with anteroposterior diameters between $5^1/_4$ and $5^3/_4$ in. In the shallowest, or "saucer," depression, of which there were 6 examples, the anteroposterior diameter ranged from 6 to $6^1/_4$ in. In every patient with sternal depression the apex-beat was displaced to the left—sometimes beyond the anterior axillary line—and there was a mid-systolic murmur best heard at the left edge of the depression. It was presumably the combination of this murmur with the displacement of the apex-beat that had usually led to the erroneous diagnosis of heart disease. The radiological findings were outstanding. In the 2 patients with a funnel depression the heart was displaced bodily to the left, but there was no change in the shape or size of the cardiac outline. In the patients with a cup depression the anterior film showed slight or moderate enlargement of the cardiac outline with prominence of the pulmonary arc, but the oblique view showed that the cardiac silhouette was normal. With the saucer depression the findings were similar to those with the cup depression, but less pronounced. Other features were the transparency of the cardiac shadow in the anterior view on screening, and in the left oblique films the displacement backwards of the heart until it overlapped the vertebræ and the constriction of the so-called aortic window.

Evans's explanation is based on his finding that in 16 healthy adults the anteroposterior diameter of the chest averaged $7^3/_4$ in. and was never less than 7 in., while the anteroposterior thickness of the heart was 3 in. and the thickness of the sternum, vertebral column, and the soft tissues covering them about $3^3/_4$ in. If the anteroposterior diameter of the chest is less than the sum of these last two figures—i.e., $6^3/_4$ in.—the heart is compressed and thereby has its lateral limits extended. If this compression is gross, as in the funnel depression, may perhaps find their counterpart in the earlier history of vitamin B_1, when it was found that an irregular proportion of rats maintained on a diet devoid of the vitamin unaccountably failed to develop symptoms of deficiency. The trouble was later identified and given a name, "refection"—a phenomenon due, as we now know, to a peculiar type of fermentation of the food brought about by changed bacterial action in the intestine.

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[1] Lang, K. *Klin Wschr.* 1928, 7, 1253
[2] Evans, W. *Brit. Heart J.* 1946, 8, 162.

Annotations

BUILDING THE HEALTH SERVICE

IN an address last week to the Institute of Public Administration Mr. John L. Edwards, parliamentary secretary to the Ministry of Health, referred to the undisputed deficiencies of the present medical organisation. National Health Insurance benefits only twenty-one million people, and some of the uninsured are deterred from seeking medical advice by the cost; under the existing system continuity of treatment is not assured; doctors are badly distributed; the general practitioner works too much in isolation; the hospital system has grown up haphazard, the service varying from good to very bad; and the mental health services are cut off from other branches. Discussion in Parliament was centred not on the existence of these problems but on how best to deal with them; and the Act which emerged did no more than give the powers necessary for the establishment of a new service.

This service is divided into three main branches: hospital, general-practitioner, and local and domiciliary health services. At the Ministry progress has been greatest with the hospital services. In formulating the fourteen hospital regions the first aim was to provide a good planning unit. The areas are designed for administrative purposes, and there is no intention to confine patients within the boundaries of their own region. The regions vary in size—Manchester has four million people, while Oxford has under one million—and the performance of the different regions as planning units will be compared. Members of regional boards were not chosen as delegates or representatives of interested bodies. Selection was difficult, but "judging by the criticism we have received we have done it fairly well." The work of the boards is going to make heavy demands on the members' time. The Minister's wish is that in setting up hospital management committees the boards shall be guided not so much by size as by function. *Management committees may be appointed* to a single hospital or to a group of hospitals: there is no rigid formula. The Minister will advise on the types of organisation to be consulted before the committees are appointed; but otherwise the regional boards will have a free hand. A list of hospitals and of convalescent homes coming under the Act has been prepared by the Ministry; but the future of some hospitals will not be settled at once, and in a few cases the question may be referred for arbitration. Public-assistance institutions now house both sick and fit, and protracted negotiation will be required before all the sick are in hospitals under the regional boards and only the healthy are accommodated in these institutions. Local authorities have been asked to readjust their staffs so that the boards will get sufficient personnel and the authorities will not be unduly deprived; the allocation is important for the officers concerned, since those who come under the boards will benefit by the new superannuation scheme, which, Mr. Edwards suggests, is the most flexible yet devised.

Hitherto the creation of the machinery for the general-practitioner service has proved a straightforward task. Nearly all of the local executive councils have now been formed, and these are working in harmony beside the old insurance committees. Local authorities enjoined to use voluntary services, and, for th running of part 3 services, to devolve to subcommittees in various parts of county areas.

In moulding the service decentralisation has be reconciled with central supervision; the must, for example, supervise finance. A common throughout the country is not wanted, but the should also not be much worse in one area others. It will be particularly difficult to d much the Minister should interfere with hospital p *and development; considerable delegation is* plated, but expert advice from the centre may be In general, the guiding principle is that decisions be made at the lowest possible levels. Even so, objective criteria for judging performance, of hospitals, must be evolved. In the service h cratic methods are to be shunned; there sho neither delay in treatment nor too much form- the Ministry is investigating the possibility of and simplifying forms, but "I am not too o for checks are necessary to avoid abuse of the

Under the Act doctors may engage in both and private practice. The danger here is that *may provide a better service for private patients;* this were to happen and patients were not to use service, the whole scheme would fail. Thus the must be to set a high standard; but though for maintenance of this standard disciplinary machinery necessary there will still be complete clinical free The ideal should be to treat patients in their ordi social environment. Much of the work now done clinics could be restored to practitioners if these relieved of routine and were provided with be facilities; and here group practice and health cen are important. The practitioner must be restored the position he used to occupy.

Between the three arms of the new service there bound to be frontier difficulties and boundary disput This has been acknowledged by allowing for over in the constitution of bodies and for the passing on proposals from one body to others. Much will dep on the readiness of bodies to see the service as a whole and for complete success much will still rest with th public.

HOW DOES RUBELLA ACT ON THE EMBRYO?

THE response to the original observations of Gre and Swan, and Tostevin on congenital defects followi rubella in the mother has passed through the phase scepticism, via surprise, to complete confirmation an acceptance. We may now be entering *the stage* attempted rationalisation of a group of facts for whi no-one except the experimental embryologists seems have been prepared. These embryologists, indeed, in the clinical observations only a satisfying example man of a well-known experimental finding—that th time of application of a noxa to a developing embry determines the resultant developmental defect; th nature of the noxa is much less material, provided th it will retard mitosis. Evidence that diseases other tha rubella can produce similar defects is accumulating, is also a mass of data concerning the variety of defect met with and their relationship to the time of th maternal infection. *This line of work is likely to* yiel fruitful results.

Meanwhile the exact mode of action of the viru remains obscure. If we accept the analogy with the experimental findings—mainly in amphibia—the virus or toxins attack whatever organs are actively developing at the time. This does not explain why, though the defects are widespread, *they do not* extend to all parts of the body. Brown[1] suggests that th

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1. Brown, E. E. *Nthwest Med., Seattle*, 1947, 46, 288.

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DIABETIC NEUROPATHY

INVOLVEMENT of the nervous system is one of the commoner complications of diabetes mellitus. In the days before insulin Kraus[1] reported abnormal tendon-jerks in 40% of his diabetic patients and impairment of vibration-sense in the legs in a third of them, while in 426 patients studied by Broch and Klovstad[2] some of the jerks were absent in 48·7%. The exact types of neurological involvement, the pathology, and the relationship between the metabolic disturbance and the neurological abnormalities are still doubtful. Jordan[3] divided the neurological complications into four groups—(1) hyperglycæmic, in which tenderness of nerve and muscle, usually without objective signs, is found in patients with a high blood-sugar and responds well to treatment of the diabetes; (2) circulatory, in which there are signs of arteriosclerosis in addition to neurological involvement; (3) degenerative, in which impaired tendon-jerks and poor pupillary reaction to light occur without severe symptoms; and (4) neuritic, where there are relatively serious symptoms and abnormal signs in the legs coming on fairly acutely and gradually improving in the course of weeks or months. Broch and Klovstad found that their cases fell into somewhat similar groups though they have avoided the ætiological terms which Jordan used.

The main symptom of diabetic neuropathy is pain in the legs, which may be very severe, especially at night, and is accompanied by considerable tenderness of the muscles. In the more advanced cases there is wasting and weakness of muscles and sometimes foot-drop, absent ankle-jerks and knee-jerks, and impaired vibration-sense; position-sense in the feet may be lost, resulting in ataxia. Sometimes there is cutaneous sensory impairment, which may be dissociated in type, resembling that found in syringomyelia, and may be in the distribution of spinal root segments rather than in the peripheral-nerve areas commonly affected in other types of peripheral neuritis. Of 100 cases of diabetes with neurological signs Rudy and Epstein[4] noted evidence of spinal-cord involvement in 26, but they did not give details of these cases; in 1904 Williamson[5] demonstrated histological signs of degeneration in the posterior columns of a diabetic aged 25 who died in coma and was known to have had absent knee and ankle jerks. Disturbance of bladder function similar to that found in tabes dorsalis may be associated with the peripheral neuropathy (in 10 of 125 cases reported by Rundles[6]), and in rare cases this may occur without other clinical evidence of neuropathy.

It seems certain that the neuropathy is not the direct result of hyperglycæmia or ketosis; it may be seen in patients whose diabetes is well controlled by diet and insulin,[2] whereas other patients who were free of neurological signs before treatment have developed symptoms and signs shortly after treatment has been started. Inevitably lack of vitamin B_1 has been suggested as the cause, but Needles[7] and also Fein et al.,[8] who from this point of view investigated the diets given to their patients, found that neuropathy when the intake of B_1 was well above requirements. Treatment with large doses of does not notably affect the rate of recovery of patients, and if the vitamin is in any way with the neuropathy it must be in relation to subtle upset of carbohydrate metabolism. Some think there is an important relationship betw pheral vascular disease and neuropathy, and B Klovstad suggest that the neurological invol in some unexplained way the consequence of disturbance; but only about 10% of their had impalpable pedal pulses, incipient g ulceration, while a further 12·5% had other ev vascular disease, such as cerebral arteriosclerosis, pectoris, or retinal vascular changes. Of R 125 cases only 25 had clinical evidence of p vascular disease.

At present, therefore, the pathogeny of neuropathy remains obscure, which makes treatment difficult, other than effective control diabetes. It is usual for slow improvement to place over a period of weeks or months, but patients pains in the calves and ataxia persist knee and ankle jerks are permanently impaired.

ANKYLOSING SPONDYLITIS

THE need for more detailed classification of anky spondylitis was emphasised by several speakers at week's meeting of the Heberden Society. Dr. C Buckley expressed his belief that there may b types: the first type, which attacks adolescents, males, is acute and spreads rapidly; while the which starts in or after the late twenties, is fou predominantly in men and is less acute, with s involvement of the sacro-iliac region in the early Dr. Buckley maintains that the diagnosis shou be made on the strength of sacro-iliac changes these are accompanied by an increased blood-sedi tion rate or characteristic spinal changes. Progr suggested, has been retarded and the truth ma the acceptance of this disease as a form of rheum arthritis. Ankylosing spondylitis is an osteopathy; is evidenced in the spread of connective tissue from bone-marrow and in the osteoporosis, which is extreme. The distinction is borne out in the diff response to gold: gold, which has an affinity for syn tissue, is more or less effective in rheumatoid art whereas in ankylosing spondylitis it does litt no good.

Mr. N. L. Capener could offer little that was ne encouraging in surgical treatment. During the phase he tries to achieve physiological rest by Bradford frame or one of its modifications, com with head retraction. There is little place for the p jacket, and a plaster bed must be used only with *jackets restricting respiratory function* are to be abj The orthopædist's aim is correction of the defor maintenance of the correction, and re-education. O tomy may be needed; osteotomy of the hip is helpful, but cases must be well chosen since by operation patients are on their feet at the expen sitting down. Osteotomy of the spine may give better results; Smith-Petersen has evolved a techn by which multiple excisions are made at the site of old posterior apophyseal joints. With rec procedures the difficulty—apart from biological siderations such as muscle wasting—is that int fascial flaps are almost bound to become ossified. results would be better if the costovertebral joints be mobilised.

Dr. I. G. Williams was uncertain why benefits this condition. Applying, as he does, 300 units to each of two fields daily, irradiation of the

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takes three weeks; even where the sacro-iliac alone is affected, he treats every part of the spine. therapy is not without its dangers: the skin is cularly liable to react because of the immediately cent bone: and, since operation may be necessary, ment should not be continued beyond the stage he hard, dry, scaly skin reaction. Moreover, the bility of blood changes has to be borne in mind: in women the sacro-iliac region cannot be effectively ed without exposure of the ovaries to irradiation the risk of artificial menopause and chromosome rmalities. The symptoms of artificial menopause be averted by the administration of œstrogens: there is no evading the danger of chromosome ges, the reality of which has been proved in animals. Williams is thus led to advise against this treatment ny young women wanting children. The benefits adiation are that pain and paravertebral muscular h are reduced, mobility is increased, and the patient ted for orthopædic treatment. In the early stages atient may regain full movement: and even where ondition is advanced pain is relieved. If symptoms after a full course one further course may be given a six-months interval; but the two courses should pervised by the same therapist.

PLANS IN EIRE

re has now produced a white-paper outlining changes contemplated under the Health Act lately ed. Over the next ten years the State is to assume cial responsibility for a steadily increasing proportion health expenditure. At present some £5¼ million re spent each year from public funds, about one- of which is paid direct by the State and five-sixths he local authorities: but it is intended that in years' time just over £9 million shall be allocated, ich half will come from central funds.

r administrative purposes Eire is to be divided three regions, based on the university teaching res of Dublin, Cork, and Galway, and upon these res will be centred institutional services and special ices such as those for cancer, for rheumatism, and pathological investigations. The more direct services, the other hand, are to be administered at a county l by special local health councils on which will be sented the county and county-borough councils, ther with coöpted members "having special knowe of, or interest in, health administration." These th councils will be concerned with tuberculosis, tious diseases, venereal diseases, mother-and-child general-practitioner services "in so far as these ces do not relate to the provision of institutional t and specialist facilities." Each county will be ded into districts served by health units normally sisting of a doctor, a nurse, and a midwife. Properly ipped local health clinics will in time be provided ome with X rays but all with accommodation for dical examinations, for pharmacy, for record-keeping, d for hygiene instruction. In country districts these ics will be adapted where possible from the existing ispensary buildings." A few major health centres will available at selected places to deal with complicated specialised cases sent on from the local clinics.

Unlike those proposed in Great Britain these health vices will not be freely accessible to all who care to e them. Only people whose income is below £250 a ar—or in the case of farmers whose holding is rated a valuation of less than £25—may avail themselves all services unquestionably, and even these may be ked to make token payments to the district medical icer for general-practitioner services (except in respect maternity and child welfare and the treatment of ectious disease). The next income-group (£250–£500, farmers rated at £25–£50) is excluded entirely from participating in the general-practitioner services, but may receive regional services on payment at prescribed rates.

District and county hospitals will provide general hospital services, but only the regional hospitals will offer a full range of specialist investigation and treatment. This is probably inevitable in a country in which so many of the people live in small scattered communities, but good integration and association (including transport) between central and local units will be necessary if hospitals lacking suitable equipment and staff are to be dissuaded from undertaking specialised work. This danger may easily be accentuated by the ambitious plans of hospital building in country areas which to some extent have been already realised with the aid of funds derived by the Hospital Trust from sweepstakes. The trust has at present £9 million which is to be used, together with supplements from local authorities, on a country-wide hospital building programme likely to cost some £30 million. This is the estimate for provision for the acutely sick, and another £13 million will be required before the aged and infirm are properly accommodated.

Judging from this white-paper Eire has much leeway to make up, but is planning resolutely to give her people as good a service as possible within her financial limits.

WHO IS TO PAY FOR MEDICAL FILMS?

THE making of medical films, in the view of the Scientific Film Association's medical committee,[1] should no longer be left to a few enthusiasts, attached to photographic units in universities and medical schools, to public-spirited industrial bodies, or to Government departments (which occasionally produce a few); nor should it be left to commercial enterprise; the cost should be met from public funds. In July Sir Ernest Graham-Little asked the Chancellor of the Exchequer to earmark sums for the production of medical films, and received the reply[2] that it is for the medical schools to apply to the University Grants Committee for funds for this purpose. Besides making grants to universities as a whole, that committee administers an additional Treasury grant of a million pounds a year intended for recurrent grants to medical schools; and the Scientific Film Association propose that a small proportion of this should be set aside for the production and distribution of medical films, possibly by financing a new body to make films for the whole country. A sum of £58,000, they think, would cover an initial two-year programme to supply films for all our medical schools; and this represents only 2½% of the special grant to medical schools over two years. The S.F.A. medical committee could ensure unity of purpose between the film committees in universities and medical schools, those of the British Medical Association and British Medical Students' Association, and the Government departments interested in postgraduate medical teaching; if funds were forthcoming an immediate start could be made with the two-year programme.

THE KING'S SPEECH

IN opening Parliament on Tuesday H.M. the King began by speaking of our "grave economic difficulties, affecting almost the entire world," and of his confidence that in these times of hardship the nation will once again demonstrate its resolution and energy. The Government's first aim will be to redress the adverse balance of payments, particularly by expanding exports, and they will give all possible help to the home production of food. Legislation projected against this sombre background includes Bills for abolishing the poor-law, for reforming the administration of criminal justice, and for extending the scope of public care of children deprived of normal home life.

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[1] Sir Kenneth Goadby is chairman and Mr. C. J. Longland hon. secretary of this committee.

[2] See *Hansard* for July 18, 1947.

Special Articles

EDUCATIONAL TREATMENT OF DEAFNESS

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PROBABLY in no other branch of education are the possibilities of progress so great as in the education of the deaf. Unquestionably the most difficult part is the education of children who were born deaf or have become deaf so early in life that they cannot learn to talk in the ordinary way. The official policy of the Ministry of Education and of the Scottish Education Department is to give every deaf child an opportunity of acquiring speech. This is also the policy formulated by the Office of Education of the Federal Government of the United States.

A new conception of this aspect of the education of the deaf has resulted from experimental work with very young deaf children. In the past there was a tendency to emphasise the intellectual needs of deaf children (Story 1915). The teaching of lip-reading and speech was understood and practised in terms of formal schooling (Haycock 1933). Often they were (and sometimes still are) taught piecemeal, in prescribed lessons, very much on the same basis as other school subjects.

It is now possible to develop speech comprehension through lip-reading in deaf children under $2^{1}/_{2}$ years of age, with the result that they make spontaneous attempts to talk. It is advisable to begin training at the age of 6 months or as soon as deafness is discovered. Inevitably this has entailed a different approach from that formerly made with deaf-and-dumb children, who were admitted to school at the age of 5 years or later. With infants and very young children formal methods of teaching are impracticable and unsuitable.

Learning to walk and talk depends on (1) maturation, a factor of inner growth which cannot be brought under environmental control, and (2) the opportunities for learning. With the young child successful learning is always essentially spontaneous; it only takes place in so far as it satisfies the needs of his personality as a whole.

Habits of speech comprehension, vocalisation, and talking are an aspect of a child's growth in personal-social relationships. This growth is as much emotional as intellectual. A baby learns to talk so that his physical, social, and practical needs may be satisfied through the response of others to his attempts to express them vocally. The needs are his, and stages in the development of his body and mind set the pace. In the first place it is his dependence, as an immature and relatively helpless being, on persons stronger and more skilful than himself for life, health, and happiness during the first five years that normally makes those years the natural and optimal period for him to acquire speech.

HOME TRAINING UNDER SUPERVISION

As part of an experiment, 32 deaf children, ranging in age from 12 weeks to nearly 3 years and referred to the research unit at Manchester University for tests, have been given home training by their parents under the guidance of one of us. In every instance but one the children have first developed a habit of watching for speech and have then begun spontaneously to lip-read. These beginnings have been characterised by naturalness and apparent absence of any need to look at the face of the speaker in any fixed or concentrated way. The children seem also to have capacity to grasp the associations that constitute the a new word or phrase with a freedom that sharply with the effort to lip-read that is so in older beginners.

All of the children have vocalised freely whe have wanted something, and many of them vocalised in response to speech. In 16 cases th been spontaneous attempts to say words in ap situations. Such attempts have been made at a age and are less accurate than those of childre hear.

The earliest beginnings in speech have been at 18 months of age, but some of the children not begun to lip-read or to speak until after the 2 years. The rate and extent of progress have considerably. No doubt they depend in part parents as well as the child. Common sense, standing, and affection in the parents count than does a high standard of education or int ability.

A. B., who became totally deaf at 7 months, aft began to lip-read when he was 1 year and 8 mont and to imitate words spontaneously at 1 year a months.

C. D., first seen at 1 year and 8 months, severely from birth, started to lip-read a month after his had begun to offer him home training. At 2 years 2 months he was both lip-reading phrases and sen and spontaneously trying to repeat words.

E. F., first seen at 1 year and 3 months, born so deaf that her mother could not make her hear her began to lip-read after three months' training. At 2 and 5 months she could lip-read hundreds of phra words. At 2 years and 11 months she tries to imit word that holds her interest.

G. H., first seen at 2 years, born deaf, has had conti home training. He did not begin to lip-read until h 3 years and 3 months old, and so far has only im approximately and used spontaneously "*Thank you*" "Goodbye."

The benefit of this early training is threefold. Fi the child's personality is extended through a wide and deepening of the child-parent relationship. The in the early stages the child's vocabulary is very limi the kind of training provided brings parents and into an ever-closer relationship and helps to build in the child a confident attitude towards normal contacts. By contrast, if child and parents rely gesture as a means of communication, the isolatio the child from normal society increases with advan age. Secondly, as with the hearing child, the ana and synthesis involved in speech comprehension stim and enrich the child's mental experiences. Thi the normality of the home environment, as a p where everyone communicates by speech, is b conserved and established before the child goes school.

Both the beginning and the nature of the h training depend on the results of tests of hearing in the research unit. A graded series of tests with children aged from 4 weeks to 5 years has b described in detail elsewhere (Ewing and Ewing 1 1947).

From the results of the tests children are ult classified into three groups. Those to whom an u moderately loud voice at 3 ft. is audible are pa deaf. Those who respond only to a loud raised at 1 ft. are severely deaf. Young deaf children cannot hear a loud voice at 1 ft. must be treated totally deaf to speech. Home training is modified the needs of children in each of these three gr i.e., the parents aim at developing speech com sion in partially deaf children through hearing.

reading; in severely deaf children through lip- g stimulated by hearing; and in the totally ild through lip-reading alone. It is rarely possible h a conclusion about a young deaf child's capacity r as the result of tests made at one visit. Most 32 children already mentioned visit the clinic ically, and the parents come for guidance at r intervals.

EDUCATIONAL OPPORTUNITIES

er the Education Act of 1944 special educational ent of children handicapped by defects of hearing e begun at the public expense at the age of 2 years to be continued to the age of 19 years. In the capped Pupils and School Health Service Regula- 1945, provision is made for two groups of children mpaired hearing: (1) deaf children—i.e., "pupils ave no hearing or whose hearing is so defective hey require education by methods used for deaf without naturally acquired speech or language"; partially deaf pupils—i.e., "pupils whose hearing defective that they require for their education arrangements or facilities but not all the educa- methods used for deaf pupils."

Ministry of Education (1946) states that if with lp of lip-reading and/or the use of a hearing-aid tially deaf pupil can make satisfactory progress ordinary school he should remain there, but if difficulty in keeping his place in class he should a special school for the partially deaf where nous special education would be provided for him h the use of an appropriate hearing-aid combined ip-reading. The main problem, therefore, in ying a partially deaf pupil is to decide whether ll need part-time or full-time special educational nent. This problem can be readily solved by a of tests, together with the otologist's report and neral medical history. The tests include pure-tone metry, speech tests of hearing, and tests of educa- achievement and of mental ability. The giving se tests presents little difficulty with pupils aged rs or more. With children aged 5 years or younger factors must be taken into account. A pure-tone does not give the information that is most urgent a child of pre-school age. His capacity to hear h is the essential factor. At his age he cannot ven tests of educational attainment; nor can his rehension of language be assessed through reading. have therefore discarded the "tunnel test" with pure-tone audiometer (Ewing 1930) in favour of the of capacity to hear speech and other meaningful ds.

has been shown already that modern educational ment for a child with impaired hearing should be eded by suitable home training to the age of 3 or 4 s. Unless parents are qualified teachers of the deaf cannot convert their child's spontaneous imitations ords into intelligible speech; nor can they develop acquisition of language. Attendance at a nursery or school is therefore the next step. Here lip- ing and speech would be further developed and, never possible, stimulated by auricular training. er the child would proceed through the kindergarten he junior school. In a recent Medical Research ncil investigation (not yet published) the hearing of pupils in eight schools for the deaf was tested: had some useful capacity to hear speech with a up hearing-aid; and 144 could recognise called nbers, by hearing alone, with a degree of accuracy ying from 50–100%.

The application of scientific inventions in the form better hearing-aids and amplifying apparatus calls certain modifications of, and additions to, the older thods by which speech and language were taught as subjects in the school curriculum. But a deaf child's success in learning to talk intelligibly does not depend solely on his residual capacity to hear. Mental factors are also of great importance. Some totally deaf pupils acquire lip-reading and speech to a very useful degree. Speech becomes their first and principal language. In other cases, in spite of some useful capacity to hear, the best standard of lip-reading and speech of which a child is capable falls short of what is considered to be a "useful" standard. In any modern system of classifying the pupils within a school for the deaf account must be taken of two groups of children: (1) those who have some residual capacity to hear or who, in spite of total deafness to speech, can be enabled to communicate with ordinary people by speech; and (2) those who, with or without any capacity to hear speech, have proved to have little aptitude for learning to lip-read and to talk. These pupils are usually transferred to "silent" classes. Obviously the "silent" classes should not form part of the régime of an "oral" school. The needs of these less fortunate pupils are not negative but very positive. They require a different kind of educational treatment and environment, through which opportunities for the development of personality and of their practical and mental abilities are provided. At present the needs of this group of children are a matter of concern to teachers of the deaf and to those responsible for the organisation of special schools, most of which have, until now, been constituted on an all-age basis for the education of pupils with defective hearing of all types other than the ineducable. It is now hoped to allocate to certain schools responsibility for children belonging to specific categories. This is the only means by which the educational needs, characteristic of different age-groups, can be given the practical recognition that they already receive in the case of ordinary children. This reorganisation already includes provision for grammar-school education for pupils of superior ability. There should also be separate schools for the deaf who are incapable of oral education. It is contrary to their interests to remain as a minority tacitly, if not explicitly, recognised by their fellow-pupils and teachers as inferior in educability and status

NEW PROSTHETIC EQUIPMENT

Recently we saw in New York a demonstration of the equipment developed in Bell Telephone Laboratories to make speech visible while it is being spoken. The equipment includes a cathode-ray translator. Patients without hearing, one of them a member of the staff of the laboratories and two senior pupils of the Lexington Avenue School for the Deaf, were able to converse, relying for speech reception solely on luminous patterns seen on a moving screen.

Before being trained to recognise sentences and words symbolised in this new way all these patients had acquired speech and were accustomed to ordinary reading. It is doubtful whether, in its present form, the visible-speech apparatus could help deaf children while still in the early stages of gaining their first experience of words.

It has been stated that, when trained, a deafened adult can follow visible speech more easily than he could lip-read it. But lip-reading has the advantage of being a form of direct and personal contact.

Apart from its use as a way of communication the new equipment is likely to prove a means of teaching children to speak more normally when they have never heard and are severely or totally deaf. Ordinarily the accuracy and skill with which they talk are based on tactile and kinæsthetic sensations arising from the movements of the organs involved and contacts of the tongue and lips. With the visible-speech apparatus they can see in detail the sounds they make while they are talking. They can learn to compare the visible recordings of a word or phrase spoken by the teacher with recordings of their own efforts. The patterns are detailed and remain on the screen long enough to allow a second glance. From the deaf pupil's point of view they can give him the best means of expressing both his own speech and the speech of others in terms of a single medium. An extended investigation into the educational possibilities of this invention is now being made at the University of Michigan, where a special organisation has been set up. As yet the equipment is exceedingly complex, very costly, and large.

Among devices that indicate in a readily recognisable form certain of the variations and characteristics of speech one of the most promising is the pitch indicator. The sound of the voice causes thyratron valves to glow. Raising the pitch of the voice increases the number of valves lit up. The apparatus can be adapted to indicate changes in pitch corresponding to those of musical notation. In the hands of a skilful teacher trained to use it a pitch indicator is attractive to deaf children. It seems clear that, when using it, a pupil with suitable aptitude can learn to adjust the pitch, loudness, and duration of his voice (Sterne and Zimmermann 1939, 1940.)

For many children with defective hearing and for deafened adults hearing-aids constitute the most important form of prosthetic device. The incidence of partial deafness among school-children is considerably larger than that of severe or total deafness. Improvements that have taken place since 1939 in the design of hearing-aids for individual use are very great (Ewing 1947).

Efficiency in the fitting of aids is much enhanced if a hearing-aid evaluator is employed. This type of equipment has been designed and used for some time, with conspicuous success, for investigations under the Medical Research Council in England and for the National Research Council in the U.S.A. The accuracy with which speech is received by a child or adult using a particular hearing-aid can be tested and compared with the reception ordinarily possible to the patient listening without an aid.

AURICULAR TRAINING

Greater even in importance than these technical advances is the significance of new conceptions of auricular training and of the use of aids as a factor in personality adjustment. It is in terms of personality as a whole that success in the application of prosthetic devices in special educational treatment must be judged. Selection of an aid whose capacity to reproduce speech and music is suited to the individual child or adult is the first step. Training in its use should be associated with the acquisition of skill in lip-reading. For the present, at any rate, an efficient type of group aid gives the best introduction to amplified speech. Considerable individual variations in initial capacity to tolerate loud sound are found among most classes of children who are partially deaf (grade II) or who have useful residual capacity to hear (grade III). If trained in this work, the teacher can ensure, with a group aid, that the volume of sound delivered to each pupil is correctly adjusted. Speaking like a good radio announcer in a manner that combines clarity with naturalness, at an even level of loudness and at a short distance from the microphone, the teacher makes sure that the sound input to the aid is uniform. He can then guide each pupil to a correct adjustment of his volume control.

Since group aids can reproduce speech very accurately and at high levels of loudness, they will probably remain the best form of aid for use in the class-room, school assembly, or concert hall by children whose deafness is at all severe. Preparation, while still at school, for the use of individual aids in employment and at leisure is practicable for many and constitutes an

Recent investigations have shown that some and adults who, unaided, would be unable to loud speech 6 in. from the ear can, through acquire such skill in auditory discrimination and capacity to tolerate loud sound without other ill effects that the daily and continuous an individual aid is invaluable. If perceptive extensive, the aid is an excellent ally to lip Where deafness, though severe, is mainly the patient relies a good deal on lip-reading more on speech heard through his aid.

Programmes of auricular training should gradual initiation into the effects of hearing a noise and much experience of listening to speakers in variable acoustic conditions. F deaf patients the use of most types of aid in life is only efficient if they frequently adjust the control, which may be supplemented by a designed to modify tonal quality and the of general noise background.

Many boys and girls whose opportunities of sound would otherwise be very incomplete, gible, can now have auditory experience the of which is taken for granted in ordinary schools. spoken word, in its richness and variety, take place as the supreme form of stimulation to relationships and mental growth. There is no ind that absence or loss of auditory acuity involves of capacity for musical appreciation. The sing the choir of the Royal Schools for the Deaf, Manc in the British Council's sound film *Education of t* exemplifies what has already been proved pos certain progressive schools in Britain and the U.S. the Maud Maxfield School for the Deaf at S several generations of pupils have now benefited training in which piano music and a percussion are used to promote rhythm in movement and spe

To complete the process of adjustment to their cap, school-leavers who use aids need simple and pr courses of instruction in the care and managem their instruments, the mechanism of hearing, elementary phonetics, with vocational guidance. vision of aids and auricular training and instructi lip-reading should not be restricted to pupils wh educationally retarded through the handicap of de Deaf and partially deaf pupils of good or superior and achievement are equally entitled to these for special treatment.

SUMMARY

It is now possible to develop speech comprehe through lip-reading in deaf children under 2½ ye age with the result that some of them make spont *attempts to talk.*

Such training should be begun at the age of 6 m or as soon as deafness is discovered.

Successful learning is essentially spontaneous satisfies the needs of the personality as a whole therefore as much emotional as intellectual.

The type of home training depends on the classific of degree of deafness by tests.

The provisions made by the Ministry of Educ for the training of deaf children are detailed.

New hearing-aids are described, including visible- apparatus.

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RCINOMA OF THE ŒSOPHAGUS AND UPPER STOMACH

PROFESSOR GARLOCK'S ADDRESS

AKING at the Royal College of Surgeons of England t. 16, Prof. John A. Garlock, New York, recalled he first successful œsophagectomy was performed eek in 1918. The preceding twenty years had seen preliminary work on the surgery of the upper ch. notably by Bilroth and his associates. Between and 1936 little progress was made. but in the last years there had been considerable advances which tributed to four factors: (1) the development of n endotracheal anæsthesia: (2) technical advances raumatic surgery with minimal blood-loss. free ne, and accurate suture methods; (3) a proper standing of the physiology of chest mechanics: and e advent of penicillin and the sulpha group of drugs. fessor Garlock emphasised that any patient ted of having carcinoma of the œsophagus should bmitted to œsophagoscopy. The barium swallow not be relied on in early cases, and conversely diological diagnosis of carcinoma had on occasion disproved by the œsophagoscope. All carcinomas ating in the œsophagus were squamous; these nous carcinomas never spread into the cardia. h they very commonly involved glands below the ragm. particularly the paracardial group. On ther hand. the adenocarcinomas originating in the ch often spread into the œsophagus and might as high as the aortic arch. The squamous variety not metastase early. but they quickly became able through invasion of neighbouring structures. ccessful handling of these cases depended on team- and on careful preoperative preparation to correct hydration. avitaminosis. disturbances of protein olism, and variations of mineral metabolism were commonly present. He liked his patients to weight while in hospital awaiting operation.

to three years ago all resections for carcinoma of wer œsophagus and upper stomach were performed gh a transthoracic approach. This had the serious back that operability was not determined until xtensive exposure had been completed, for only then the subdiaphragmatic glandular field be examined. ld the growth prove to be irremovable, the patient been subjected to a useless traumatising procedure, he surgeon to a disheartening waste of time. Accord-, Professor Garlock had evolved his combined minothoracic approach.

patient was placed on the table in the right lateral ion. The first stage was a high left rectus incision at the r border of the muscle; if exploration of the abdomen ed the growth to be inoperable, then the incision could apidly closed after performing a gastrostomy. If the th was operable, then the incision was extended into the ntercostal space after division of the 8th costal cartilage r as the posterior scapular line. and completed by splitting iaphragm to the hiatus. This incision gave an excellent sure, and through it total gastrectomy and partial reatectomy could be carried out with the greatest ease. absence of postoperative pain, which was a notable ure, was probably due to avoidance of rib resection stomach was mobilised by dividing the left gastric artery freeing as much of the greater curvature as was necessary. vided the gastro-epiploic arch on the greater curvature maintained intact, there was little danger of necrosis of stomach wall through poor blood supply; he had seen this nly 2 of 100 cases. This degree of mobilisation would mit the stomach to reach to the thoracic inlet with ease without tension. Two rows of interrupted silk sutures ch must never be under tension. were used throughout anastomosis to the œsophagus. The stomach was pared for anastomosis by removing a circular portion the of the œsophageal opening, and clamps were never used operation was completed by drawing the stomach up r the œsophagus and anchoring it by interrupted sutures both mediastinal pleuræ. Very careful suturing of the phragm to the stomach was necessary; 2 cases had been t through herniation round the stomach. The intercostal ision in the chest was closed by interrupted silk sutures, ter inserting an under-water seal-drain through a dependent intercostal space. If necessary, a jejunostomy could be done before closing the abdominal incision.

After total gastrectomy the digestive upsets that followed the use of a long loop of intestine were avoided by isolating a segment on the Roux on Y principle for anastomosis to the œsophagus.

For carcinoma of the middle third Torek's operation had been routinely performed until three years ago. Despite some successful results (1 patient was alive and well twelve years later) it was a bad operation; with it the subdiaphragmatic lymph-glands were not removed, and patients were not comfortable. He did not like skin tubes, and he had had no success with a subcutaneous segment of intestine. as described by Yudin. He considered that removal of the œsophagus should be undertaken only if immediate restoration of continuity could be effected. For these difficult middle-third tumours Professor Garlock used the same left-sided incision and dislocated the œsophagus from beneath the arch of the aorta. He had not found this manœuvre difficult, but it was important to avoid injuring the intercostal arteries and the thoracic duct. This could be avoided by keeping close to the œsophageal wall; and if local spread of the growth rendered this impossible he considered the case inoperable. Surgeons in Britain preferred an approach through the right chest, but he found it difficult to stage the procedures. Time would show which of the two methods was the best.

Carcinoma of the upper third was fortunately very rare, as it quickly became inoperable. He had recently removed one such tumour, the anastomosis of stomach to œsophagus being completed through a separate cervical incision after mobilisation through the chest. This patient had died in a vasovagal attack, caused by the division of both vagal nerves: this unfortunate end result could be prevented by preoperative atropinisation.

Professor Garlock had not performed any palliative short-circuiting anastomoses, since he felt that the high mortality-rate would bring the surgery of œsophagus into disrepute.

In 220 cases explored by him for carcinoma of œsophagus and upper stomach, approximately 50% were operable: and the operative mortality was 28–30%. The oldest patient was 79 and the youngest 30; the average age was 60+. Of those patients who survived operation, 32 were alive and well—1 twelve years, 1 eleven years, 12 over five years afterwards, and the rest for shorter periods.

STUDENT AND TEACHER

In his inaugural address at the Westminster Hospital on Oct. 6 Sir ADOLPHE ABRAHAMS expressed sympathy with the students who regard lectures as a waste of time; only too often, he said, lectures are no more than an articulate textbook for which indeed a gramophone might be substituted. Yet he held that they have a legitimate place. Teaching is not merely intended to inform students of facts; it should aim at educating the judgment and at direction. The student should disabuse his mind of the idea, only too prevalent, that a lecture is there simply to save him from taking trouble: it should teach him how to take trouble, and perhaps save him from unnecessary trouble. The diversity of opinion in the medical schools is illustrated by the provision, which ranges from many hundreds of lectures to none at all; and although Sir Adolphe himself favoured the principle of allowing attendance to be optional he realised its impracticability, quite apart from the doubt whether a young man is a reliable judge of what is good for him.

The more important subject of clinical instruction, he continued, represents the art as well as the science of medicine. The teacher has a dual responsibility—to help students to pass examinations and simultaneously to make them capable practitioners. These two undertakings, while to some extent inextricably associated. are by no means the same thing. No amount of training can make a man clever, but almost anyone can be trained to be capable; and while we admire the clever doctor it is the capable man who is valued. Whatever their shortcomings in the matter of lecturers, British schools of medicine can proudly and confidently claim to give the best bedside instruction in the world and to produce the best general practitioners in the world.

He distinguished three methods of approach: the didactic method; the Socratic or catechistic method; and a third which might be described as the "personality" method, which is seen on rare occasions as practised by a man of great experience who may or may not be learned but is certainly wise. He says but little; he asks few questions or none at all; but he creates an atmosphere through which there is a subconscious registration by the onlookers of his mental processes as well as of his attributes. The didactic method is attractive to both student and teacher but the catechistic is the more valuable. It is a heavy strain upon an instructor compelled to work at high pressure for 60 minutes in the hour to keep everybody continuously on their toes.

Education at the bedside may conveniently be summed up as Bedside Manner—a term which at its best is generally the subject of more or less good-humoured banter and at its worst is employed with a sneer as if it were something sinister or opprobrious. Yet Bedside Manner comprehends the relation between patient and doctor and comprises very many things. The qualities of kindness, sympathy, gentleness, and the capacity to inspire confidence are natural or quickly acquired by some and with difficulty by others; but contact with disease, with mental and physical suffering, develops them to a greater or less extent in all, and success in practice is proportionate; so we are not surprised to find one, although academically undistinguished, so eminently successful, and another, a brilliant gold-medallist, so dismal a failure. This education is continuous throughout the whole of professional life, but the foundations are laid in the medical school. One learns to suffer fools gladly; still better to realise how often we, not our patients, are the fools; to disagree without being disagreeable; to listen to the most preposterous nonsense with an unmoved countenance; at times to act as the confidential family lawyer; at times as a priest to hear confessions; to learn that in life if not in logic there are degrees of truth, and that it is not through a knowledge of anatomy that one reaches an understanding of the human heart; to appreciate that the democracy of disease puts duke and dustman on an equality when in a sick-bed, so that we are as much at home with the highest as the lowest are at home with us. All of this surely constitutes Bedside Manner—a term that should be regarded with respect and not with the suspicion and contempt that is so habitual.

There are unfortunately many things that cannot be learnt in hospital, and the old apprentice system had much to recommend it. What a privilege it must have been for a young man to accompany a good old-fashioned general practitioner on his rounds. He may not have been taught the differentiation of myasthenia gravis from bulbar palsy or how to diagnose an obscure case of periarteritis nodosa; but he may have learned how to deal with a baby's bellyache, or how to handle miserable poverty-stricken senility, and many other things that are not in the medical curriculum.

HARVEIAN ORATION

THE annual Harveian Oration was delivered on St. Luke's day, Oct. 18, at the Royal College of Physicians of London, this being the 291st occasion of its delivery. The orator was Dr. C. E. Lakin, consulting physician to Middlesex Hospital, who chose as his subject Our Founders and Benefactors. Recalling that the college was founded in 1518 by Henry VIII at the instigation of one of his physicians, Thomas Linacre, he said that Linacre was one of a group of men including Grocyn, Dean Colet, Sir Thomas More, and Erasmus who were profoundly influenced by the Revival of Learning, in the doings of which they took an active part. The foundation of the college and the revived interest in medicine were the direct result of that remarkable mental awakening.

Among the benefactors mentioned were John Caius, who was among the first to introduce the study of practical anatomy in this country, and William Gilbert, physician to Queen Elizabeth and James I. Dr. Lakin pointed out the three stages in the evolution of knowledge as exemplified by these investigators. Linacre looked to the past and recaptured the knowledge of and the old philosophers: Caius was deeply in the same learning but turned to the practical tion of nature; while Gilbert steadfastly looked and by introducing the experimental method research may be said to be the first English scientist.

MENTAL HEALTH WORK IN A

DR. FRANK FREMONT-SMITH, medical director Josiah Macy Jr. Foundation of New York, ad meeting at Manson House, London, on Oct. 17, the Armed Forces came to realise during the much more could be achieved by the psychot team, made up of psychiatrist, psychologist, and atric social worker, than by any of these working In the United States the ideas and enthusiasm in the Services had borne fruit in the Veterans' tration, which was now putting into effect a t and training programme which would have an effect on the mental health services. One effect, had been to attract many of the better people a the State mental hospitals, where pay and not as good or the work as vigorous as in the V Hospitals: consequently the mental hospitals deteriorated in their nursing and medical staffs, t overcrowded, and the exposure of their defects in newspapers had shocked many people, though it be necessary to bring the facts home to the State latures and create a very strong public demand for before effective measures were likely to be underta

The proper functions of psychiatric social worke become a subject of controversy, since, in areas i south and west where psychiatric services were these workers had taken on duties which would regarded as part of their legitimate job in the States. A similar dispute had centred on the ri the clinical psychologist to practise psychotherapy. Fremont-Smith inclined to the view that the doctor or not, who had been trained by a psychothe was the right person to give psychotherapy. The discussion of problems affecting human relations be carried out by psychotherapists, psycholo psychiatric social workers, cultural anthropologists, sociologists. Groups of 15–20 such people, meeti intervals for two or three days at a time, develop understanding which grew from their converging different standpoints. This was plain when such a was asked to consider a problem like world citizen Psycho-analysis had come to play an increasing par the training not only of psychiatrists but of pædiatric and general physicians. A psychiatrist seeking a pr sorial appointment would have to show outstan qualities to compensate for the lack of a personal psy analysis and the related analytic training.

Dr. Fremont-Smith said it had been very encour and impressive to him to find the progressive achi ments here of multidisciplined discussion at Roffey and the Tavistock Clinic; these developments co sponded very closely to his own view of what was requi nuclei of subtle and penetrating thinking are very im tant at this crucial point in world history. Psychi insight cannot yet, however, solve the major probl It is necessary therefore to make a long-range program building atom-smashers against hostility and aggres and thus releasing the nuclear energy of goodwill coöperation available in groups. (Dr. Fremont-S attended the Operation Crossroads at Bikini as official observer.) To a question whether such e could avert "the next war," Dr. Fremont-Smith a guarded reply, but said that when he was being psy analysed he had realised that he had hatred for pe he thought he loved and that this had set him thin about ways of diminishing hatred and aggression. it was unfortunately impracticable to have everyb psycho-analysed, he thought a most useful begin could be made in the nursery schools where the yo mothers and the teachers could be reached; but might take three or four generations to be effective. hoped that a new International Committee for Me Health might be formed next year, which would b body with close ties to UNESCO and the World He Organisation.

In England Now

unning Commentary by Peripatetic Correspondents

E first thing that impresses one in the American al schools is the tremendous energy the students nto their notes. Ward teaching rounds are not a inent feature over there (some of us in London this ner wished there were not so many of them here). aing is done mainly in "clinics," of which there cores. Some are for the staffs of different departs meeting together, some for the whole staff of one tment, some primarily for the interns (housers), and some for students. The students' notes be called for at any of these clinics, and at the s for students they are presented by themselves. student will usually recite the whole history and e of the case with tremendous detail of pathological tigations entirely from memory. So complete is "work up" that the teacher may be hard put to another facet requiring elucidation. The standard te-taking puts us very much to shame. But there ething impersonal and perhaps a little too academic esenting a case in this manner to a big class. It be a good method with postgraduates, but in spite weariness I prefer our ward rounds.

e cannot help being struck by the great part played athological investigations. and the rather advanced e of the surgery at many of the schools. This also s the teaching rather academic. The students attend the operating-rooms. In some operating s visitors (at any rate) are kept in a balcony partly mpletely shut off with glass screens. Opera glasses rovided and it is possible to see quite clearly what ng on but one is apt to miss what the surgeon is in spite of a microphone. When one asks the nts why they do not attend the operations they hey are too busy attending clinics or writing notes. y of us here feel that long hours spent in the operating-tre have little educational value, but it seems to me rtant that the student should follow his own case he theatre, imbibe the theatre atmosphere, and me familiar with the common surgical procedures— to mention the heavy responsibility he bears in y London teaching hospitals, where the student rd-clerk's" notes are often the only complete record he case.

t the medical schools I saw in America the whole ical training occupies but four years, and since there summer vacation of four months it is a little difficult understand how the necessary knowledge is obtained. eight months remaining are divided into four rters of two months each, with no apparent breaks. intensive programme is laid out for each of these uarters," with a certain amount of spare time for ding—more in the later years. This rather concented teaching must demand a high degree of application, d it would be my guess that a little inattention might ve rather large gaps in knowledge. But it is only to point out that at most of the schools only graduates arts or science are admitted, which presupposes a her older student, with some experience of methods study. Perhaps this is how they manage to learn much in such a short time.

* * *

I had imagined in my innocence that income-tax was graded as to reduce us all to the same level, more or s, of austerity. But I was wrong, for there are evidently eerful spirits among us who do themselves fairly well. still keep long-standing accounts at some of the big ondon stores, but seldom buy anything, for I have money for luxuries and they seldom have any of the osaic things I should like. The last I heard from one these emporia last month was that I had a credit lance of one penny, and in this pleasant state of lmost complete neutrality I have remained happily ntil yesterday, when I received a document purporting show that I owed them £70 1s. 11½*d*. The first item n the list was "Wine £18." I decided to try to work ut the personality and habits of the person who had t mixed up with me. The last time I had tried to get bottle of sherry from this establishment was just efore VE-day, when they said they couldn't give me any because I had not been buying wines or spirits from them throughout the war. But this man—it must be a man, because there was "Cigars £1 8s. 2*d*."—had no difficulty, and ten days later he had had "Wine £15." Perhaps he was giving a party. because he had "Balls £1 5*s*.," though for what game was not specified. He spent 18*s*. 2*d*. on dog meal, which sounds like an animal-lover, and there was an item "Zoological £1 1*s*." He hardly sounds like a research-worker buying frogs, and the price does not suggest pedigree puppies or kittens, so he must have been buying goldfish or tortoises for his children. There were coffee spoons and several unspecified household articles, and "Handtruck £3 15*s*." which perhaps he uses for taking the wine away himself: it could hardly be for his wife to use when queueing, for no-one could get enough food at one time to need it. Lastly there was "A/c rendered" for £21 odd, so my unknown fellow-customer is perhaps rather happy-go-lucky, an extravert, a cyclothyme, a pleasing chap. As for the shop, I sent back the account with a few cold words.

* * *

Medical gentlemen engaged 120 years ago by the London (Quaker) Lead Company to look after their lead-miners, were given (Arthur Raistrick tells us[1]) a house rent-free, a salary, and an allowance for a horse. They were required to attend all the company's work-people and their families, whether they belonged to the workmen's fund or not, and by their contract of appointment were expected to work hard, well. and pleasantly. To an afflicted member of the fund they were to give a certificate at every visit, write the nature of his complaint on the sickness paper, and add dated reports of his progress. The instructions go on:

> "You are to visit personally, at their homes, the sick members, immediately you are required to do so, as it will occur that the progress of the fever may be arrested. and its otherwise regular course prevented by timely assistance
>
> "And in internal inflammation, so prevalent among the working classes, the important period of a few hours being lost for blistering or bleeding, fatal consequences ensue rendering all future attempts at remedying fruitless.
>
> "In case of accidents, also, the prompt assistance of a medical gentleman will, of course, frequently prevent after mischiefs and tedious complaints"

Even if his treatment for "internal inflammation" —probably lead colic—was unlikely to have the life-saving properties ascribed to it, at least it was to be given every chance. The doctor was also to advise patients on their regimen and was particularly asked to "prescribe, distinctly, *the hours of the day* during which it will really be beneficial for them to take the air."

> "And in your visits and intercourse with the members and their families," the injunction goes on, "you must bear in mind that not only prompt personal attendance, *but the highest degree of courtesy and kindness of manner* is requisite towards them, they being generally more susceptible to slights than persons of more liberal education, and of the higher walks of life.
>
> "Lastly the Court wish to impress upon you the consequences which must arise, if members (who are not apt to declare on the sick fund too early, but rather otherwise), be slightingly attended to, or a trifling medicine sent them by an assistant, or from neglect to label medicines with the proper directions. and not impressing on sick members the regimen to be observed, &c.—*diseases will be protracted, or disorders confirmed, to the danger of life*,—to the serious injury of the workmen's fund,—*and protracted attendance of the medical gentlemen themselves*"

What a discriminating use of italics!

* * *

"The incubation period," wrote a nursing orderly in the examination I set them, "is the time when the M.O. does not know the diagnosis."

* * *

Then there was the student who thought that regional ileitis was one of the likely snags in the National Health Service.

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1. Two Centuries of Industrial Welfare. Published by Friends' Historical Society, London, 1938.

Letters to the Editor

WINTER IN EUROPE

SIR,—Sir John Boyd Orr said recently at Geneva that millions in Europe would be worse fed this winter even than during the war. We have our own difficulties, but comparing our lot with that of many thousands in Germany, Poland, Austria, Hungary, and Rumania, whose diet is little more than half of ours, we must surely feel that there is something, if only a little, which we can do to help.

Here I am appealing particularly for money for our European Relief Fund; for relief supplies, if they are to arrive in time, must be purchased soon.

Of the four beneficiaries of the fund, far the biggest amount is required by the Friends Relief Service for the purchase of food, clothing, and medicines for their work in Austria, Germany, and Poland. They could spend £20,000 on food alone immediately if they had the money: for such supplies, unsuitable for distribution in the normal ration, are still available in the sterling areas of the world. Smaller yet substantial sums are needed by the Ecumenical Refugee Commission for the household medicines they send to Germany and Austria, and for the work of German Educational Reconstruction in fostering the rebirth of democratic education in Germany. Finally, a comparatively small sum is needed for our own Supplies Fund to meet the costs of handling and shipping the food parcels and other supplies which we send to nine European countries—Austria, France, Germany, Greece, Hungary, Italy, Poland, Rumania, and Yugoslavia. Cheques and postal orders should be made out to "Save Europe Now European Relief Fund" and may be earmarked for any one of the beneficiaries listed above, all of which are registered war charities.

We shall also be grateful for help with any other of the needs listed in our circulated leaflet, which explains fully the ways in which help can be sent. The need is desperate: a few warm clothes, a little flour, and a bar or two of chocolate can make a tremendous difference to the lot of one of the many families who have to survive this winter on so little. We ask for help in giving practical expression to those Christian tenets of brotherhood and love on which our European civilisation is grounded.

Save Europe Now, HENRY CARTER
15, James Street, London, W.C.2. Hon. Treasurer.

VOLUNTARY INFERTILITY

SIR,—In his article on Oct. 11 Dr. Alex Comfort said that at the Camberwell childhood advisory clinics the reasons adduced for limiting the family "were strikingly uniform, war coming first, fear of renewed war second, and the consequences of war, particularly housing, third, followed by economic considerations."

There is, I suggest, room for doubt whether these are usually the true reasons for voluntary sterility. War, or the threat of it, or the perils and dangers of the world have been quoted so often in this context that they have become clichés—useful verbal masks behind which to hide one's real thoughts. To avoid parenthood because of these alleged reasons out of solicitude for the unborn may appear unselfish and even noble to some, including the potential parents themselves; but the facts, for what they are worth, are usually against this explanation of voluntary sterility.

Actual war conditions and a perilous state of non-belligerency (he would be a hardy optimist who called it peace) have led since 1941 to a continuously rising birth-rate; and even in the late 'thirties, when early war was becoming more and more certain, the rate tended to rise. Whether this increase was due mainly to the foundation of more families or to the birth of more children in families already existing is at present undisclosed. Clearly the former and more likely alternative is less significant of change in fertility habit since it is little more than a function of more marriages; but in either case no support is given to the "war and wretched world" argument. If it is antisocial to have more children, it is equally antisocial to have any children; but most married people do in fact have one or two children.

The underlying cause of voluntary infertility is surely the fashion of the times, which declares so many things to be more desirable than family life and has society in which a really large family is Economic factors reinforce and are reinforced by but as the standard of life declines and necessarily less artificial it may be that people, that they can avoid starvation, will be driven back and more to the basic natural satisfactions and families will become not only more frequent but in size.

Philosophically considered, of two evils it is people should avoid parenthood for the real because they regard children as a nuisance and economic drag—than because they think the bad a place to be born into. In this latter should be faced by an insidious defeatism and chæism that boded even worse for our country civilisation than the obvious facts allow.

Whitley Bay. JOSEPH V. W

EARLY RISING AFTER OPERATION

SIR,—In your leading article of Sept. 20 (you refer to our series of 629 surgical cases[1] in "early rising" was the routine. Since that was we have had another year's experience of early and nothing has occurred to alter our opinion. We found no disadvantages and our belief in its advantages is still further confirmed.

An outstanding fact is that no case of femoral th bosis has occurred in four years—i.e., in about 850 cases. This is perhaps the most concrete and obj feature and one which cannot be effected by fai gratitude.

Johannesburg. W. A. POCOC

ALKYLAMINE TREATMENT OF LEUKÆMIA HODGKIN'S DISEASE

SIR,—The article by Dr. Wilkinson and Dr. Fl (Oct. 11) gives ample food for thought. Of the 8 of myeloid leukæmia which they treated with alkyla 1 reached the refractory stage in twelve month another in six months; 1 showed no significant resp 2 were complicated by coexistent pernicious an and 1 showed a remission for four months. F there is claimed well-marked improvement; we are told how long the improvement lasted, but since authors state that they deal only with immediate e it appears to have been short. The 8th case lived months. In 4 there was no considerable increa survival (compared with untreated cases). Of th cases of lymphatic leukæmia, 2 needed blood-transfu after treatment. Of the 4 Hodgkin cases 1, which certainly advanced, deteriorated "in spite of" treatm For the others the most that can be said is that t remained satisfactory and without remission for sevent weeks.

The drug has "potent nucleotoxic and cytot effects," and unless treatment is controlled by d white-cell counts and bi-weekly full blood-counts, periodic sternal puncture and "various other hæm logical and biochemical examinations" there is a of aplastic anæmia, agranulocytosis, thrombocytop purpura, and severe aplasia of the bone-marrow, not mention nausea, anorexia, vomiting, diarrhœa, thrombosis at the site of injection. These many great dangers are hardly surprising in view of the that the substance used was originally intended for destruction of human life.

The results, which I think I have summarised fa should be compared not with those in untreated ca but with those in cases treated by X rays. With m therapy patients have a reasonable expectation survival for five years or more, in a state of modi comfort, happiness, and efficiency, with very little, any, constitutional disability and without furt interference beyond occasional blood-counts. By t standard the alkylamine treatment is a disastrous fail This, however, is not the view of the authors, for th are prosecuting their researches by new methods administration and control. In so doing they victims of the all-too-common delusion that because agency modifies the appearance of disease it must ne

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[1] Pocock, W. A., Kark, W. *S. Afr. med. J.* July 12, 1947, p.

e a cure, if only the key can be found in the form
ect administration.
ay be argued that X-ray treatment also passed
h an experimental period of ill-success. But
o it was the only form of treatment capable of
ing any amelioration ; it was X-ray treatment or
g. No-one is more conscious than I am of the
ions of X-ray treatment ; but if it is to be replaced
other, the new remedy must prove itself superior
a reasonable time. In these results of alkylamine
ent one sees not a vestige of hope that it has any
. A fair trial was certainly justified, but the
are sufficiently conclusive to condemn its con-
ion. A case could, however, be made out for
treatment supplemented by the gradual insinua-
f the alkylamine method, however inconclusive
ult from a scientific point of view.

alise that in venturing to criticise anything done in
me of research I am committing sacrilege. But
authors of this report were themselves afflicted
one of these diseases, would they, in the light of
experience, still choose this method in preference
ay treatment ?

ridge. FF. ROBERTS.

RESTRICTING BOOK IMPORTS

—In my opinion your editorial last week on this
t is not strong enough. We *must insist* on a
e of opinion by the Board of Trade on this very
tant matter. At the present time I am engaged
ting a work on the life and writings of a foreign
I cannot obtain from abroad the necessary books
rence. This is, of course, no longer a free country:
rstand that the French, for example, are allowed
d by draft or cheque in francs at the officially
d rate of exchange any amount in payment of
published in this country. This utterly absurd
on is hampering progress in education here. Many
ooks as well as medical works, because of shortage
per (the Government seems to have plenty), are
f print. This is intolerable, and the situation is
ently getting worse. Why do we sit down to all
e restrictions ? We must fight for our rights and
our liberty, otherwise we shall go under. If these
s continue much longer the foreigners will take the
and the Britisher will be completely ousted. Let
therefore, adopt the fighting spirit, instead of the
p-like attitude which means defeat.

burgh. JAMES BURNET.

RAVENOUS INFUSIONS AND MASTOIDITIS

R.—In reply to the correspondence which followed
earlier letter (Aug. 23) I should like to make the
owing points :

y main contention is that the injudicious use of intra-
us infusions results in overloading of the general circula-
, which entails similar overloading of the respiratory
ulation and predisposes to a primary respiratory infection
ot of course blood-borne from the gastro-enteritis. The
cted respiratory secretion can then gain access to the
oid antrum in exactly the same way as infected
itus may do. Such respiratory infections in cases of gastro-
ritis are in my experience on the increase, and where
oiditis also occurs the organism most commonly found
me has been the pneumococcus. In one case pneumococci
e grown from one antrum and *Bact. coli* from the other.
Infected vomitus may certainly be the occasional cause
mastoiditis in these infants. In my hospital, however, in
rs gone by all infants were fed lying down by means of
tle slings attached to the heads of the cots ; in those
rs our cases of gastro-enteritis were uncomplicated by
toiditis.

My argument is that a new method of treatment which
ay be valuable in itself has been converted into a menace
indiscriminate use. As an example may be cited the
e of an infant, aged two months, who was admitted
ith what was recognised as very mild gastro-enteritis.
n intravenous infusion was given, the child died, and
t autopsy the only lesion was œdema of the lungs.

Royal Alexandra Hospital
for Children, Brighton. MARY A. LESLIE-SMITH.

POLIOMYELITIS COMPLICATING PREGNANCY

SIR,—Mr. Maxwell and Dr. Willcox in their article of Sept. 6, included no examples of poliomyelitis with respiratory paralysis in pregnancy. The following account of such a complication in the eighth month of pregnancy may, therefore, be of interest.

A married woman, aged 30, and in the eighth month of her second pregnancy, took ill with malaise, nausea, and frontal headache on Aug. 29. Symptoms persisted throughout the next day. On waking up at 6 A.M. on Aug. 31, she noticed weakness of the left arm and right leg, inability to sit up in bed, and shortness of breath. About 8 A.M. the breathlessness had increased and she developed difficulty in swallowing. There was no retention of urine. She was admitted to hospital at 11 A.M. on the same day as a case of acute anterior poliomyelitis.

The patient, a cheerful, intelligent, well-nourished woman, was slightly cyanosed and intensely dyspnœic. The respiratory distress compelled a bolt-upright position in bed—even a semirecumbent position was intolerable. Practically no subjective relief was obtained from continuous oxygen (5 litres per minute by Tudor Edwards spectacles), although the degree of cyanosis was reduced. Examination of the central nervous system showed pronounced nuchal rigidity ; in the left upper limb there was severe paresis of deltoid and triceps, and slight paresis of biceps ; in the right lower limb there was almost complete paralysis of iliopsoas and slight paresis of quadriceps, hamstrings, and dorsiflexors of foot. No contraction whatever could be observed in any of the muscles of the abdominal wall or in the thoracic or lumbar components of erectores spinæ. Apart from slight movement of the lower ribs there was no evidence of contraction of the intercostal muscles, the respiratory effort consisting almost entirely of violent contractions of the accessory cervical muscles of respiration. Auscultation of the chest showed very poor air entry on both sides with a few coarse crepitations at each base. No cranial-nerve abnormality was present, and examination of the other systems was negative. As the diagnosis of acute anterior poliomyelitis was beyond doubt, the patient was not submitted to lumbar puncture—a procedure which would have added considerably to her discomfort.

There appeared to be a reasonable possibility that diaphragmatic function was retained and that it might be sufficient to restore adequate pulmonary ventilation if given scope to act ; the disease was advancing rapidly ; and the child was viable. It was therefore decided to evacuate the contents of the uterus in the hope that respiration would be eased and the baby would be saved. Rapid classical cæsarean section was performed with anæsthesia by cyclopropane and oxygen under pressure, and a live female child weighing 4 lb. 3 oz. was delivered.

On return to the ward the patient's colour was good, she was less dyspnœic, and some degree of diaphragmatic respiration appeared to have been restored. For these reasons it was decided not to place the patient into a Drinker respirator immediately, as had previously been proposed, but to observe her for a period on continuous oxygen. A further factor in this decision was the risk of inhalation of secretions and vomit to which an unconscious patient is exposed in a mechanical respirator. Respiration and oxygenation (as judged by the patient's colour) showed little change in the first two hours, both being reasonably satisfactory ; but by this time it was becoming obvious that the patient was not recovering from her anæsthetic. She now appeared to be practically comatose, with all deep reflexes absent and only a sluggish corneal reflex. A definite right-sided facial palsy was also noted at this time. The coma became progressively deeper, but respiration remained unchanged and cyanosis practically absent until a few minutes before death at 7.45 P.M., when the vomiting of "coffee-ground" material produced fatal asphyxiation. The baby is now 5 lb. 1 oz. in weight and is progressing satisfactorily.

In reviewing the case cæsarean section seems to have been almost in the nature of a post-mortem operation for the sake of the child. The patient should have been out of her anæsthetic within half an hour, but her condition steadily deteriorated and she never recovered consciousness. Operation would have been impossible under local anæsthesia as the patient could not breathe of her own accord when lying down. Whether the cyclopropane had any adverse effect on the already injured nervous tissue is debatable, but it was felt that cæsarean section was of no benefit to the patient whatsoever. The disease must have attacked all the vital cerebral centres and given the patient no chance of recovery. The only benefit was that a live child was obtained.

This case bears out the observations of Maxwell and Willcox, and also those of Kelleher (*Brit. med. J.* Aug. 23, 1947, p. 291). Another case treated by cæsarean section has been reported by Freeth (*J. Obstet. Gynæc.* April, 1947), but in this case an equally good result could perhaps have been achieved by vaginal delivery.

Ayrshire Central Hospital, Irvine.
IAN W. B. GRANT
RICHARD DE SOLDENHOFF.

CLINICAL FEATURES OF POLIOMYELITIS

SIR,—In the report in your issue of Oct. 18 of the proceedings of the section of epidemiology and State medicine of the Royal Society of Medicine on Oct. 6, I am quoted as saying "that the current epidemic of poliomyelitis differed from previous English experience of the disease in clinical features as well as in extent."

With regard to the first part of this statement my actual words were: "As far as my limited knowledge goes, with one exception to which I shall refer in a moment, the present epidemic has shown no clinical features that have not been encountered in previous outbreaks in other countries." The one exception to which I referred was an unusual form of ocular tremor with or without cerebellar signs, already the subject of two recent communications in your journal.[1] Reference to the classical descriptions of poliomyelitis and polioencephalitis by workers in America, Sweden, and Australia should convince us of the fact that, with the possible exception already referred to, the clinical features of this outbreak have all been previously described.

Middlesex Hospital, London, W.1.
DOUGLAS MCALPINE.

THE METRIC SYSTEM IN MEDICINE

SIR,—In his letter of Oct. 18, Dr. Breen objects to my recommendation that preparations for internal administration should be written as a single dose and the number of doses stated, his reason being that under the Dangerous Drugs Act the total amount of the drug must be clearly prescribed. In the prescription for diamorphine hydrochloride, 5 mg. for a dose, send 10 doses, the *total* amount of the drug is clearly prescribed; it is 50 mg. To quote from Hugh N. Linstead's *Poisons Law*:

> ". . . the regulation only requires that the prescription shall 'specify the total amount of the drug to be supplied.' It does not say that the prescription must contain the words 'total amount of A, x grains.' So long, *therefore*, as the total amount of drug to be supplied can be calculated from the particulars given on the prescription, the requirements of the regulation are satisfied."

Croydon.
HORACE FINNEMORE.

CHOLERA IN EGYPT

SIR,—In an annotation on Oct. 11 you discussed the possible path of entry of cholera to Egypt. As a matter of fact "the pilgrim traffic from the Mohammedan countries to Mecca" should no longer be considered a cause of spread of epidemics, because of the efficient quarantining of pilgrims before they go home. A cause till now neglected is the movement of troops, who may carry infection from one area to another, as they did in Egypt during the last world war, when there were outbreaks of malignant malaria (*gambiæ*), typhus, and relapsing fever.

As to the present cholera epidemic, the bringing of infection by pilgrims from Hedjaz is not likely, (1) because the time of pilgrimage to Mecca (Oct. 23) has not yet come, and (2) because the present epidemic has stopped the pilgrims going to Mecca from Egypt. There is, and will be, no pilgrimage from Egypt this year, apart from a small number who had already left Egypt before the start of the epidemic and who will remain in Hedjaz till November.

As to the facts which point to the infection by troops, the following may be given: you remark, "cholera's home is India." (2) An of cholera is now in progress in India. (3) During weeks preceding the appearance of cases in Egypt was active traffic of troops from India to camps occupied Suez Canal area (as announced by (4) The outbreak of the present epidemic Al-Korain village, which is close beside camps area, and contains 10,000 men who work in the

Leysin, Switzerland.
AMIN

*** Our correspondent renews the allegation movement of British troops has been res outbreaks of typhus, relapsing fever, and m Egypt. It is difficult to see why an army in typhus and relapsing fever have been almost non through the excellence of its hygiene control, be blamed for the spread of these diseases in a where they have long-been epidemic from time Nor do we know of any evidence that malignant carried by *Anopheles gambiæ* was spread in during the late war by troop movements, either air, or water. There is in fact strong presumptive that the tragic outbreak of malaria in Upper was similar to previous malaria epidemics in which are attributed to the well-known ten *A. gambiæ* at intervals to overflow its normal The suggestion that cholera was introduced into this year by troop movements from India seem break down on the fact that there have so far no cases of cholera among British troops in India those stationed or arriving in the Canal Area, or Middle East as a whole.—ED. L.

STREPTOMYCIN IN INFLUENZAL MENI

SIR,—In your issue of Oct. 18 (p. 593) you "supplies of streptomycin are still strictly limit unfortunately there is not enough to treat every tuberculous meningitis or miliary tuberculosis." same note you give a list of hospitals to which appli may be made for the treatment of influenzal men with streptomycin. Surely, this does not appear justified at present. Influenzal meningitis respo penicillin in adequate doses, as we have recently (*Lancet*, Aug. 2, p. 164). Nor can the use of streptomy in influenzal meningitis be justified on the ground clinical research, since adequate reports of its effic in this disease have already been published in the Un States.

It seems to me that present supplies of streptomy should be used for the treatment of as many case possible of the hæmatogenous forms of tubercul if a clinical trial is to be attempted against anot infection, this should be against sulphonamide-resist and penicillin-resistant bacteria, and not *H. influe* which is sensitive to penicillin in massive doses.

St. Alfege's Hospital, London, S.E.10.
B. GOTTLIEB
Senior Resident Physic

THE BARBITURATES

SIR,—Your leading article last week draws atten to the perils of the barbiturates. It is a sad comment on our way of living that so much sedative should used by the nation.

Some cautious practitioners, you say, will only prescr enough tablets to total less than a fatal dose. Ab 20 grains of phenobarbitone is an average lethal do though much smaller quantities have been known cause death. It would be impossible for a busy doc to see, say, every week all his patients who took phe barbitone—to say nothing of the waste of patien time. I think unreasonable the implication that practitioner who prescribes larger amounts is incautio Practically, long-term prescription of barbiturates confined to phenobarbitone, for the use of other for implies that the patient needs further treatment or cl supervision. Phenobarbitone is mostly used for epilep for "*tension neuroses*" in the busy, overactive pers for some cases of peptic ulcer and hypertension, for so dermatoses, and for menopausal disturbances which not respond to replacement treatment. Also migr may sometimes be improved by sedation between attack

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1. Strickland, B. *Lancet*, Sept. 6, p. 369. Marmion, D. E., Sandilands, J. *Ibid*, Oct. 4, p. 508.

h cases there is little risk of deliberate overdosing patient is known to be well balanced.

he more severe anxiety states, and particularly in ed depression, there is a great risk of suicide, so must be care in prescribing barbiturates. But , dressing-gown cords, and coal gas are so readily ible that it seems supererogatory to hamper the iption of a useful drug by limiting quantities.

on Mount, Essex. GAVIN THURSTON.

Obituary

HUGH NASH BRADBROOKE

M.A., D.M. OXFD, M.R.C.P., D.P.M.

Hugh Bradbrooke, who was appointed to the staff Prince of Wales's Hospital, Tottenham, only a year 0 ago, took up psychiatry after long experience of al practice. A pilot in the 1914–18 war, he gained -class in natural sciences at Oxford and qualified 5 from the London Hospital. As a student he was nding—in integrity and humour as well as in —and while holding house-appointments and ng at clinical pathology he collaborated with Roaf in a paper on Hypochromatic Vision, and Clark-Kennedy and Owen in observations on CO_2 Muscular Exercise in Man. On the clinical side he arly interested in nervous and mental disorders, e was for a time assistant medical officer at Little- Mental Hospital and clinical assistant in the tment of nervous diseases at the Radcliffe Infirmary. d. He became M.R.C.P. in 1927, and while in practice nger carried out, with D. A. Mitchell, an investiga- into the use of quinine in normal labour. This ained him his D.M. degree in 1934, and in the ng year he and Mitchell recorded it in the *British al Journal.*

n after the outbreak of war Bradbrooke joined R.A.F.V.R., where he served as a neuropsychiatric alist with the rank of squadron-leader. On demo- tion he did not return to general practice but nued to work in his specialty. He was appointed nical assistant in the department of psychological cine at Middlesex Hospital and a neuropsychiatric alist to the Ministry of Pensions. On election he Prince of Wales's General Hospital he started a d-guidance clinic; but unfortunately he held his for only a few months before he was taken ill.

s high character and unselfishness," writes a col- ue, "made it easy to work with him; and his abilities e recognised by all the staff." A friend of Oxford days wise speaks of the quality of his mind, which was etty good if not actually first-class. If he did not, the conventional sense, fulfil early promise it was ably because his intellectual honesty would not w him to pursue the competitive way of life, the and thrust of which was not to his taste. For humbug its various forms he had a keen nose, but when he it succeed he was merely amused. Indeed he was rmined not to take life more seriously than it erved. As a young man he was gentle and sensitive, h an unusual power of insight into his own mind d those of others—a power that certainly did not inish with the years."

"The loss of Hugh Bradbrooke," writes another end, "will be a great blow to many who worked with m in the R.A.F. during the war. One knew he had d a distinguished career in general practice and in chiatry before the outbreak; but to work with him d see him in contact with Service people, especially in handling of aircrew personnel, was to learn how ilful, patient, kindly, and sincere he was. To me he presented the kind of physician who was so beloved an earlier generation and who could be utterly depend- ble; and yet he fulfilled the requirements of a time hen youthful thought, vigorous action, and decision, ith the wisdom of the older school, were so valuable. e knew his subject, which was to treat cases of flying tress, because he had himself flown as a pilot and later ad crashed and injured his spine in a glider accident: o better person existed to treat stressed aircrew. Out- de his work he could be genial and enthusiastic at games or social activities connected with the unit, and was at all times a cheerful companion.

"He will be much missed. No-one could fail to be impressed by his gentle kindliness, and wide culture, and by the courage with which he fought his affliction in the last two years."

ERNEST ARNOLD HODGSON HINDHAUGH

M.B. LOND., F.R.C.S.

Mr. E. A. H. Hindhaugh, who died on Oct. 9 at Ruthin Castle at the age of 42 after a long illness, qualified from the London Hospital in 1928, and took his M.B. the following year. After holding house-appointments at the London, the Royal Cancer Hospital, and the Royal Hospital, Wolverhampton, he worked in Liverpool as visiting assistant surgeon to Mill Road Infirmary until September, 1939, when as surgeon lieut.-commander R.N.V.R. he became surgical specialist in H.M. Hospital Ship *Amarapoora*. The work of turning his department into a first-class surgical unit he described admirably in the *Royal Naval Medical Journal* in 1942. His health began to fail in 1944, and he was invalided from the Service, but he returned to Liverpool full of zest to rejoin his old hospital, now moved to Broadgreen, and though a sick man he continued to do a full operating list to within a few months of his death.

"A hard-working general surgeon, Hindhaugh became a landmark at Scapa," writes C. A. C., "for he was well suited to deal with the emergencies which occurred in the Home Fleet in the early days of the war. His judgment was exceedingly sound, and like all good surgeons he never operated unless he must. But once he had decided on surgery, he acted with great boldness, and had a knack of knowing just how much a patient could stand. He added greatly to the pleasanter side of ship life by his magnificent baritone voice, and his classes to naval ratings on the appreciation of music were always packed."

DR. COURTNEY GAGE

R. M. writes: So many years have passed since my first meeting with Courtney Gage that the memory has faded, but it probably differed little from a thousand later occasions. A wonderful friendliness, perfectly frank and unstudied, was so characteristic of him that it was the easiest thing in the world to like him, and as time passed to become more and more fond of him: and so everyone found it. Nor did it take long to realise that his kindliness of heart showed itself habitually in acts of generosity. No-one could have given his help more freely and willingly in cases of urgency and difficulty, and no-one could have had a less mercenary view of his life's work. It is small wonder that Gage earned universal respect, admiration, and friendship.

Ilford

The straightforward simplicity, which gave his character its great charm, becomes all the more attractive when his career is recalled. With whatever degree of determination Gage started out in 1919 to become a radiologist—to have to go back to pass a preliminary examination, to turn student at 34, to qualify in five years, and two years later to be elected honorary assistant radiologist at St. Mary's—all shows gifts and intelligence of a high order. In a lesser man such rapid promotion and success might have led to some show of self-satisfaction; but in Gage there was no trace of it. He was always ready to give his fullest help, but that his opinion had the great authority which it undoubtedly possessed seemed altogether absent from his mind. His exceptional talents led him to a prominent position in his own specialty, but his chief appreciation came, as was proper, from the St. Mary's honorary staff. To feel that at the back of all one's work there was his invaluable help to be had for the asking was a real satisfaction, and to have him as a friend and colleague was indeed a privilege.

Public Health

Food-poisoning in Northamptonshire

At the end of last month there was an outbreak of illness, with diarrhœa and vomiting, at the village of Little Houghton, Northamptonshire. Of a total population of 416, 133 were affected, most of these falling ill on Saturday, Sept. 27, or Sunday, Sept. 28; there was 1 death. Specimens of fæces from 3 patients on Monday, Sept. 29, contained salmonella organisms, which were later identified as *S. dublin*.

Milk was supplied from a single farm to all but 25 of the village's residents; and none of these 25 fell ill. Inquiry at the farm revealed that on the previous Thursday, Sept. 25, a 2$^1/_2$-year-old heifer had been suspected of having a "chill"; the heifer had calved prematurely a fortnight before. Milk from this heifer was not included in the bulk supply after Friday, Sept. 26, but the animal was not isolated from the herd. It died on Saturday, Sept. 27, and the carcass was removed to a knacker's premises, where it was apparently cut up, boiled, and sold at once, for no trace of it could be found at 4.30 P.M. on Monday, Sept. 29. Workers at these premises reported, however, that the udder was badly bloodstained.

Samples of the milk delivered on Sunday, Sept. 28, and Monday, Sept. 29, contained no pathogenic organisms. On Tuesday, Sept. 30, a veterinary surgeon from the animal health division of the Ministry of Agriculture found on inspection that one cow in the herd had acute mastitis, while a further two were suspected of having this condition; but samples of milk and fæces from each cow in the herd did not reveal any salmonella organisms. The cow with acute mastitis was removed from the herd, and pasteurisation of all milk was instituted.

Cut in Milk Priorities

Last winter's severe weather, and this summer's drought, have together reduced the home production of milk by some 30,000,000 gallons, compared with last year. This fall has made it impossible to build up sufficient stocks of dried milk for baby-feeding to last through the winter. It has therefore been made an offence to use such dried milk for purposes other than feeding babies, a tempting thing to do now that household dried (skimmed) milk is no longer obtainable.

A more drastic measure came into force this week, when priority allowances of liquid milk were reduced as follows:

Invalids.—Allowances reduced by two-sevenths, so that conditions in class I qualify for 10 pints a week instead of 14, and those in class II for 5 pints instead of 7.

Children Aged 1–5 Years.—Weekly allowance reduced from 7 to 6 pints.

Non-priority Catering Establishments.—Reduction of allowance by a quarter, bringing the hotel resident into line with the normal adult consumer.

Cholera in Egypt

The cholera epidemic in Egypt continues to spread. Reports in the *Times* show that the daily total of deaths rose from just over 100 at the beginning of last week to more than 550 at the beginning of this week, when about 1000 new cases were being notified each day. Up till the beginning of this week the epidemic was still centred on the area north-east of Cairo, where it started: Cairo and Alexandria were only slightly affected, but infection had spread into Upper Egypt, which had hitherto been untouched.

Half a million people are being inoculated daily with vaccine presented by Britain, the United States, Iraq, France, Brazil, Tunisia, Italy, Switzerland, Iran, and Russia. The World Health Organisation's expert committee on quarantine, meeting in Geneva this month, agreed that the question of vaccine potency should be referred to a committee on biological standardisation. At this meeting Dr. Mohammed Nasif Bey said that the epidemic was limited more or less to rural areas. Egypt, he added, needed a hundred more ambulances to carry cases and suspects to hospital.

The Egyptian authorities, according to a correspondent, have been impeded by the movement of people out of the infected areas. cautions in other countries include the est by Palestine of quarantine posts at its frontier, stringent measures of control at French Med ports; all dock employees at Marseilles who come into contact with ships arriving from Egypt been vaccinated.

Poliomyelitis and Polioencephalitis

The decline in notifications of poliomyelitis 338 and of polioencephalitis 26 (27) continued in the ended Oct. 11. Figures for the previous week are in parentheses. In London notifications were: myelitis 31 (38), and polioencephalitis 3 (3). There substantial declines in notifications of polic Bedfordshire 3 (10), Durham 5 (14), Essex 7 Lancashire 43 (64), Middlesex 17 (28), and Yorks, Riding 11 (18). The most important rise was in shire 13 (5).

Two large-scale inquiries concerning poliomye known to be in progress. One, from the Health, derives its information from certain infe diseases hospitals and general hospitals throughout country and aims at securing more accurate of the fatality and severity of the disease in the epidemic. The other and more comprehensive organised by Dr. A. M. McFarlan and other member the staff of the Public Health Laboratory Service, concerned with the epidemiology of the disease in sele areas. Although these two inquiries are separate, method of tabulating cases is almost the same for

Infectious Disease in England and Wales

WEEK ENDED OCT. 11

Notifications.—Smallpox, 0; scarlet fever, whooping-cough, 1043; diphtheria, 201; paraty 12; typhoid, 8; measles (excluding rubella), pneumonia (primary or influenzal), 403; cerebros fever, 45; poliomyelitis, 338; polioencephalitis, encephalitis lethargica, 2; dysentery, 67; puer pyrexia, 106; ophthalmia neonatorum, 71. No of cholera, plague, or typhus was notified during week.

Deaths.—In 126 great towns there were no de from scarlet fever, measles, or diphtheria, 2 (0) fr enteric fever, 8 (0) from whooping-cough, 70 (4) fr diarrhœa and enteritis under two years, and 13 from influenza. The figures in parentheses are those London itself.

The number of stillbirths notified during the we was 216 (corresponding to a rate of 23 per thous total births), including 30 in London.

Births, Marriages, and Deaths

BIRTHS

Beaton.—On Oct. 17, at Dumfries, the wife of Dr. D. R. Beato a daughter.

Bell.—On Oct. 14, at Newcastle-on-Tyne, to Dr. Jean Bell (Cass), wife of the Rev. R. G. Bell—a son.

Dickson.—On Oct. 17, at Nunthorpe, Middlesbrough, the of Mr. D. C. Dickson, F.R.C.S.E.—a son.

Figgis.—On Oct. 16, at Harrow, the wife of Dr. M. M. Fig a daughter.

Gibbs.—On Oct. 14, at Cobham, Surrey, the wife of Dr. A Gibbs—a son.

MARRIAGES

Scrivener—Compton.—On Oct. 15, at Chichester, John Scrivener, M.B.E., captain R.A.M.C., to Patricia U. Compton.

DEATHS

Dodds.—On Oct. 15, at Edinburgh, Mary Janet Dodds, O L.R.C.P.F.

Houghton.—On Oct. 11, at Eastbourne, Murtaugh Ja Houghton, M.R.C.S.

Hughesdon.—On Oct. 17, Mary Redfern Hughesdon, M.B. Ca D.C.H.

MacGillivray.—On Oct. 15, at Crail, Fifeshire, Angus MacGilli M.D. Aberd., D.SC., LL.D. St. And., F.R.S.E., 28th chief of the C MacGillivray.

Maclean.—On Oct. 17, in London, Charles Forbes Macle M.B. Glasg.

Smith.—On Oct. 13, at Woking, Surrey, Gilbert Johnston Sm M.B. Glasg., major, I.M.S. (retd.), aged 49.

Starling.—On Oct. 18, Edwin Alfred Starling, M.B. R.U.I., aged 9

Stevenson.—On Oct. 16, in Malta, Alec King Stevenson, M.B. B surgeon commander, R.N.

Notes and News

N ASSOCIATION OF MEDICAL LIBRARIANS

E inaugural meeting of a new medical subsection of the ry Association, held in London on Oct. 4, was attended brarians from medical institutions in all parts of the try. In a preliminary statement Mr. W. R. Le Fanu, rian of the Royal College of Surgeons of England, ined that a small group of medical librarians had been ng informal meetings in London during the last few and that the time had come to organise a regular group r the ægis of the Library Association. Medical librarians ndon and in the provinces had responded with enthu-, and the university and research section of the Library iation had given its official blessing to the new subsection, was now in being. Mr. Le Fanu recalled that Sir William suggested the formation of such a body as long ago as at the annual meeting of the British Medical Association, here were few regularly trained librarians at that date othing came of the proposal. Since then medical libraries expanded enormously both in size and in the services they provide, and their importance to the profession ardly be exaggerated. An association devoted to the sional interests of medical libraries deserves a warm me and strong support from all medical men.

nous projects which will advance the usefulness and ncy of medical libraries were outlined to the meeting. include the establishment of an exchange system for cate or unwanted books and journals, the compilation tion lists of periodicals and of rare books, and inter-y loans. Membership of the group is confined to members e Library Association who are working in medical es, but medical men will always be welcomed as guests; ecretary of the group will gladly answer inquiries both members of the medical profession and from librarians.

following committee was appointed to manage the of the section: C. C. Barnard, London School of ne and Tropical Medicine (chairman); Miss E. Wigmore, al Research Council; W. A. Lee, Liverpool Medical ution; W. R. Le Fanu, Royal College of Surgeons ngland; T. J. Shields, British Medical Association; ilson, Medical Library, University of Manchester; and . Bishop, Wellcome Historical Medical Museum, 28, nan Square, London, W. 1 (hon. secretary).

WHALING TODAY

a meeting of the Universities Federation for Animal are in London on Oct. 17, Dr. H. R. Lillie emphasised ruelty of the present method of killing whales by means rpoons fitted with explosive heads filled with black ler. Sometimes, he said, as many as nine harpoons sed to kill one whale, and often death does not follow ne to five hours. Among the alternative methods of g, he thought electrocution the most hopeful line to e, though possibly the use of carbon-dioxide cylinders ome merit. He mentioned that, owing to damage to the tines, whales are often rotten by the time they are ght up to the factory ship.

. John Grierson discussed the use of aircraft in whaling, confirmed Dr. Lillie's views on the brutality of present ods. Sir Robert Robinson, P.R.S., discussed other natives, including high explosive, which he no longer red, and high-velocity solid missiles

Robert Case discussed the use of carbon dioxide, and sed the importance of keeping in mind the growing use of meat for consumption when considering new methods aughter. He was afraid, for example, that the high-ure peak from high explosive might cause much damage uts containing gas, even if the missile did not in fact e the abdominal viscera. He suggested that the Depart- of Scientific and Industrial Research would perhaps leased to coöperate with Dr. Lillie in any proposed rimental work.

. Case drew attention to an industrial hazard of whaling he had studied during the past season. A very high ence of sepsis was noted amongst deck workers, and one as lost from fulminating gas-gangrene. A study of some he wounds showed a bacterial flora in which clostridia ominated, and in certain cultures brought back *Cl. naliens* had been found. The source of infection was the of rotten whales, infected from the intestinal tract ng the post-mortem interval, when the temperature aintained at about 35°C by the insulating action of the blubber. Dr. Case suggested that steps might be taken to lower the incidence of infection, and mentioned that he had already arranged for one fleet to try out prophylactic and therapeutic sera, as well as antibiotics, during the forthcoming season.

ROYAL PHOTOGRAPHIC SOCIETY'S EXHIBITION

The scientific and technical entries for the Royal Photographic Society's Exhibition have now become so numerous as to cover the entire wall-space of the society's gallery, so the exhibition has to be held in two parts. The scientific section this year contains some entries of medical interest, with a specially strong group from the photographic department of the Westminster Hospital. Their serial comparative records of a case of arteriovenous aneurysm in the skull (600) is a model of accurate comparison photography in which the large scale and high definition, combined with the wide area of field recorded, provide an excellent visual impression of the patient's progress. This series would have been improved by lateral views to show presence or absence of proptosis. The more complete series of routine plastic surgery records (601, 602), by Alfred Benjamin, are lacking in precision. "A Pallid Kidney" (604), also from the Westminster Hospital, shows the value of including a grey-scale[1]; it would have been still better if the original grey-scale could have been attached to the mount. "Benign Pigmented Melanoma" (611), by Miss D. V. Marshall, is a good record marred by absence of any hint of the scale of reproduction of what can be guessed to be a juvenile thigh. The examples of photomicrography are mainly notable for the absence of the splendid work of J. S. Pittock.

The colour section contains fine medical prints by Edward Brain, and in the transparency cabinet Miss D. V. Marshall makes a brave attempt to present the general appearance of hæmochromatosis (343) and polycythæmia (344). In the latter she wisely included a normal control, but unfortunately chose a sallow mediterranean type which was not truly comparable; a colour-scale would have provided a more useful control.

All in all, the medical entry was disappointingly small, and many of our best workers were not represented at all. The newly established hospital photographic departments may be feeling too shy to submit entries; next year should see a much larger turnout.

This exhibition is open free to all, at 16, Princes Gate, S.W.7, until Nov. 1.

COÖRDINATION OF ABSTRACTING SERVICES

A conference of representatives of abstracting services in the medical and related sciences, held in Paris under the auspices of Unesco, agreed on the desirability of providing on a coöperative basis a scientific medical information service by means of abstracting current publications at the lowest possible cost to the reader. It was recommended that, to avoid duplication, *Excerpta Medica* and *Biological Abstracts* be asked to consider reducing the range of subjects covered by their services; and that *Biological Abstracts* and *British Abstracts* on the one hand, and *Excerpta Medica* and *World Abstracts* on the other be asked to explore the possibility of coöperation by the exchange of abstracts. The meeting recommended that, to implement the decisions taken, Unesco should set up an interim coördinating committee, composed of non-profit-making international abstracting services. Initially, the committee should be composed of the abstracting services represented at the conference (*Excerpta Medica* being invited as an observer only, until it becomes non-profit-making), the Interim Commission of the World Health Organisation, Unesco (as secretariat and convener), the International Federation for Documentation, the International Federation of Library Associations, and the Medical Libraries Association. It is proposed that the first meeting of the committee shall be held next spring.

University of London

On Thursday, Nov. 6, at 5 P.M., at 1, Wimpole Street, W.1, Mr. E. D. D. Davis will deliver the Semon lecture on the Applied Anatomy and Physiology of the Pharynx and Œsophagus. Admission to the lecture is free, without ticket.

University College, London

The remaining lectures of Dr. M. H. Pirenne's course on the Physiological Mechanisms of Vision will be given on Oct. 29 and Nov. 5 and 12, at 5.30 P.M. (and not at 5 P.M.).

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[1] Stanford, B. *Lancet*, 1946, ii, 299.

University of Leeds

The title of emeritus professor has been conferred on *Dr. J. Johnstone Jervis*, who has lately retired from the chair of public health. The following appointments have recently been made: Dr. W. J. Allen, lecturer in physiology; Dr. I. G. Davies, professor of public health; Dr. C. W. Dixon, lecturer and chief assistant in public health; Dr. R. P. Harbord, reader in anæsthetics; Dr. R. Orton, senior lecturer in psychiatry; Mr. Harold Petty, research fellow in the surgery of rheumatism; *Dr. C. J. Polson*, professor of forensic medicine; Dr. D. E. Price, lecturer in forensic medicine.

Dr. Davies is at present deputy M.O.H. for Bristol and deputy director of the preventive medicine laboratory of the University of Bristol where he is also lecturer in public health. He qualified in 1923, and took his M.B. Lond. the following year and the M.R.C.P. in 1926. After holding resident posts at the North Wales Sanatorium and St. Peter's Hospital, London, he became tuberculosis officer and senior assistant medical officer for Nottingham. He has published papers on the Foster Child, and the 1940 and 1941 outbreaks of paratyphoid B in Bristol. In 1944 he took his M.D. Dr. Davies is a member of the Population Investigation Commission.

Dr. Polson, who is a barrister-at-law of the Inner Temple, graduated M.B. with first-class honours in pathology at the University of Birmingham in 1924. He held a lectureship in pathology at the University of Leeds before he was appointed pathologist to the Crichton Royal at Dumfries. Later he became assistant lecturer in chemical pathology and demonstrator in pathology at the University of Manchester before he returned to Leeds to take up his present appointments as senior lecturer in pathology in the university and pathologist to St. James's Hospital. His published work includes papers on liver necrosis and rhinoliths. In 1941 he was elected F.R.C.P.

University of Sheffield

Dr. J. L. Edwards and Dr. L. C. D. Hermitte have been appointed honorary lecturers in pathology, and Dr. R. T. Gaunt, honorary lecturer in medicine to dental students. Dr. H. J. Whiteley has been appointed assistant lecturer in pathology.

Royal College of Physicians of London

Dr. E. R. Boland will deliver the Croonian lectures at the college, Pall Mall East, S.W.1, on Tuesday and Thursday, Nov. 18 and 20, at 5 P.M. His subject is to be the Administration of Medicine.

Royal College of Surgeons in Ireland

The following have received the fellowship:

Denis Boland, D. M. Brooks, John Bunting, F. H. Counihan, R. A. E. Magee, Eoin O'Malley, W. J. O'Regan, A. B. Walsh.

Care of Old People

The Bristol Council of Social Service and the Bristol and District Divisional Hospitals Council are holding a conference on this subject at 2.30 P.M. on Wednesday, Oct. 29, at the University of Bristol. Dr. E. L. Sturdee and Dr. Marjory Warren will speak on the medical needs of old people, Miss D. Ramsey on their social needs, and Dr. R. H. Parry will sum up the discussion. Further particulars may be had from the hon. secretary of the Hospitals Council, Royal London House, Bristol, 1.

Course on the Rheumatic Diseases

On Saturday, Oct. 25, at 9.45 A.M., Lord Moran will open this course at the rheumatism unit of St. Stephen's Hospital, Fulham Road, London, S.W.10. On that day the following lectures will be given: Sir Adolphe Abrahams (General Physician's Approach to Rheumatic Diseases); Dr. Philip Ellman (Ætiology of Chronic Rheumatism); Dr. Francis Bach (Rheumatic Fever, and Organisation of a Rheumatism Unit); Dr. G. D. Kersley (Gout); Dr. Grace Batten (Radiological Diagnosis of Arthritis). Particulars of the lectures to be given on the second and concluding day of the course will be found in the Diary of the Week on this page.

Notices in the Newspapers

The Medical Registration Council of Eire announce that their attention has been drawn to the increasing number of notices appearing in the public press that might be construed as advertising on the part of members of the medical profession. "As notices in the public press should do no more than notify the patients of absence from or return home, or of change of address, it is the opinion of the council that: (1) no notice should appear more than once; (2) no title except that of Doctor (Dr.), or Mister (Mr.), or Surgeon should be used; (3) no degree or qualification should be inserted after the name; (4) in no case should hours or days of attendance be specified; (5) the telephone number and full address should be quoted only in case of taking up residence or change of residence."

Appointments

BUCKLEY, WILLIAM, M.A., M.B. Camb., F.R.C.S.: asst. surgeon, Nottinghamshire county council and city council.

CURRIE, DONALD, M.A., M.B. Camb.: M.O., Tanganyika, Service.

JOHNSON, H. D., M.B. Camb., F.R.C.S.: asst. surgeon, Hospital, London.

MACKAY, D. H., M.B. Manc., F.R.C.S.: surgeon, Stockport

NEWBOLD, J. C., M.A., M.B. Camb., F.R.C.S., M.R.C.O.G.: rician and gynæcologist, Royal Hospital, Wolv

TALBOT, J. J., M.B. Dubl.: M.O., British Guiana, Colo

Royal Berkshire Hospital, Reading

Asst. Surgeons:

LATTO, CONRAD, M.B. St. And., F.R.C.S.E.

REID, R. G., M.B. Lond., F.R.C.S.

Diary of the Week

OCT. 26 TO NOV. 1

Sunday, 26th

ST. STEPHEN'S HOSPITAL, Fulham Road, S.W.10

10 A.M. (Rheumatism unit.) Dr. Philip Ellman: Differential Diagnosis; Drug Treatment in the Diseases.

NOON. Sir Thomas Fairbank: Development of Arthritis.

2 P.M. Mr. Timbrell Fisher: Orthopædic Aspects of Disease.

3.30 P.M. Dr. Blake Pritchard: Pains—Neuritic and

4.30 P.M. Dr. David Shaw: Psychiatric Factors in the Rheumatic Diseases.

Monday, 27th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2

5 P.M. Mr. H. F. Lunn: Applied Anatomy of Testi Descent. (Arnott demonstration.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1

5.30 P.M. *Odontology.* Prof. H. F. Humphreys: Education. (Presidential address.)

SOCIETY OF APOTHECARIES OF LONDON, Black Friars Lane,

5 P.M. Prof. D. F. Cappell: Pathology of the Rhesus F

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1

8.30 P.M. Dr. A. H. Douthwaite, Mr. Norman Tanner: ment of Peptic Ulcer.

Tuesday, 28th

ROYAL COLLEGE OF SURGEONS

5 P.M. Mr. Lunn: Cerebral Cortex and the Status *(Arnott demonstration.)*

ROYAL SOCIETY OF MEDICINE

8 P.M. *Medicine.* Prof. Alexander Haddow, Dr. Eric Dr. Edith Paterson, Dr. Joan Watkinson, Dr. Warwick, Mr. E. W. Riches: Chemotherapy in Diseases.

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, W.C.2

5 P.M. Dr. I. Muende: Pathological demonstrations.

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, *Gray's Inn* W.C.1

4.30 P.M. Mr. Terence Cawthorne: Surgical Treatme Deafness.

PADDINGTON MEDICAL SOCIETY

9 P.M. (St. Mary's *Hospital*, W.2.) Mr. A. Dickson W Coloured film on Treatment of Varicose Conditions their Complications.

EDINBURGH POST-GRADUATE BOARD FOR MEDICINE

5 P.M. (Royal Infirmary.) Mr. J. M. Graham: Obstru Dyspnœa.

Wednesday, 29th

ROYAL COLLEGE OF SURGEONS

5 P.M. Mr. W. R. Douglas: Surgical Treatment of Meta Carcinoma of the Cervical Glands. (Moynihan lectu

Thursday, 30th

ROYAL COLLEGE OF SURGEONS

5 P.M. Dr. James Craigie, F.R.S.: Viruses, Self-reprod *Substances, and Tumours.* (Imperial Cancer Re Fund lecture.)

SOCIETY OF APOTHECARIES

5 P.M. Sir Lionel Whitby: Theory and Practice of Ch therapy.

INSTITUTE OF DERMATOLOGY

5 P.M. Dr. H. MacCormac: Occupational Dermatitis.

MEDICO-LEGAL SOCIETY

8.15 P.M. (26, Portland Place, W.1.) Judge W. G. Earen K.C.: Retrospect and Prospect. (Presidential addr

SOCIALIST MEDICAL ASSOCIATION

7 P.M. (Denison House, Vauxhall Bridge Road, S.W.1.) J. Ll. Saunders, B.D.S.: New Zealand National Service.

HONYMAN *GILLESPIE LECTURE*

4.30 P.M. (Edinburgh Royal Infirmary.) Dr. W. Ritchie Ru Traumatic Amnesia.

Friday, 31st

LONDON CHEST HOSPITAL, Victoria Park, E.2

5 P.M. Dr. N. Lloyd Rusby: Diagnosis of Pulmonary *culosis.*

BIOCHEMICAL SOCIETY

2.15 P.M. (St. Thomas's Hospital medical school, London, S Short papers and demonstrations.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY

8.30 P.M. Sir Archibald McIndoe: Surgery of the Burnt Hand.

ROYAL MEDICAL SOCIETY, 7, Melbourne *Place, Edinburgh*

8 P.M. Prof. W. E. Le Gros Clark, F.R.S.: Rôle of the Anat in the Study of Sensory Functions.

E PAROXYSMAL TACHYCARDIAS *

MAURICE CAMPBELL
O.B.E., D.M. Oxfd, F.R.C.P.
PHYSICIAN TO GUY'S HOSPITAL

paroxysmal tachycardias include four varieties
xysmal arrhythmia: supraventricular (auricular
dal) tachycardia (60%), auricular fibrillation
auricular flutter (6%), and ventricular tachy-
(4%). Clinically, when no electrocardiogram is
e, the diagnosis of paroxysmal tachycardia must
e to be made and will include some cases of
mal flutter with regular 2 : 1 block and some of
lar tachycardia. This will not detract from its
much as it may seem to, for they will be few and,
main, types that behave clinically like auricular
rdia.

nately the frequency and seriousness of these
mias are in reverse order, ventricular tachycardia
he least common and much the most serious.
make no distinction between auricular and
achycardia, and little if any difference has been
which is helpful, since they can only be
ished cardiographically. The two are combined
raventricular tachycardia. I may sometimes,
ers have done, use auricular tachycardia as
nous with this; in fact it may be more accurate
o, both rhythms arising in the auricular muscle,
rer to the S-A and the other nearer to the A-V

ost cases the meaning of "paroxysmal" can be
loubt; but, especially since the introduction of
e, it may not be easy to know if a rhythm was
mal or had become established. I suggest that
thm persisting more than fourteen days should
d paroxysmal without some qualification, such
racted; and that, where an abnormal rhythm
once or twice only during some other illness
iac infarction, it should be called transient rather
roxysmal. I have emphasised this with paroxysmal
ion, but it is of more general application.

uld be tedious to describe in detail how I reached
ercentage figures for the different arrhythmias.
00 patients attending the cardiographic depart-
Guy's Hospital, during 1927–36, and two years'
ents at the National Heart Hospital, have been
d. I have also modified them by the types seen
private practice and such published statistics as
ertinent, especially many papers of White, who
that, in his experience also, paroxysmal tachy-
s twice as common as paroxysmal fibrillation.

wing classical precedent I have divided the clinical
into diagnosis, ætiology, symptoms, prognosis,
atment. In some ways it would have been simpler
uss all the arrhythmias together, but this would
iven a less complete picture of any one of them.
compromised by combining all diagnosis and
ent in two sections, before and after discussing the
spects of each separately. All these arrhythmias,
utter and ventricular tachycardia, may be physio-
and of no significance in indicating heart disease.

Diagnosis

n the attack is not seen and there is only the
; reliance must then be placed on the abrupt
and the rapid beating of the heart is nearly always
st symptom felt,—whatever others may follow.
atient complaining of palpitation should be asked,
does it start? When was the last attack? How
id it last?" A decisive answer to these three questions will generally establish the diagnosis with certainty, for ordinary palpitation is much too vague and indefinite to allow the patient to define the number and length of attacks with precision. The end of the attack is as sudden as the onset, but the patient may be less capable of detecting it, as simple tachycardia may follow the paroxysm. Most other symptoms are too variable to be reliable, and extrasystoles before or after the attack may obscure the clear picture.

Inquiry must then be made about whether the heart was regular or irregular, and, perhaps surprisingly, the patient's statement usually proves to be reliable, and I have seen few instances where a subsequent record showed it to be wrong.

If the rhythm is irregular, fibrillation and flutter with varying A-V block can only be distinguished by graphic methods, unless the irregular rhythm is interrupted by regular periods, or the signs of regular auricular activity can be seen on radioscopy or in the jugular pulse. If some paroxysms are regular and some irregular, the regular are more likely to be flutter.

If the rhythm is regular, it is impossible, without graphic methods, to distinguish between auricular and ventricular tachycardia and flutter with 2 : 1 A-V block. If the patient is already under treatment, especially with digitalis, after congestive failure or cardiac infarction, ventricular tachycardia is likely, though not certain; otherwise it is unlikely because of its rarity. The help given by the rate is discussed below.

Apart from the rate, the following points may help to distinguish between paroxysmal flutter and tachycardia. If the regular rhythm is interrupted by a slower or irregular rhythm, if the rate can be halved by pressure on the carotid sinus, or if, in the longer attacks, the rate can be halved or made irregular with digitalis, the attack is flutter. Auricular tachycardia rarely lasts more than ten and generally not more than four days; therefore the longer an attack of unknown origin lasts, the more likely it is to be flutter. If the patient has heart disease, or if congestive failure develops rapidly, flutter must be thought of but cannot be diagnosed merely on these grounds. Occasionally, even when a cardiogram is obtained, there may still be difficulties—e.g., slow flutter without heart-block; and a faster rate with 2 : 1 heart-block where the P and T waves cannot be clearly distinguished. Every effort should be made to obtain a cardiogram of an attack, to make certain of the diagnosis of flutter or ventricular tachycardia—the latter being of special importance for prognosis.

Paroxysmal Supraventricular Tachycardia

My conclusions are based largely on a series of 165 cases with 66 cardiograms followed up some years. Though so many papers have been written on the subject, most deal with points of interest in single cases, and few with large consecutive series. Hume (1930) gave a valuable summary, and Cooke and White (1942) have written a useful paper on prognosis. The condition is relatively common, though those doctors who rarely diagnose it unless they see a patient in an attack will continue to think it rare, because short attacks are so much more common.

ÆTIOLOGY

The first question to decide in each patient is whether there is any organic heart disease, as this knowledge is essential for prognosis. The ætiology of my 165 cases is shown in table I, and more than half had no heart disease. There is such close agreement on this subject between these series of cases that it may be generally accepted, the percentages without heart disease being 62 (Campbell and Elliott 1939), 62·5 (Hume 1930), and 62 (Gallavardin and Froment 1930), such exact correspondence being due to chance. White also has found the majority

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* umleian lecture delivered at the Royal College of Physicians
April 16 and 18, 1946.

without heart disease; and, if this is true of those seen by cardiologists, it must be even more true of others. If a patient has paroxysmal tachycardia, it is statistically more likely that his heart is otherwise healthy than that it is diseased.

SEX AND AGE INCIDENCE

There is no difference in sex incidence, the extra women in the rheumatic group being balanced by more men in the myocardial group. In four combined series there were 250 men and 252 women.

The age at which the attacks started is shown in table I. Briefly, 67% started before the age of 40 and only 33% after that age. With paroxysmal fibrillation the figures are almost exactly reversed, 25% before 40 and 75% after that age.

Even when there is heart disease, the onset of this is rarely the immediate cause of the paroxysms. Sudden or unexpected movements are the most common known cause, but in an even larger number of attacks there is no obvious reason for their start. The influence of various factors—infection, anxiety, indigestion, smoking, exercise, and pregnancy—in making the patient more liable to have attacks was discussed by Campbell and Elliott (1939).

SYMPTOMS OF PAROXYSMS

Apart from palpitation there may be various symptoms, any of which may be more or less prominent and exceptionally may mask the nature of the paroxysm, especially in children. Rarely, the patient may be unaware that he is experiencing an attack. The general symptoms—palpitation, breathlessness, inability to stand, faintness, dizziness, and anxiety—are of little special significance. Any degree of incapacity up to complete prostration may be met with, and may be attributed to any of these sensations; this depends mainly on the state of the heart muscle, on the length and, to a less extent, the rate of the attack, and on the mentality of the patient.

If the heart is healthy, the symptoms are generally discomfort rather than real disability. Many patients could carry on their routine work, though they found it more of an effort. At the other extreme some developed congestive failure. Many of those with rheumatic or other heart disease had little more disability than had most of the normals, yet with severe heart disease any attack may be very grave. If an attack lasts one or two days the symptoms and disability generally become important, even if the heart is healthy; but a healthy heart will support short attacks, even at such a rapid rate as 200, surprisingly well.

Loss of Consciousness.—Unconsciousness during an attack is uncommon, and equally so with paroxysmal fibrillation. It is more common with paroxysmal flutter and is generally due to the assumption of 1 : 1 rhythm, often as the result of exercise.

Anginal Pain.—Besides discomfort or tightness in the chest, present in most attacks and of no special significance, an eighth of the patients, including many with normal hearts, had more severe anginal pain during attacks, some occasionally, and others when the attack had lasted some hours. In few was the pain really severe. Anginal pain is rather less common in paroxysmal fibrillation but more common in paroxysmal flutter (a quarter of the cases). Pain, even of a severe anginal type, does not indicate an unfavourable prognosis; this must be judged mainly by the condition of the heart during the free periods.

Congestive Failure.—The occurrence of congestive failure in a paroxysm does not prove that the patient has heart disease, though if it develops soon after the start of the paroxysm it is significant. Failure, generally right-sided, was seen during one or more attacks in an eighth of the patients.

One man without heart disease, after several failure, had developed it by the eighth day of a te when the blood-pressure had fallen from 140 to 105

Another normal adult had failure in her two lon of seventeen and twenty-nine days.

Two children with normal hearts developed failure lasting two or three days, but the rates were

Most others had heart disease. One of the pietic patients is alive and in fair health *fourte* after the paroxysm, in which severe failure was the seventh day of a twelve-day attack. In *failure became apparent about the third day*, *many attacks lasting three days were observed in as they were less likely* to seek medical advice, figures quoted indicate that the development of failure depends, as a rule, on heart disease. Its does not seem so serious as might be expected, where the heart is normal or well *free intervals.*

In paroxysmal fibrillation, and *still* more in failure develops more readily, unless the rate is controlled with digitalis.

Nausea, vomiting, flatulence, and abdominal important symptoms in about a tenth of the ca longer attacks the congestion of the liver and as the result of failure may be misinterpreted and to be the cause of the attack.

Embolism.—This is a rare complication, though cerebral and pulmonary embolism have been seen. more common where there is mitral stenosis.

HEART-RATE IN PAROXYSMS

Lewis (1920) places the usual rate between 200 per min., with a range 110–220. This upper high enough; it is not very rare for it to reach 240. cases the rate was 160–200 in about half, and in 90%. In 5 cases rates were less than 140— 126, 124, and 112—and in 4 as fast as 230, 234, 240,

Table II shows how the rates were distributed all the different types of paroxysms. There were grams of 99 attacks from 81 patients (two from the patient being counted when the rate was and of 42 others observed clinically. There is no to think that the "clinical" rates are not accu except that there were fewer under 160, perhaps bec paroxysms at a slow rate are less likely to be diag without a graphic record. The rate should alway taken for half a minute. Generally, when the rate is to be uncountable, it is because an attempt has made to count the pulse by the finger instead of heart by the ear.

The range of rates does not in the main vary with type of paroxysm or on the presence or absence of

TABLE I—ÆTIOLOGY AND AGE INCIDENCE

Ætiology	Percentage at each age (years)					at
	Up to 19	20 to 39	40 to 49	50 to 59	60 and over	
	Paroxysmal supraventricular tachycardia					
Normal† ..	15	31	8	6	3	63
Rheumatic ..	2	12	3	0	1	18
Myocardial*	0	5	6	6	3	20
	Paroxysmal auricular fibrillation					
Normal Thyrotoxic	0	9	8	7	5	15 11
Rheumatic ..	2	11	6	2	1	22
Myocardial*	0	2	8	16	23	49
	Paroxysmal auricular flutter					
All cases ..	0	12	12	46	30	100
	Paroxysmal ventricular tachycardia					
All cases ..	4	10	22	34	30	100

* Includes hyperpietic. † Includes thyrotoxic.

Nodal attacks were a little slower, more falling a 140 and 180, perhaps because it is then easier nguish P and to decide that the attacks are nodal. he supraventricular (average 187) and ventricular e 198) had the same general range, most being a 150 and 220, though a larger proportion of the ular were above 190. Nor did the presence or of disease seem to be important, and the average separate groups was 180–190. The range was he same, and all groups have slow and fast attacks. rate in different attacks is said to keep constant. s our general experience, and cardiograms of t attacks from several cases were almost identical a interval of years. In many patients, however, aried by as much as 10–15%. In short attacks e may vary within a few minutes, but sometimes ans two different ectopic foci. Where rates were d in several paroxysms, a third showed a differ- 12–30 beats a minute; most of these had heart . The period over which paroxysms have occurred in itself cause a change in rate. There was some e that, as the efficiency of a diseased heart lessens, e of the paroxysms may fall; but others observed the time of death maintained a constant rate to d. An increase in rate as the myocardium failed s common.

ter differs from the other arrhythmias in that the ay be regular or, rather less often, irregular.

LE II—HEART-RATE IN PAROXYSMAL TACHYCARDIA

pe of paroxysm	Percentage of cases with rates of—							No. of cases
	Up to 139	140 to 159	160 to 179	180 to 199	200 to 219	220 to 239	240 and over	
al paroxysmal ycardia	0	14	28	24	22	7	5	42
entricular tachy- a	6	26	26	16	14	7	4	80
ular tachycardia	5	16	16	21	26	10	5	19
smal flutter ..	29	24	35	12	0	0	0	17

patients the auricular rate varied between 180 and minute—most commonly between 240 and 340. sual finding was 2 : 1 block; hence the ventricular was generally between 120 and 170.

table II the ventricular rates in paroxysmal tachy- and flutter are contrasted and the differences triking, though there is much overlapping. In r nine-tenths are below 180. In paroxysmal tachy- a nine-tenths are between 140 and 220. Expressed other way, if the ventricular rate is below 140, r is more likely (2 to 1); if between 140 and 180, ysmal tachycardia is more likely, but paroxysmal r is not uncommon ($3^{1}/_{2}$ to 1); but, if the ventricular is over 180, paroxysmal tachycardia is almost certain o 1). The rate of 160 is the nearest possible approach dividing line, but it is very inexact. In 52% of ases of flutter the rate is below 160; in 72% of the of paroxysmal tachycardia the rate is above 160, in nearly half 160–200.

LENGTH OF ATTACKS

aroxysms last hours much more commonly than . Though variable, they tend to have a more or customary length in any one person, who can generally rt that the attacks last between, say, two and eight rs, or less than half an hour, or more than a day, is surprised if his past experience does not prove seful guide to what to expect. The usual lengths aroxysms was up to half an hour in a third; under hours in more than half; and under six hours in three-quarters: only a tenth habitually had attacks lasting a day or more, though longer attacks are more likely to come under observation.

TABLE III—DURATION OF PAROXYSMS OF TACHYCARDIA AND OF FIBRILLATION (PERCENTAGES)

Duration of paroxysms	Paroxysmal tachycardia		Paroxysmal fibrillation
	Usual length *	Longest duration †	Usual length ‡
Up to 2 hours ..	60	65	9
2–6 hours	17		20
6–12 hours ..	10		13
12–48 hours ..	13	21	25
2–10 days	—	9	22
Over 10 days ..	—	5	11
No. of cases ..	100 *	325 †	..

* Campbell and Elliott (1939).

† Combined figures for Campbell and Elliott (1939), Hume (1930), and Gallavardin and Froment (1930).

‡ Orgain et al. (1936).

The longer paroxysms are more important, for the disability and the chance of congestive failure are increased. Of 100 patients 29 sometimes had an attack that lasted more than a day, but in 10 it was not much longer than this. Of the remaining 19 with long attacks there were 6 (including 2 children) with healthy hearts. The long attacks were least common in those without heart disease—11% of the normal, 21% of the rheumatic, and 33% of the other groups having these long attacks. All the types of attacks were represented, but there was a higher proportion of ventricular paroxysms than of the other types, nearly half the former lasting more than a day.

Even among these longer attacks relatively few lasted more than two or three days, and they were of this length in 8 of 100 patients. In 2 others they lasted four days; in 2 up to seven days; and in 5 ten days; only in 2 did they last longer than ten days. In one of these patients attacks lasted seventeen and twenty-eight days; in the other, who had had attacks for twenty years and during five years' observation had about ten a year lasting never more than forty-eight hours, three attacks lasted seventeen, twenty-nine, and about thirty-five days.

These long attacks are very unusual and more serious but they may occur without there being any disease of the heart. Most paroxysms last hours rather than days, but 30% of our patients had one or more attacks lasting a day; 10% of these very rarely, 10% occasionally, and 10% habitually. The general agreement about the short attacks is shown in table III. If the figures are combined only 20% had an attack lasting more than a day, and only 5% more than ten days.

Attacks lasting more than a month are extremely rare, but some unusual cases have been recorded where they have lasted, possibly with interruptions, up to a year. Nothing, however, corresponding to established tachycardia has been described, though the case of Miller and Perelman (1945) is of interest in this connexion.

PROGNOSIS

The immediate outlook is excellent; and, however long a paroxysm has lasted, whatever the rate, and however ill the patient may seem, he may be expected to recover. It is often stated that a patient may die in a paroxysm; this is rare, and it creates just the impression which it is necessary to avoid in the large majority, where there is no danger. Only 6 of my 166 patients have died suddenly or unexpectedly, and they will be described to justify my general optimism.

The first patient had been subject to paroxysms twenty-six years before he died, probably from a double injection of morphine from two doctors independently.

The second patient had mitral stenosis, and, after ten years of paroxysms, was admitted with pregnancy, severe anæmia, and early failure on the fourth day of an attack; she died on the seventeenth day after losing much blood with a miscarriage.

The third and fourth patients had anæmia, and one of them pelvic suppuration also; frequent paroxysms contributed to the fatal issue by pulmonary embolism from venous thrombosis. In these cases the paroxysms were not the cause of death, but they illustrate the danger of embolism and thrombosis, especially in the presence of anæmia.

The fifth patient had pericarditis and died on the eighth day of an attack.

The sixth patient has been fully reported (Campbell and Elliott 1939); after twenty-one years with attacks he died of congestive failure in a five-week attack.

Cooke and White (1942) report 7 deaths among more than 700 patients: 2 from cerebral embolism, 1 from pulmonary œdema (with mitral stenosis), 3 after operations with a great fall of blood-pressure, and 1 child with pneumonia.

These 13 cases give a good general picture of the risks: of thrombosis and embolism, especially in the presence of anæmia; of long attacks after major operations or with concurrent illnesses; of attacks precipitating failure in a heart that has little margin; and of an exceptionally long attack that cannot be stopped. If it is known that the paroxysms are not ventricular, these are, I think, the only risks.

Perhaps it is surprising that these risks are not greater. The rapid rate is a great strain on the circulation and cannot be reduced as it can in fibrillation with digoxin. The fall of blood-pressure will give some idea of the risk in a long attack and indicate when the most heroic measures should be taken to arrest it. Barcroft et al. (1921–22) found that in a healthy man paroxysms at a rate of 200 reduced the output of the heart from 78 to 13 ml. per beat, and the minute volume to less than half (from 5·5 to 2·6 litres). It is therefore not surprising that the circulation should be so much affected, and that thrombosis may develop, especially if other factors, such as anæmia and infection, predispose to it. Many extremely low pulse pressures have been found in attacks, especially with congestive failure.

If the patient is seen for the first time during a paroxysm, it is most important to decide whether there is heart disease or not. During a paroxysm murmurs may be missed and the size of the heart may be difficult to estimate, and for some days after a paroxysm the cardiogram may be deceptive. Campbell (1942) described 5 cases with striking but transient changes in the T waves suggesting cardiac infarction after the paroxysm; 3 of the patients are still alive and are thought to have normal hearts, one of them having been watched with paroxysms for twenty years. Reversible chemical changes in the myocardium as the result of a long attack are probably responsible. Others have confirmed this finding.

Having recovered, the patient will want to know the chance of another attack. Single paroxysms are rarer than with fibrillation, but one student had an attack (recorded), and twenty years have passed without a recurrence. This is, however, unusual, and paroxysms will probably recur; but, if they are frequent enough to be troublesome, steps can generally be taken to reduce their frequency.

The immediate outlook is therefore excellent in nearly all cases. Even when a paroxysm occurs after cardiac infarction, as it does in 3% (Master et al. 1937), it does not add greatly to the seriousness of the prognosis.

Ultimate Prognosis.—This depends mainly on the condition of the heart in the free intervals. The early papers were pessimistic about the outlook, but more recently there is wider agreement that the prognosis is good. Of my 92 patients seen in 1925–32 and followed up to 1938, more than half had, when they were last seen, had their attacks for more than ten years; hence there was ample opportunity to observe any changes.

Attacks may continue throughout the greater life without the development of heart disease. C (1930) cases 32 had an average duration of and 1 had a normal heart after fifty-two years. and White (1942) traced 57 of 80 with normal and found them in good health after an average twenty-five years after the onset of their p 1 after sixty-four years. Of my own cases (C Elliott 1939) 21 were in good health after an period, with attacks, of twenty years—1 years.

A decrease in the frequency of the attacks change in the patient's life is as likely as an Paroxysms do not cause progressive deteriorat less disease of the heart, though some are treatment and continue with the same frequen many years.

In one patient paroxysms started when he was 9 and continued through life; but until a few months death at 69, from leukæmia, he led an active life, recovered from pneumonia the year before.

Another started having paroxysms at 50; at 74, they were rather frequent, he was still in business and dyspnœa.

A third was 68 when he was first seen, and par started at 23 and recurred about every two weeks; had no complaint except of "a dulcimer constantly all the old tunes that had run through his life," a of increasing nerve deafness.

All these 3 patients had normal card spite of their age, and no signs of heart disease. among the rheumatic patients most have done as could have been expected had they been paroxysms.

Campbell and Elliott (1939) concluded prognosis was excellent unless, appearing late in was the first indication of coronary disease. Co White (1942), commenting on this, thought the good even when the paroxysms started late in life; of 128 patients with normal hearts started their pa after the age of 40. Excluding the 16 with pa after cardiac infarction, they found only 2 deaths, and concluded that, arising in later life, parox may warrant a more serious prognosis in comparat uncommon cases, but generally have no influence on ultimate outcome. With this I agree, as I have no more instances where paroxysms were the imme precursor of angina pectoris, and many paroxysm elderly patients where the subsequent course has satisfactory.

Paroxysmal Auricular Fibrillation

Auricular fibrillation often occurs in parox though the established form is more familiar. My clusions are largely based on 200 consecutive cases by Parkinson and Campbell (1930); many cases since have scarcely modified our conclusions, and the figures quoted without any statement of their so are taken from this series.

I am glad to have the opportunity of thanking Dr. J Parkinson for his help, and Dr. Paul White, of Boston, shall refer to his work so frequently.

ÆTIOLOGY

Is the occurrence of paroxysmal fibrillation evid of disease? Gossage and Hicks (1912) thought it m be caused by toxic or reflex influences on a healthy he Cowan (1928) has elaborated this with some stri cases and suggested that, when established, it is gener caused by organic disease but, when paroxysmal, m often by toxic or reflex factors. This distinction, tho of value, cannot be accepted without reserve, paroxysmal fibrillation often becomes established n occurs with structural disease, but some chemical lex stimulus most probably provokes the paroxysm, ther the heart itself is healthy or diseased. White ght that a fifth of his patients seen in consultation no organic heart disease.

he ætiological grouping of our patients is shown in e I. Syphilitic heart disease was found in 2·5% (and has been included in the tables with myo- al disease); it is therefore of as little importance aroxysmal auricular fibrillation as in auricular tachy- ia. There were two main contrasts with auricular ycardia: the percentage with normal hearts was 15 ead of 62; and with goitre 15 instead of 6 or less, most of these had thyrotoxicosis, which had not ys been the case with those with auricular tachycardia.

brile and Infective Causes.—Paroxysms have occurred r pneumonia, rheumatic fever, infective endocarditis, cæmia, tonsillitis, erysipelas, influenza, diphtheria. ntery, and osteomyelitis; and with simple and gnant pleural effusions, biliary colic, appendicitis, ro-enteritis, and, more often, cystitis and pyelitis n an enlarged prostate. But on the whole the short- s of this list shows that an acute infection is only an sional factor.

e action of digitalis in starting fibrillation is well ed, and was emphasised early by Mackenzie (1908). s more likely to provoke fibrillation where there is dy failure with normal rhythm. It is only under e conditions that it follows small or moderate doses. other drug produces fibrillation so often, though it has described after adrenaline, arsenic, aspirin, carbon oxide, and iodine in the treatment of goitre.

he influence of tobacco and alcohol (and even coffee) ficult to estimate. They are often used excessively patients with paroxysmal fibrillation and have been ned as the cause, but there are few reports of complete ef for any long period with abstinence from either prove them more than accessory factors, and we have patients in whom the attacks could be entirely or n partially attributed to these causes.

aroxysms are not uncommon after thyroidectomy, l may occur after other operations. Attacks have n induced by electric shocks, vagal pressure, deep athing, coughing, and straining at stool; but these unusual, and such events and sudden movements do have the same importance as in auricular tachycardia. A large meal or exercise just after a meal may provoke attack. It is difficult to establish the relation ween indigestion and paroxysms. Paroxysms are not ecognised feature of the organic dyspepsias. Dietary iscretions and overeating have often been blamed, d many patients are inclined to attribute their attacks such causes on scanty evidence, but the abdominal comfort caused by the attack may be mistaken for the se.

DURATION OF PAROXYSMS

In 160 of our 200 patients no attack was known to ve lasted more than two days. Up to eight hours, from to eighteen hours, or from about twenty-four to about ty-eight hours were characteristic answers. Unfor- nately this series was not recorded in the same way as roxysmal tachycardia, in which attacks lasting two ys or more occurred in 5% only, against 20% in roxysmal fibrillation. Orgain et al. (1936) gave the ual duration in their cases, and I have analysed their ures for comparison (table III). Nearly three-quarters my cases of paroxysmal tachycardia had a usual ration of less than six hours; nearly three-quarters those with paroxysmal fibrillation had a usual duration longer than this.

Attacks lasting more than two days only occurred in fifth of our patients. In 16 of the 29 where attacks sted four days or longer the absence of more than one two attacks showed that they were not of the usual recurrent type. In several of these fibrillation became established after only one or two paroxysms; in some it was an incident in the course of heart-failure; but in some there was no other evidence of heart disease. There were only 8 of our 200 where one of the typical recurrent paroxysms lasted more than four days. The longer attacks that were known exactly were nine, eleven, twelve, nineteen, twenty-one, and thirty days, and 6 others of about two or three weeks.

Finally, 5 other cases were really in a class by themselves, as fibrillation had been present for months or over a year when normal rhythm returned, in 3 cases during treatment with digitalis with great advantage. Lea (1918–20) recorded a short interval of normal rhythm after years of fibrillation. Cases of fibrillation stopped after thyroidectomy have been excluded.

CLASSIFICATION OF PAROXYSMS

The different types of paroxysms have often been noted. Heitz (1914) divided them into frequent short and infrequent long attacks (often with more severe symptoms). Fahrenkamp (1917) and Gerhardt (1915) distinguished the same groups, the former resembling paroxysmal tachycardia, and the latter having temporary fibrillation for days or weeks. Krumbhaar (1916) introduced the term "transient" for these, and added the type, noted by Vaquez (1911) and Mackenzie (1908), where fibrillation occurred for a short time in paroxysms before it became established. The word "transient" is not perfect as a description, since it might be applied to any paroxysm, but it serves to designate a group differing from the usual type. Most writers have found that the isolated attacks tend to last longer than those which recur often, and this was true in our series.

The following classification seems useful not only for paroxysmal fibrillation but also for paroxysmal flutter and, to a lesser extent, paroxysmal tachycardia:

Group I: Typical paroxysms occurring (1) often, or (2) at long intervals, comparable in many ways with paroxysmal auricular tachycardia (58%).

Group II: A short series of paroxysms occurring before fibrillation is established (12%). In many of group I also fibrillation will become established ultimately.

Group III. "Transient" fibrillation, very few paroxysms (generally only one), often of longer duration:

(1) in the course of heart-failure, often without affecting it (8%);
(2) after cardiac infarction (6%);
(3) associated with infections, &c.—e.g., pneumonia—(6%);
(4) with no apparent cause (10%).

Coronary Thrombosis in Relation to these Paroxysms.—Paroxysmal fibrillation is not often a striking feature after coronary thrombosis; but, if the cases are under observation in hospital, it can be noted more often. White and Bland (1931) found it in 13 of 200 cases, and Master et al. (1937) and the present series give about the same proportion. Two other patients, after having ordinary paroxysms of fibrillation for five and nine years, developed coronary thrombosis.

Paroxysms of fibrillation occur in 7% of cases of cardiac infarction and in 3% of cases of angina. A small proportion of patients with paroxysmal fibrillation have angina, and a few get anginal pain that is not of serious significance during these attacks.

PROGNOSIS

There may be a normal heart or congestive failure but most often some degree of heart disease of slow evolution. Quinidine often proves of great value. There is no doubt of the success of surgical treatment in all cases where there is goitre; thiouracil can be effective, but its rôle is still unsettled. In other cases the prevention of attacks is difficult, but they are not dangerous.

and the long history of many patients shows that paroxysmal fibrillation does not usually indicate the graver forms of heart disease.

During the Attack.—The outlook in an attack is excellent. It is rare for a patient to be extremely ill because of the paroxysm, and the danger to life is negligible, unless there is already a seriously damaged heart.

Will the paroxysm end spontaneously? It usually lasts less than four days; but after this period permanent fibrillation becomes more likely, and after seven and fourteen days increasingly probable.

Ultimate Prognosis.—This depends mainly on the heart, but it is also important to know how often the attacks will recur and what is the chance of fibrillation becoming established. A first attack is less likely to remain the only one if there is heart disease, and fibrillation is more likely to become established if there has been rheumatic carditis. The frequency of attacks is more variable, for there are patients with fibrillation present a large part of the time, and others with only a few attacks in several years, and yet others in excellent health after an interval of freedom of many years; even then, attacks may recur.

In general there is a tendency for these paroxysms to become more troublesome with the passage of time by a gradual increase in their frequency or more suddenly by fibrillation becoming established. But attacks may continue for long periods without any increase in frequency. One man has had four or five in each of the last ten years, and two others have had eight and four fairly evenly distributed throughout the same period. Occasionally the frequency may decrease even apart from treatment.

When there are not more than one or two attacks a month the prognosis is good, and the incidence need not increase. When the attacks are very frequent, fibrillation is likely to become established; but, even when they are so frequent and irksome that established fibrillation seems preferable, it is not always easy to bring about this change with digitalis (see below).

Liability to Established Fibrillation.—During a period of years fibrillation will become permanent in about a quarter of the cases. In our cases it became established in half of those with rheumatic hearts, but only in a tenth of those with normal hearts, and in about a quarter of the remaining groups.

(1) Where there had been the usual recurrent attacks, ætiology did not make so much difference, for fibrillation became established in about 15% of each group, except that with a normal heart the proportion was much less. The average interval since the first attack was three years in those with rheumatic hearts, and from five to eight years in the remainder.

(2) Where there had been attacks only for a short time before the permanent onset, they were few but often lasted unusually long, as though fibrillation had just failed to become established then. The average time elapsing here between the first attack and established fibrillation was a year, and in 12 cases it was less than six months.

Parkinson and Campbell (1930) concluded that *paroxysmal fibrillation was a troublesome rather than a serious complication*, and that the ultimate outlook depended mainly on the heart but also on the chance of fibrillation becoming established. Orgain et al. (1936) thought the prognosis of those with normal hearts was, with rare exceptions, excellent. Cooke and White (1942) increased their cases to 88 and traced 78 of them; they conclude that below the age of forty paroxysmal fibrillation may be considered as having no prognostic significance, but in later life may sometimes be the first sign of serious heart disease.

In general terms, one can say that the prognosis is that of the heart condition, only slightly modified by the paroxysms. It is possible that the heart is in the patient who is older at the start of the special care must be taken to be sure that they the first indication of heart disease.

Paroxysmal Auricular Flutter

Whether established or paroxysmal, flutter is common than fibrillation in the proportion of to 20. I have not found any paper dealing syst with a long series of cases of paroxysmal flutter; my conclusions must be more tentative. Many deal with auricular flutter as a whole, and in respects it is hard to disentangle conclusions the paroxysmal and established forms. A all cases of flutter are paroxysmal, and an the established cases have been paroxysmal rhythm becomes established. In about a third cases paroxysmal fibrillation alternates with flutter.

ÆTIOLOGY

The series all agree in the very small proportion have not got organic heart disease, but Parkinson Bedford (1927) found about 10% with hearts normal. Orgain et al. (1936) have described 7 paroxysmal flutter with hearts otherwise normal: of these would clinically have been diagnosed paroxysmal tachycardia, though even here attacks sixteen days and six weeks in 2 cases before they stopped with quinidine. On the other hand, and Bellet (1931) thought that none of their patients normal hearts.

When the series of Campbell (unpublished), P son and Bedford (1927), and McMillan and Bellet (are combined, the ætiological incidence is 26%, hyperpietic 15%, other myocardial 43%, toxic 6%, and normal 10%. Perhaps this the importance of thyrotoxicosis. The findings similar to those for paroxysmal fibrillation, except the general myocardial group is larger; rather odd obscure cases are more common, and alcohol is a m important factor with flutter.

Sex and Age Incidence.—There is a much higher p portion of men than with the other arrhythmias, eve ventricular tachycardia—more than 5 to 1. Of cases 88% were over 40 when the paroxysms start whereas with paroxysmal tachycardia 76% were und 40. In most series the highest incidence (60–70% has been found between 40 and 70 years—i.e., in old patients than those with auricular tachycardia.

The ætiology and the age and sex incidence are different from those of paroxysmal tachycardia that, even if the underlying mechanism of both rhythms were similar, some explanation of the different clinical pictures would be needed.

SYMPTOMS

Breathlessness, palpitation, weakness, faintness, and disinclination for effort are the main symptoms. Substernal pain is found in a quarter of the cases. Loss of consciousness occurs in a tenth, a higher proportion than in other paroxysms, generally due to the assumption of 1 : 1 rhythm and often caused by exertion. Embolism develops more often and, unless the rate is controlled with digitalis, congestive failure more quickly, probably because there are more often heart disease and a tendency to longer attacks. The same classification into three groups suggested for paroxysmal fibrillation is also useful for flutter.

DURATION OF ATTACKS

Ritchie (1914) said that attacks might last minutes, hours, days, or weeks. Longer attacks are more common than with the other paroxysms, and the change to established flutter takes place more often. Parkinson and Bedford (1927) considered it established if it ed fourteen days; McMillan and Bellet (1931) nd the duration ten days or up to six weeks. The ; that digitalis treatment was introduced so early and o often effective makes it more difficult to draw a between the paroxysmal and established forms.

PROGNOSIS

he prognosis depends on the heart disease and can n be judged by the speed with which congestive failure ows the onset of flutter. The presence or absence of rt disease has no effect on the chance of restoring mal rhythm with quinidine or digitalis but influences chances of maintaining it. Cooke and White (1942), owing up some patients with normal hearts, found n still in good health from seven to thirty-two rs later.

(To be concluded)

HE DELAYED IMMUNITY RESPONSE

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HE goal to be aimed at in any scheme of prophylactic ive immunisation is the production of a permanent el of antitoxin concentration, sufficient to neutralise toxin produced in the early stages of infection, and th a degree of potential immunity that a rapid protion of antitoxin will ensue, sufficient to neutralise toxin, however severe the infection.

xperiments made by us during the past 10 years e brought to light two observations that bear on e points: first, it is possible so to immunise an mal that the production of antitoxin continues almost efinitely; and secondly, the injection of an antigen o a potentially immune animal may give rise to two pes of response in the same animal, the secondary ponse being often followed by what we may describe, want of a better term, as a delayed response. The pid rise in antitoxic value during the first 10 days ter a second injection is followed by a fall for about months, after which the antitoxic titre may steadily e again for several months.

Most of the early work by Glenny and Sudmersen[1] immunity response was carried out with toxintitoxin mixtures as the primary stimulus; little work as done with toxoid either as primary or secondary imulus, and none at all with the modern prophylactics .A.F. or A.P.T. now in general use for human immunisaon. The intervals between first and second injections ere often several months, in contrast to the 4-weekly nterval customary in human immunisation at present. Certain conclusions drawn by these workers therefore equire extending, if not revising, in the light of recent xperiments. Some of the data obtained by us may assist n the determination of the best methods of testing any new prophylactics and possibly throw some light on the requirements and conditions necessary for the satisfactory immunisation of children.

ABLE I—PERCENTAGE AMOUNT OF TETANUS ANTITOXIN REMAINING IN HYPERIMMUNISED HORSES ABOUT A YEAR AFTER THE LAST INJECTION

No. of immunisations	Percentage of antitoxin remaining	Interval since last injection (months)
41	87·9	13
13	15·4	12
6	6·0	17
5	8·3	12
3	5·5	11
2	1·4	14
1	2·3	12

We have found that many horses used in the production of therapeutic serum continue to form antitoxin a very long time after specific immunisation has ceased.

In October, 1937, horse 7665 received an injection of 10 ml. of tetanus alum-toxoid, which was repeated 4 weeks later. These injections constituted the routine prophylactic measures used for all horses as a protection against accidental infection with tetanus.

For 2 years the horse was used for the production of anti-pneumococcus serum and in November, 1939, started courses of injections of tetanus toxin, continuing until April, 1945, and yielding during these 5¹/₂ years a total of 1,190,000,000 international units of tetanus antitoxin from bleedings.

When the antitoxic titre had fallen to 1150 units per ml., tetanus immunisation was not pursued further, and the horse was used for other purposes. The last injection of tetanus toxin was given on April 13, 1945, and the antitoxic value on May 21, 1946, was 1000 units.

Thus after an interval of 13 months, during which no specific stimulation was given and 144 litres of blood was withdrawn, the antitoxic value was 87·9% of the value when injections ceased.

It is of interest to compare the rate of loss of tetanus antitoxin among horses less well immunised. Table I shows the correlation between number of immunisations and percentage of antitoxin remaining: the longer the immunisation, the more antitoxin remains; the two discrepancies in sequence in the second column are probably due to the differences in interval since the last injections (column 3).

Similar results have been obtained on a larger scale from horses hyperimmunised with diphtheria toxoid and toxin, and tested at short intervals after the cessation of injections. The average loss during the first few months was about 50% per month but was practically negligible after 6 months. Well-immunised horses contained 10–20% of the antitoxin present at the conclusion of immunisation 6, 12, or 18 months later, though they had received no further injections of diphtheria toxin and had had many 8-litre bleedings.

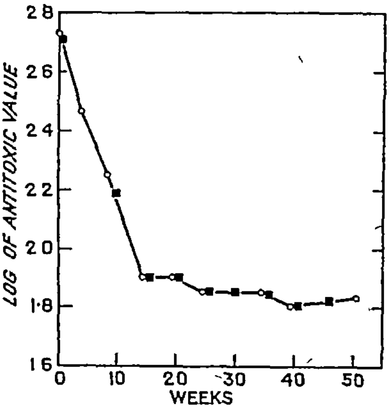

Fig. 1—Logs of diphtheria antitoxic content of a hyperimmunised horse during a year after end of the last immunisation: circles, observed antitoxic values; squares, occasions on which 24 litres of blood was withdrawn in 8 days.

Fig. 1 shows the antitoxic titre of a horse after hyperimmunisation with diphtheria toxin had ceased. About 42% of the titre was lost per month during the first 3 months of observation, reaching 15% of the original titre after 14 weeks.

After this there is an abrupt change in the shape of the curve, the antitoxic value never falling below 12% of that at the beginning of the experiment, from this time up to 50 weeks after the last injection of toxin. During this period 168 litres of blood were withdrawn from the horse.

It therefore appears that the production of antitoxin in a hyperimmunised horse may continue for at least a year after the last specific stimulus. It is of interest in this connexion to recall the findings of Glenny and Sudmersen[1] on immunising a guineapig with a single injection of a diphtheria toxin-antitoxin mixture. The antitoxic response of this animal was measured by means of tests on bleedings taken over 20 months, during which the guineapig gave birth to eight young. Despite this and the increase in weight of the animal and the fact that blood was withdrawn from time to time for titration,

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[1] Glenny, A. T., Sudmersen, H. J. *J. Hyg., Camb.* 1921, 20, 176.

TABLE II—ANTITOXIC VALUES OF GUINEAPIGS, 10 DAYS AFTER THE SECOND OF TWO INJECTIONS OF DIPHTHERIA TOXOIDS, GRADED ACCORDING TO ANTITOXIC RESPONSE

Antitoxic value	No. of guineapigs			
	Grade A	Grade B	Grade C	Grade D
Under 0·001 unit ..	0	25	38	39
0·001 to 0·01 ..	0	19	4	11
0·01 to 0·1	9	16	13	2
0·1 to 1·0	64	91	35	4
1·0 to 10	96	84	2	0
Over 10	9	13	0	0
No. of animals ..	178	248	92	56
No. of toxoids ..	15	22	8	6
Median antitoxic value (units per ml.)	1·74	0·567	0·0504	Under 0·001

the authors found that "the total antitoxin present steadily increased for at least a year after the injection."

Since this time we have followed the course of production of antitoxin in several hundred guineapigs, used to measure qualitative differences in diphtheria toxoids. The guineapigs were injected with 2 Lf doses of various batches, reinjected after 4 weeks, and bled at fixed intervals thereafter, groups of 10 to 15 animals being used for each batch of toxoid. On the basis of the antitoxic titres of bleedings 10 days after the second injection, the toxoids were graded as follows:

(A) No antitoxic values under 0·01 unit per ml.
(B) From 1 to 3 per group under 0·01 unit.
(C) At least 3 under 0·001, but some over 0·2 unit.
(D) Not more than 1 per group over 0·1, and many below 0·001 unit.

The results of grading and numbers of guineapigs are given in table II. Median values are given rather than geometric means, because some titres are under 0·001 unit.

Fig. 2 shows the antitoxic titres of guineapigs bled at definite intervals after their second injection of antigen, and the titres shown as the median values for each group. Owing to the amount of labour which would have been involved, the guineapigs were not individually labelled. Most of the animals were obtained from outside dealers, and the death-rate was therefore relatively high over the whole period of the experiment. Fig. 2 includes curves for A.P.T. in doses of 1 Lf (curve 1) and 0·1 Lf (curve 4): curves 2, 3, and 5 represent the values of guineapigs immunised with grade A, B, and C toxoids respectively. The essential details calculated from the experiment are given in table III.

The toxoid curves 2, 3, and 5 show a preliminary drop in antitoxic value of 65–69% (the equivalent of 80–82·8% per month) from 10 days to 4 weeks, but the loss during the next 4 weeks is much less, being greatest with the best toxoids (grade A) and actually becoming an increase with group-C toxoids. In curves 2–5 a considerable increase is apparent at 24 weeks over that found at the lowest point at 4, 8, or 12 weeks; the amount of this increase ranges from 58% to such result is shown in guineapigs injected wit dose of A.P.T. (curve 1), a slight but steady drop observed from the 4-week value to the conclusion experiment. It is not possible to calculate median for guineapigs injected with grade-D toxoids, too many titres are below 0·001 unit per ml.; calculated for several of these animals with values 0·001 unit, however, give a curve similar to that for grade-C toxoids (curve 5).

TABLE III—CHANGE IN ANTITOXIC VALUE OF GUINEAPIGS AFTER IMMUNISATION

Period		Calculated percentage change per month				
		Curve 1	Curve 2	Curve 3	Curve 4	Curve 5
10 days to 4 weeks	loss	65·5	82·2	82·8	38·2	80·0
4–8 weeks	loss	61·1	37·5	22·1	17·7	..
	gain	..	..	..	..	86·2
8–24 weeks	loss	26·7	..	..	..	15·8
	gain	..	66	128	28	..
Time (weeks) of lowest value ..		..	8	8	12	4
Percentage gain in value from lowest to 24 weeks		..	66	128	68	58

It is probable that the configuration of the curve poor-quality toxoids C and D is due at least in to the mixed population of responders among the pigs. Relatively high titres given by some at 10 days, as a secondary response, had fallen the intermediate response of other animals. This tion cannot, however, apply to the curves for and B toxoids; among the antitoxic values of the A at 10 days, none was below 0·01 unit and 95% 0·1 unit. Practically all these animals must have a secondary response at 10 days, and following this was a delayed response giving a second rise in value 8 weeks.

Of guineapigs injected with B toxoids, only had no detectable antitoxin and 75% had over 0·1 after 10 days. To conclude that the presence of peaks in curve 3 was due to the existence of two po tions of responders, it would be necessary to that this 75% of animals produced over 0·567 ml. in 10 days, and that 65% of this antitoxin wa in the next 18 days; little would remain after 24 The remaining 25%, more than half of which had useful titres after 10 days, would continue a slow p tion of antitoxin for 6 months, eventually values appreciably higher than those reached by good responders after 10 days. This is so imp that this explanation can be rejected.

TABLE IV—CHANGE IN ANTITOXIC VALUE OF GUIN FROM THE 8TH TO THE 12TH WEEK AFTER THE S INJECTION OF TOXOID

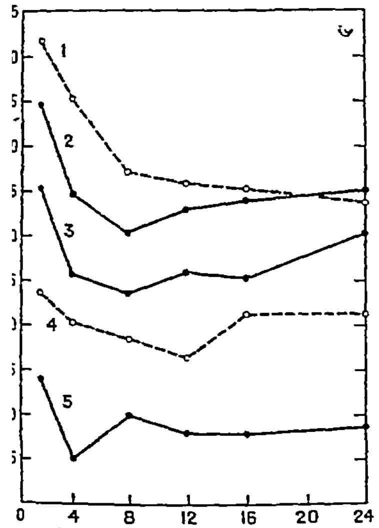
No. of guineapigs	Geometric mean of antitoxic value at 8 weeks	Percentage change value, 8th to 12th we
9	0·441	− 39·2
11	0·776	− 7·1
9	0·631	+ 0·3
5	0·0776	+ 20·3
10	0·431	+ 46·3
9	0·205	+ 64·5
11	0·340	+128·6

One experiment was made in which the titres individual guineapigs were followed: these anim received an injection of 0·25 Lf dose of A.P.T. followe 4 weeks later by 0·1 Lf dose of toxoid. Tests on bleedin were made at about twofold differences—i.e., 0·1, 0· *0·5, 1·0, &c., units—thus small differences in titre wou* not be detected. It was found, however, that sev guineapigs out of eight showed a fall in titre to a h from 10 days to 4 weeks, and one did not fall to a h until 8 weeks. Of the seven animals surviving 6 month three gave a twofold, and the remainder a greater, increa from 4 to 14 weeks. A further group of eight guineapig received the same primary stimulus but 1 Lf dose of toxoid as secondary stimulus. Of these, seven showed a fall in value between 10 days and 4 or 8 weeks, the eighth remaining constant; five showed a rise from 4 or 8 weeks to 24 weeks, and three remained constant. When the secondary stimulus was increased to 10 Lf doses, four guineapigs out of ten showed a fall followed by a rise in value; in most of the others the values remained constant, and all were over 1·0 unit per ml.

It is possible that the deaths in the animals used in experiments shown in fig. 2 may influence results and

T some conclusions unsound. Guineapigs dying possible infections might well show a lower antivalue than those surviving the full 6 months; the median antitoxic value would tend to rise. An analysis has therefore been made of groups injected with 7 batches of grade-A toxoids, in which no deaths took place among 72 guineapigs between 8 and 12 weeks. The results are given in table IV.

Further, it might be that the curves in fig. 2 represent the result of a gradual primary response from the first injection with an independent secondary response super-ed. Against this, we have tested one batch of l on four different occasions by giving guineapigs le injection of 10 Lf doses, and obtained a median of 0·00167 units per ml. 6 months later. The toxoid was tested on four occasions by injecting loses repeated after 28 days, and the median value ıed at 6 months was 0 40 units per ml., the curve htoxic titre being similar to that of curve 2. This ın value is very considerably higher though the amount of antigen used was less than that used in ngle-dose experiment.



Logs of median diphtheria antitoxic content rge groups of guineapigs bled at different s during 24 weeks after second of two tions given at an interval of 4 weeks: 1, 1 Lf P.T.; 2, 2 Lf of toxoid grade A; 3, 2 Lf of id grade B; 4, 0 1 Lf of A.P.T.; 5, 2 Lf of id grade C.

We therefore conclude that the injection of 2 Lf ses of toxoid into guineapigs, already immune as a sult of a previous similar injection, is followed by o independent responses in the same animal. In . 2, curve 1, where no rise in antitoxic value occurs ter 4 weeks, there is a rapid reduction in the rate of s, which may be due to the loss being partially mpensated by increased production after 8 weeks.

It is difficult to explain these results on the basis of imary and secondary response. It appears possible to that the two types of response (secondary and delayed) scribed here may be explained by differences in the gree of sensitisation of parts of the immunity-producing echanism of the body. On this hypothesis, some oportion of the mechanism, depending on the nature d amount of the primary stimulus, would become nsitised in such a way that a further injection would oduce a rapid rise—i.e., a secondary response—in ititoxic value. The same phenomenon would occur ter any injections given subsequently. Other tissues quiring a bigger stimulus or a longer rest from rther stimulation would not produce antitoxin rapidly it slowly and continuously, in contrast to the pical secondary rise and rapid fall. It appears from e results on tetanus horses that this capacity for ow-continued production is increased with length of munisation.

As we stated previously, in human immunisation a ate should be reached in which a child coming into contact with infection should possess sufficient circulating antitoxin to neutralise any toxin produced in the early stages and have sufficient potential immunity to bring into play a rapid production of much greater amounts of antitoxin. This would necessitate the establishment of a reasonably high antitoxic titre, maintained for several years as a result of the continued production, or delayed response, which we have described. Further, a sufficient proportion of the immunity-producing mechanism should be sensitised to the rapid type of production of antitoxin so that a secondary response, involving a very considerable rise in circulating antitoxin, would follow any infection. These considerations suggest that, when a new type of prophylactic is tested, Schick testing should be postponed until 4–6 months after the second injection in some of the test subjects.

SUMMARY

Antitoxin-production in animals continues for months or years after the injection of the last specific stimulus.

The injection of a toxin or toxoid into a potentially immune animal may give rise to two types of response in the same animal, the secondary response being followed by a delayed response in the form of a slow rise in antitoxic titre 2–3 months after injection.

There is a definite relation between the percentage of tetanus or diphtheria antitoxin remaining in the blood of hyperimmunised horses about a year after their last injection and the number of immunisations the horses have undergone. One horse, 13 months after its last injection, showed an antitoxic titre 88% of that observed when injections ceased. This animal had been under hyperimmunisation to tetanus for about $5^1/_2$ years.

SALT METABOLISM IN ACUTE PORPHYRIA

REPORT OF TWO CASES

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Though acute porphyria is one of the rarer diseases, Waldenstrom (1937) found it fairly often in Scandinavia, and more cases are being reported elsewhere as clinicians become more aware of the disorder and of the variations in the pigments which may occur with it in the urine. Kooy (1939) and Barnes (1945) have reported cases in South Africa.

It is now recognised that "acute" porphyria is a hereditary constitutional disease which may be latent or chronic, and that crises arise spontaneously (acute idiopathic porphyria) or may be precipitated by taking certain drugs, particularly sulphonal and the barbiturates (acute toxic porphyria).

The crisis has two phases. It starts by simulating an abdominal emergency, with diffuse crampy pain extending into the groins, and severe vomiting with constipation, or else an attack of stone, with pain in the back and "hæmaturia." There is often a peculiar psychical state which resembles hysteria, and the neurological aspect may be emphasised by the occurrence of temporary paralyses or blindness. Sometimes consciousness is impaired. Radiology and laparotomies have shown segments of dilated bowel, and lesions of the cœliac plexus have been described. The second phase is characterised by the development of an ascending paralysis of the Landry type, which often extends to the bulbar centres, leading to death from respiratory paralysis. More than half the victims die in their first attack.

The first necessity is to recognise the nature of the emergency and to apply such measures as are available to remedy the abdominal symptoms. A search for porphyrin may be suggested by the colour of the urine, but porphyrin is usually accompanied by many other pigments (porphobilin, skatole red, urofuscin, indole, and tyrosine derivatives) which make the expected easy recognition of the spectral bands of porphyrin difficult. The urine may not be abnormally pigmented when fresh, and porphyrin may not be present in recognisable amounts, but porphyrin may be identified by finding porphobilinogen or a porphyrin metal complex.

Porphobilinogen (Waldenström and Vahlquist 1939).—This precursor of porphyrin appears very constantly in the urine in porphyria. It contains two pyrrol groups, whereas porphyrin contains four in a ring. With Ehrlich's aldehyde reagent it gives a red compound similar to that given by urobilinogen; these compounds have slightly different spectral bands and may be readily separated by extraction with chloroform, in which the urobilinogen compound is freely soluble, whereas the porphobilinogen compound is very insoluble in organic solvents. Porphobilinogen in urine does not give Schlesinger's reaction after oxidation; urobilinogen does. On being treated with acid, porphobilinogen forms a red pigment, porphobilin, which has a single spectral band at 500, and on further heating porphyrin can be obtained. Porphobilinogen is of great practical importance in the recognition of porphyria because of its constant presence and its easy recognition by the aldehyde reaction with chloroform extraction (Watson and Schwartz 1941).

Porphyrinogen (Waldenström 1937, Chandler et al. 1939).—This term was used for all the colourless substances which change to porphyrin on standing or heating the urine with dilute acid. Of these porphobilinogen is the most important.

Porphyrin Metal Complex.—This zinc compound gives the urine a red colour and a spectrum closely resembling those of hæmoglobin, but the supposedly blood-containing urine contains no protein or red cells and does not give the benzidine or guaiacum tests; acidification with hydrochloric acid changes the spectrum to that of acid porphyrin. This substance has probably caused considerable confusion in the separation of porphyria from hæmaturia.

When a porphyria is recognised, the risk of a fruitless laparotomy is avoided, but the problem of treatment remains acute. There is no fundamental remedy, for the basis of the disorder is uncertain. Waldenström (1937) compares the relationship of porphyrin to porphyria with that of uric acid to gout, and claims that, in both, the observed chemical changes are the signs of a more deeply seated metabolic disorder. Nesbitt (1944) has collected evidence that porphyrins may interfere with the autonomic nervous system, and Thorner (1937) records the case of a patient treated with a porphyrin compound who developed a severe peripheral neuritis. Spasm of the blood-vessels may be shown by hypertension and changes in the electrocardiogram, and Waldenstrom (1937) has observed contraction of the retinal vessels, with amaurosis.

Treatment must therefore be directed to the relief of pain, the correction of dehydration which may have followed the vomiting, and the use of glucose, insulin, vitamins, and liver extracts in the hope of doing good. Though treatment for dehydration is often applied, it does not appear to be recognised how severe is the disturbance of mineral metabolism in some cases, and that the rectification of this may be important in meeting the crisis. In the cases reported here the mineral metabolism suggested adrenal failure.

CASE-RECORDS

Case 1.—A European woman, aged 29, developed in *April, 1944*, an ulcer on her leg after an injury. It was treated with sulphanilamide powder and had almost healed in June. On *May 21* an itching vesicular eruption appeared on her hands; the vesicles burst and dried up, but the rash spread over the legs, forearms, and face. On *May 24* she had nausea and abdominal pain and began to vomit persistently. On *May 30* she had a vaginal discharge and tenderness in both fornices, and sulphadiazine was given for a possible salpingitis. After being given sulphadiazine 13 g. she developed tinnitus and deafness, swollen slight mental confusion; the drug was stopped.

On *June 3* the urine became very dark, and she convulsion, followed by coma. Examination numerous scabs on arms, legs, and face, and a few vesicles. No œdema or jaundice. Temperature 99°F, rate 100, respirations 30. Chest and abdomen normal vaginal discharge. Blood-pressure (B.P.) 110/58 equal, reacted sluggishly to light. Fundi normal. Ab reflexes absent. Tendon reflexes present. Right response flexor; left response indefinite. Urine: sp. gr. dark port-wine colour, trace of albumin, acetone porphyrin and urobilin present. Red cells 4,500,000 c.mm., Hb 94%, white cells 11,300 per c.mm. (dif count normal). Cerebrospinal fluid (C.S.F.): colour clot, protein 15 mg. per 100 ml., no globulin, chloride per 100 ml., normal sugar, no cells in 1 c.mm chemistry: serum-chloride 422 mg. NaCl per 100 content 52·4 volumes %; sodium 280 mg., 22·6 mg., urea 44 mg., and protein 6·9 g. per 100 ml. ment was begun with intravenous saline and glucose, and desoxycortone, and liver extract. Vomiting

June 4: B.P. 130/80; red cells 4,000,000 per Hb 80%, white cells 6400 per c.mm. Patient could relatives. Knee-jerks and ankle-jerks present; left response extensor. *June 5:* improvement maint serum-chloride 515 mg. NaCl per 100 ml.; van den direct negative; serum-bilirubin 0·5 mg. per 100 *June 6:* improving; intravenous saline and glucose cortin given. *June 7–11:* Condition satisfactory; consciousness; patient took food with extra salt vomiting; no cortical extract given. Pulse-rate rose 80 to 100 on 8th and 120 on 10th. *June 11:* in arms and hands; tendon reflexes brisk in arms, in legs. *June 12:* paræsthesiæ more intense; ton much diminished in arms and legs; patient felt B.P. 120/80; serum-chloride 436 mg. NaCl per 100 sodium 301 mg., potassium 18·8 mg., urea 50 mg., and 7·6 g. per 100 ml.; intravenous saline and cortin *June 13:* felt better; B.P. 140/90. *June 14:* sudden of rapid breathing, dyspnœa, and tachycardia, fol death from respiratory failure in about 20 min.

Necropsy.—No gross disease. Suprarenal glands 16 no macroscopic or microscopic abnormality. Tubes ovaries normal.

Urinary Pigments.—The urine contained a red pig which showed the spectroscopic bands of alkaline porph and a red fluorescence in ultraviolet light. Ehrlich's re gave a strongly positive reaction; this was shown to due to urobilinogen and porphobilinogen. Schlesing reaction ++. The porphyrin was adsorbed on kiesel as directed by Rimington (1943). It was insoluble in but soluble in ethyl acetate at pH 3. It was prob uroporphyrin III, but an attempt to prepare its methyl failed.

Case 2.—A European woman, aged 31, admitted to hosp on *Nov. 26, 1945*. She had had abdominal pain at interv for a year, and for five days it had been very severe. radiated from the loins into the iliac fossæ and down the She had taken many medicines, including sulphanilam without relief. For a year the urine had been dark fr time to time, and it had been thought to contain blo but this had not been proved. No action of bowels attack began; no vomiting. General condition poor; she was drowsy at times. Temperature 99°F, pu 120, respirations 24. General tenderness of abdomen local signs. Heart, lungs, and pelvic organs normal. Ref normal. Nothing abnormal noted in urine.

She became increasingly irrational, and her legs beca weak.

Nov. 30: the urine became reddish-purple, and porph was found. There was flaccid paralysis of both legs, fair strength in arms. Tendon reflexes present in absent in legs. Plantar responses flexor. Urine: trace urobilin; no sugar, acetone, albumin, or bile. Red 5,510,000 per c.mm., Hb 86%, white cells 14,200 per c.m (polymorphs 89%). C.S.F.: protein 35 mg. per 100 ml minute trace of globulin, chloride 502 mg. per 100 ml, CO 39 volumes %, sodium 310 mg. per 100 ml., 10 lymphocyt 2 polymorphs, and 1080 red cells. Blood: icteric ind less than 3; sugar 83 mg. and urea 137 mg. per 100 Urine: chloride 1·55 g. per 100 ml.

EPLETION OF SERUM-CHLORIDE IN ACUTE PORPHYRIA

Case	Serum-chloride (mg. per 100 ml.)	Serum-CO_2 (vol. %)	Blood		Remarks
			Non-protein nitrogen (mg. per 100 ml.)	Urea (mg. per 100 ml.)	
1.. ..	422	52	..	44–59	Persistent vomiting
2.. ..	562*	39*	..	137	No vomiting
(1935) .. e 1	437	..	280	..	Hypochlorä-misch Uramie
itt and ins (1942) e 4	476	..	..	54	Vomiting ++
n (1943)	482	33	66	..	Severe diarrhœa and vomiting
tt (1944) e 1	382	43	..	42	

* Cerebrospinal fluid.

. 1: patient much more irrational and difficult to rouse; paralysed, and all tendon reflexes absent; respiratory ess. By noon the cranial nerves were involved and was unconscious; death took place suddenly soon after. *ecropsy* was delayed by legal formalities; no gross se was found.

ine.—Three bands of alkaline porphyrin were seen, on addition of hydrochloric acid the bands of acid porn appeared. Porphobilinogen reaction + +. Schlesinger's on feebly positive. The porphyrin was not soluble ther.

the families of neither patient was there any history esting porphyria, and the urines of accessible tions contained no porphyrin or porphobilinogen.

DISCUSSION

wo points of special interest arise in case 1—the tion of the sulphanilamide to the porphyria, and the ning of the disturbances of mineral metabolism. phanilamide was given in case 2 but was less likely have been an important factor; again there was a y abnormal mineral picture.

hat porphyrin was often found in the urine after atment with sulphonamides was discovered soon after se drugs were extensively used. It accompanied the thæmoglobinæmia and was small in amount (Rimington and Hemmings 1938, 1939). Its occurrence depended the quantity of sulphonamide taken and only to a all extent on the make-up of the patient; there re no symptoms referable to the porphyrin, which appeared from the urine when the drug was stopped. was an exaggeration of the normal excretion of roporphyrin—a porphyrinuria, not a porphyria. porphyria the abnormality is in the patient. The phyrin excreted is uroporphyrin, and in acute porphyria it usually belongs to series III. If a drug is cerned it may have a trigger effect so that a few es or even a single dose may provoke a crisis, or e after a long period of treatment with a drug a sis occurs and as a rule will recur if ever the drug is en again.

t seems probable that sulphanilamide played a part case 1. The danger of allergic sensitisation of a tient to sulphonamides by local applications has been wn by Tate and Klorfajn (1944) and by Park (1944), d it seems that the sensitivity is often to the sulphonide group and not to the side-chain—therefore the tient is sensitised to the whole group of sulphonamides. is very probable that the dermatitis was caused by sitisation to the sulphanilamide applied to the ulcer, d that the general reaction after the sulphadiazine s due to sensitisation to the group. The sequence of events may have been latent porphyria, sensitisation to sulphanilamide, generalised allergic reaction to sulphanilamide and sulphadiazine, a crisis of porphyria; but it seems probable that the abdominal pain, diagnosed as salpingitis, was the beginning of the crisis of porphyria, and that the sulphadiazine merely added insult to injury. In the recorded cases of porphyria sulphonamides are under suspicion but do not seem to have been definitely incriminated; they have usually been given after the onset of the abdominal pain, but Nesbitt and Watkins (1942) record a case in which an acute attack followed treatment of an infected tooth socket with sulphanilamide.

A gross depletion of serum-chloride has been noted in several cases of acute porphyria (see table). This hypochloræmia has not been commented on and has presumably been attributed to the vomiting, for treatment has usually been directed to the correction of dehydration. Vomiting alone causes a fall of serum-chloride but as a rule it is accompanied by an increase of bicarbonate and alkalosis. In the cases of porphyria in which the data are given there is no increase in bicarbonate, and in some of them the bicarbonate is low. The possibility of an adrenal insufficiency will therefore bear examination.

The characteristic changes in the blood in adrenal insufficiency are hæmoconcentration; an increase in blood-urea; a decrease in serum-chloride and sodium, with normal or low bicarbonate; and an increase in serum-potassium. The urine contains chloride and sodium in considerable amounts. In Addison's disease there are also low blood-pressure, vomiting, weakness, and pigmentation. Investigations were carried out in case 1 to see to what extent these features were present, and a less thorough study was possible of case 2. As judged by the red-cell count, hæmoglobin, and serum-protein, the hydration of the blood was normal in case 1, but the red-cell count was high in case 2—5,500,000 per c.mm. The blood-urea was 44 mg. per 100 ml. in case 1, which is high for a woman aged 29, and 137 in case 2. In case 1 the serum-chloride was 422 mg. per 100 ml. (normal 560 +), and in case 2 the C.S.F. chloride was 562 mg. per 100 ml. (normal 700 +); a low amount of C.S.F. chloride indicates a proportionately low serum-chloride (Linder and Carmichael 1928). In case 1 the serum-sodium was 280 mg. per 100 ml. (normal 320 +), and in case 2 the C.S.F.-sodium was 310 mg. (normal 300–340), which indicated a normal serum-sodium level. In case 1 the serum-potassium was 22·6 mg. (normal 18–20). The serum-CO_2 in case 1 was 52 volumes % (normal 55–75) and the C.S.F.-CO_2 in case 2 was 39 mg. per 100 ml. (normal 42–56). In general these findings resemble closely those found in adrenal insufficiency.

Aitken (1929) has found that in experimental depletion of body salt in normal people there is a zone between 585 and 555 mg. of NaCl per 100 ml. of serum above which chloride excretion is considerable and below which it is reduced to a trace of about 5 mg. per 100 ml. of urine; he has emphasised that this zone may be different under other conditions, and that the body has a great capacity for retaining salt offered to it when in a depleted state. With a normal power of chloride conservation the urine of cases 1 and 2 should have been practically chloride-free. The urine of case 2, far from being chloride-free, contained 1550 mg. NaCl per 100 ml. Chloride was not measured in the urine of case 1 until after cortical extract and salines had been given; the excretion then was high. After her relapse on June 12 it was found that with a serum-chloride level of 436 mg. per 100 ml. the urine contained 540 mg. per 100 ml. and 3·1 g. was excreted in the day. There was therefore in both cases a definite failure to conserve chloride.

Such a failure to conserve chloride with a low serum-chloride level is not confined to adrenal failure. It may occur occasionally in diabetic and nephritic acidosis. It is probably usual in respiratory diseases severe enough to lead to "free CO_2 excess"; the compensation for this deviation of acid-base balance is an increase of serum-bicarbonate at the expense of serum-chloride, the total base remaining unaltered. This low serum-chloride level can only be established and maintained by the excretion of chloride in the urine. It has been found in emphysema and sometimes in tuberculosis (Winkler and Crankshaw 1938, Thorn et al. 1940). With the vomiting of pyloric obstruction there is a loss of hydrochloric acid, which leads to a state of alkalosis with high serum-bicarbonate and low serum-chloride levels; in the urine there is usually little chloride and sometimes much bicarbonate, the chloride reappearing promptly when the serum-chloride level is restored (Anderson and Lyall 1937). In the present and similar cases there was no evidence of respiratory weakness when the low serum-chloride level was discovered. Vomiting did not occur in case 2. In case 1 it was a prominent feature, but the absence of alkalosis at least suggests that the hypochloræmia was not established by vomiting alone. In neither case was there diarrhœa or constant albuminuria; so a combination of vomiting with alimentary or renal acidosis is unlikely. The retention of urea was an extrarenal azotæmia, but one of the characteristics of this when not of adrenal origin is the small amount of chloride in the urine (Zondek 1940). In severe disturbances of acid-base metabolism excretion of chloride may occur in spite of depleted serum-chloride, but there was no such grave acidosis in these cases.

The result of treatment with cortical extract and salt was excellent in case 1. Before this she was comatose and vomiting continually; in a few hours consciousness began to return and vomiting ceased, and in three days she could take normal food with extra salt. The subsequent development of progressive neuritis was an independent event, but the low serum-chloride level at that time suggests that the need for cortical therapy had not passed or had returned.

Pigmentation was absent in these patients, but Muller (1894) and Roth (1935) have described cases of porphyria with pigmentation similar to that of Addison's disease, and Waldenström (1937) records pigmentation which he thought might be of adrenal origin, though he could not obtain other evidence of adrenal disorder. Campbell (1898) reported degeneration of the epithelial cells of the cortex in a case of porphyria, and Geissler (1939) found "Starker Lipoidgehalt der Rinde" in another.

The suggestion of a functional adrenal insufficiency is not altogether fanciful. Hypertrophy of the glands, and changes in the urinary excretion of 17-ketosteroids and other cortical waste products after infections, burns, and operations, give a firm basis to the assumption that in such conditions a large demand is made on the adrenals (Albright 1943, Shipley and Dorfman 1946). That in porphyria a similar demand is made is not unlikely, and it appears from the present cases that sometimes it cannot be met, and that a state of relative adrenal insufficiency ensues.*

The prognosis of acute porphyria is grave, for there is no known way of stemming the progress of the neuritis. The death-rate is very high, and of those who survive the initial attack many succumb within a year; a few however do survive for years—one for over 35 years (Waldenström 1937)—therefore any contribution to the successful treatment of the acute attack has some and it is suggested that cortical therapy and worthy of a further trial in suitable cases.

SUMMARY

The mineral metabolism of two patients with porphyria suggested a state of functional adrenal and encouraging results were obtained in one case cortical extract and salt.

In one case the porphyria followed allergic to sulphanilamide.

I wish to thank Prof. F. Forman and Dr. M. H. their help in studying these cases.

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SPONTANEOUS RUPTURE OF SPL AFTER DEFÆCATION

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SPONTANEOUS rupture of a diseased spleen has been recorded, most commonly in malaria and less commonly in leukæmia, Banti's disease, disease, syphilis, tuberculosis, amyloid disease, kala-azar. Susman (1927) collected additional cases to hæmophilia, acute infections, typhus fever, relap fever, cystic degeneration, infarction, sarcoma, absc and hydatid disease.

The commonest cause of ruptured spleen in this coun is trauma, which causes either immediate shock or si of intra-abdominal hæmorrhage; the rupture may occur until several weeks after the accident. Jack (1925) reported a case of rupture occurring 28 days af injury. Very slight trauma, such as the flick of the fing under the left costal margin, may suffice to rupture malarial spleen—a fact made use of in certain countr by would-be assassins.

Spontaneous rupture of an apparently normal sp is much rarer. The term "spontaneous" is ob difficult to define but is here intended to imply rupt in the absence of trauma. Zuckerman and Jacobi (collected 28 cases of spontaneous rupture of a spleen, regarding 21 of these as genuine and 7 as d

In some other cases rupture was preceded by physiological effort, such as bending to lift a weight (Susman 1927), coitus (Stretton 1926), (Hubbard 1879), and labour (Schwing 1880). Burne and McMenemey (1935) reported cæsarean section splenectomy in a 16-para whose spleen had ruptu ihe stretched backwards and upwards to turn out ; eighteen months later she gave birth to her 17th

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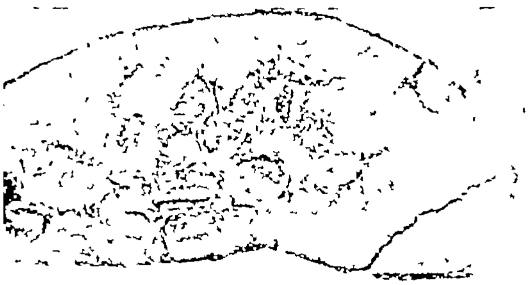
* Since the completion of this paper Abrahams et al. (1947) have published a case of porphyria with features of adrenal insufficiency. This patient's serum-chloride was 380 mg. per 100 ml. and the sodium 248 mg. per 100 ml.; she was treated with eucortone and salt.

In the case reported by Watson and Ferdeber the patient was awakened from sleep by the abdominal pain.

following case is the first reported in which e followed the effort of defæcation.

CASE-RECORD

rman prisoner-of-war was admitted to hospital on , 1945, with a history of vague indigestion for two



opical section of spleen showing hæmorrhages (just under life size).

with a sudden onset of acute pain five minutes after ion.

amination he was not much shocked ; pulse-rate 92, ature normal. His face did not have the worried ance usually seen in gastric perforations There was ike rigidity of the abdomen and much tenderness in ogastrium. The pain seemed to be slightly worse on ht of the midline. A more exact history was not d until later (see below), owing to language difficulty, iagnosis was made of perforated gastric ulcer.

tion.—Under gas, oxygen, and ether anæsthesia, a paramedian incision was made, splitting the rectus The abdominal cavity contained a little blood-fluid. No abnormality of stomach or duodenum was A small tear was seen in the liver, but this was possibly ult of too enthusiastic retraction ; it was certainly ugh to explain the hæmoperitoneum. On passing the to the abdomen, a large soft blood-clot was discovered left flank, and a soft mass was felt protruding from a n the capsule of the spleen.

original incision was enlarged parallel to the lower tal margin, thus cutting a portion of the right rectus, e whole of the left. The spleen was delivered and d. The wound was closed without difficulty and well, and the patient made an uninterrupted recovery hree weeks in bed.

stigations.—Blood-count on the morning after opera-ed cells 5,000,000 per c.mm., Hb 90%, white cells 16,700 m. (polymorphs 85%, lymphocytes 6%, monocytes 9%, ils and eosinophils less than 1%). No abnormal white ere seen. Red blood-cells appeared to be normal.

spleen was normal in size, being $3^1/_2$ in. long, 2 in. and $1^1/_2$ in. thick at its centre. The capsule on the r surface was ruptured, and from the small tear in lp a blood-clot was exuding. On cross-section the ance was as shown in the accompanying figure.

H. J. Barrie, pathologist to the Royal Hospital, Sheffield, ed: "The splenic capsule, malpighian bodies, and vessels appear normal. The pulp is for the most part cted and therefore appears very cellular, but its com-t cells appear normal. Finger-like hæmorrhages seem verse the spleen without any relation to its anatomical ure. They are all recent. The red cells are for the most bordered by normal pulp or separated from it by a r rim of fibrin. In the hilum one hæmorrhage has an zone of laminated thrombus. This hæmorrhage probably ated the others but could not have been more than a r so old, for surrounding erythrophagocytosis is very though there is considerable polymorphonuclear on. None of the hæmorrhages has caused marginal se in hæmosiderin, and the pulp contains only scanty ellular hæmosiderin. No Leishman Donovan bodies The histological picture throws no light on the origin hæmorrhages."

Events preceding rupture.—During convalescence the patient gave a few more details. For three weeks before the operation there had been small vague pains in the left loin, particularly at night, but not severe enough to cause him to report to the doctor. Two years previously, during the bombing raids on Germany, he had been hit by falling masonry, which had caused bruising of the right leg and slight concussion, but no abdominal bruising or injury. He had never had malaria or any other serious illness, and he confirmed the fact that the acute pain followed a normal act of defæcation. At the time he was not constipated.

DISCUSSION

Kehr's sign of radiating pain to the right shoulder is pathognomonic of a ruptured spleen but was absent in this case. Ballance's sign of increased dullness to percussion in the left flank, seldom shifting when the position of the patient is changed, was not looked for.

Trendelenburg (1918) stated that vomiting was a constant sign of rupture of the spleen, but it was absent in this case and in 16 of the 28 collected by Zuckerman and Jacobi (1937). Kehr's sign occurred in only 3 of their cases.

In the present case and in 5 of those collected by Zuckerman and Jacobi there was a history of indigestion before the rupture. Rupture was possibly due to increase in pressure in the portal vein.

The spleen in my patient resembled that described by McCarthy and Knoepp (1944). The pulp contained dark purplish-red circular and ovoid hæmorrhagic nodules, varying in diameter from a few millimetres to 2 cm. Histologically, a diagnosis of multiple hæmangiomata of the spleen was made.

My thanks are due to Mr. D. Brady for the histological sections, and to Mr. A. L. Watson, M.S.R., for the photograph.

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PSEUDOMONAS PYOCYANEA MENINGITIS FOLLOWING SPINAL ANALGESIA

IAN M. DAVIDSON
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ACCOUNTS of meningitis following spinal analgesia are infrequent because of " a natural reluctance to report what should be a preventable happening " (Kremer 1945). But I feel that the conscientious recording of such cases is important, if only to emphasise the possible dangers of the method and keep in everyone's mind the importance of a rigid technique in asepsis both in the preparation of the syringes and ampoules and by the administrator.

Kremer reported 7 cases, 1 of them fatal. Evans (1945) described 2 fatal cases due to *Ps. pyocyanea.* More recent examples are those of Vuylsteke (1947) and the Portsmouth case (*Lancet* 1947).

My own experience is as follows. On April 16, 1945, three hernial repairs were carried out under spinal analgesia. The first patient, aged 41, made an uninterrupted recovery; the second, aged 19, developed meningitis from which he subsequently recovered; and the third developed meningitis from which he died sixteen weeks later. The details of the 2 cases of meningitis were as follows.

CASE-RECORDS

Case 1.—An air fitter R.N.A.S., aged 19, underwent on April 16, 1945, a Willys-Andrewes modification of a Bassini repair of a right oblique inguinal hernia under spinal analgesia with 3 ml. of 5% 'Planocaine' given in the right lateral position. From the evening following operation he had severe headache. There was no nausea, vomiting, or diarrhœa. On the 19th head-retraction and Kernig's sign developed. Lumbar puncture revealed a turbid cerebrospinal fluid (C.S.F.) at a pressure of 90–100 mm. of water. Examination of the C.S.F. showed 1500 polymorphs per c.mm., and culture yielded a growth of *Ps. pyocyanea*. Patient was given sulphadiazine in full doses on the 18th, and after the finding of the organism in the C.S.F. a ketogenic diet was given in the hope that aceto-acetic acid in the C.S.F. might inhibit the organism, even as 1% inhibits it in the bladder or in an open wound. On the 20th lumbar puncture was repeated and 10 ml. withdrawn. Penicillin 50,000 units was given intrathecally.

In the meantime the organism was tested in vitro against penicillin and all the sulphonamides, either alone or in combination; none made any appreciable difference to its growth except sulphamerazine. On the 27th sulphamerazine was given, starting with eight tablets of 0·5 g. and continuing with two tablets every four hours. Lumbar puncture was repeated on the 22nd, 26th, and 30th and on May 10. On April 30 there were only 129 cells per c.mm., and there was no growth on culture. On May 15, because of a tendency to leucopenia, the drug was reduced to 1 g. eight-hourly. The drug was discontinued on the 23rd and the patient, being symptom-free, was allowed up. On the 25th the ophthalmologist reported that the optic disks were clear. On June 6 the patient was discharged to his unit.

Case 2.—A private, aged 18, underwent on April 16, 1945, a Bassini repair of a right oblique inguinal hernia under spinal analgesia with 3 ml. of 5% solution of planocaine administered in the right lateral position. He had headache, diarrhœa, and vomiting after operation and was given a full course of sulphadiazine starting on the 18th. Next day lumbar puncture revealed a turbid C.S.F. under pressure, and by this time he had developed head-retraction. Examination of the C.S.F. showed 3500 cells per c.mm., mainly polymorphs, but there was no growth on culture. On the 20th lumbar puncture was repeated, 10 ml. of fluid withdrawn, and penicillin 50,000 units given intrathecally. The fluid from this puncture contained 940 cells per c.mm., and there was still no growth on culture.

Ps. pyocyanea was first isolated on May 2, but on April 27 sulphamerazine was given, starting with eight tablets of 0·5 g. and two tablets thereafter four-hourly. The dosage was modified as the white-cell count became lower and then increased as symptoms required. By May 11 there were only 14 cells per c.mm. in the C.S.F. and one colony of *Ps. pyocyanea* in serum agar. On the 23rd there was no growth on culture. The patient's general condition was, however, deteriorating, and a week later there was a further growth of the organism on culture. In spite of further sulphamerazine the clinical condition of the patient worsened, and he died on Aug. 5.

Necropsy revealed a tense dura on removal of the skull cap. Both cerebral hemispheres were flattened by hydrocephalus, but there was no pus over either hemisphere. Pus was found surrounding the medulla, pons, and inferior surface of the cerebellum. The brain was removed, and thick greenish pus was found in the lateral and fourth ventricles. There was obstruction of the aqueduct of Sylvius and foramen of Monro, with internal hydrocephalus. No abnormality was found in the thorax or abdomen.

COMMENTS

An exhaustive attempt was made to trace the source of the infection in these cases, but without success. Cultures were made from the glove powder, sterile water, and air of the theatre, but no trace was found of *Ps. pyocyanea*. A possible source of infection was thought to be the patient's skin, but cultures from the skin of the back on May 11 yielded only *Staph. albus*.

Undoubtedly the second patient died mainly because the internal hydrocephalus and basal meningitis gave no chance of drainage; but one is forced to the conclusion, already expressed by others, that meningitis following lumbar puncture with or without introduction of a solution for spinal analgesia will be avoided only by the maintenance of a scrupulously careful aseptic technique which must apply to the whole theatre.

The only other case of meningitis following spinal analgesia which has occurred in this area during several years was in a patient operated on in the same and in this case *Ps. pyocyanea* was cultured " sterile " water in a winchester jar.

SUMMARY

Two cases of *Ps. pyocyanea* meningitis spinal analgesia are described. One patient after treatment with sulphamerazine; the other

The source of the infection could not be traced in a similar case (not described here) the so-called sterile water in the operating-theatre.

Emphasis is laid on the importance of a rigid of asepsis in lumbar puncture, whether for anæsthetic purposes.

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Medical Societies

ROYAL SOCIETY OF MEDICINE

Renal Circulation

AT a meeting of the section of experimental med on Oct. 21, Dr. A. E. BARCLAY (in the absence of K. J. FRANKLIN) outlined the development of the logical techniques which have been applied to the of the renal circulation. The work originated in ments by Barnes and Trueta, who set out in determine whether protracted constriction of could cause persistent spasm of its main art tourniquet was applied to one of the hind legs anæsthetised rabbit to exert pressure on the vessels for several hours. Angiograms of both were made at various intervals after the removal tourniquet. In some animals the spasm was to the vessels of the affected limb, in others the of the other limb also were in spasm, and in one there was well-marked spasm *above* the level tourniquet. Other studies on the circulation taken at the Nuffield Institute in cats, rabbits, and sheep fœtus provided a technique suitable for demo ting all the abdominal vessels in the intact animal in later investigations. In these further tourniquet ments, by the injection of thorotrast into the ext jugular vein and by direct cineradiography, it found that prolonged application of a tourniquet thigh resulted in arterial spasm involving not only femoral arteries but also the aorta and extending ally to include the renal arteries. In such suitably timed angiography showed diminution in calibre of the renal arteries and pronounced dilat of the renal veins—by contrast the mesenteric was unaffected. The changes noted in the renal in these tourniquet experiments were reproduced stimulation of the central end of the cut sciatic Thus the constriction of the renal arteries was to be a reflex reaction to afferent impulses with efferent pathway located most probably in the nerves. Bilateral section and degeneration of splanchnics was followed by dilatation of the vessels and mesenteric artery, and in tourniquet ments performed on animals so treated these remained unaffected while the limb vessels were stricted. Finally, faradic stimulation of the splanchnic nerve yielded results closely comparable those from tourniquet experiments or after effe sciatic stimulation and gave final proof of the rôle of splanchnic nerves in the reflex vasoconstriction.

When taking angiograms during these experim Dr. Barclay explained, it was customary to two exposures at carefully timed intervals, to show thorotrast first in the renal arteries and then in the In some angiograms of the renal arteries, in tou experiments, a certain amount of the contrast med was noted actually in the renal veins. Further obs tions on this point by direct cineradiography sh the renal circuit-time much altered from the n from the control circuit-time of 2·7 sec. before the ment to 1·8–2·1 sec. during the application of the tou still further reduction to 1·5–1·65 sec. at 15 min. 5 hours after its removal. There was a correspond- astriction of the renal artery and dilatation of nal vein, and so the presence of a "shunt" or ircuit was suspected. This led to a study of the tion within the kidney to ascertain where the ircuit was taking place.

tinuing the account of this work, Dr. JOSEP A said that after inconclusive radiographic results experiment in which the central end of the cut nerve (left) was stimulated, methylene-blue was d into first the left and then the right renal arteries. sult was quite unexpected. The kidney on the ulated side (right) was uniformly stained, that stimulated side (left) showed on the surface only small scattered dye spots. On radial section the nce was much more striking—on the left side the ortex and medulla alone were stained; the outer was not stained. This gave a clue to the level short-circuit, and everything now pointed to the ing mechanism being a neurovascular reflex. fter followed studies of the intrarenal circulation roradiographic, histological, and several injection ques. By the integration of these, the complete he "lesser" renal circulations were demonstrated e latter shown to be the normal medullary circula- stained by the large glomeruli of the boundary that is, the juxtamedullary glomeruli and their t vessels, sometimes also called the vasa recta). These experimental findings seemed to indicate the kidney might be regarded as having two nally separate parts, the cortical and the lary; Dr. Trueta also stressed the high proportion recta to the loops of Henle, which suggested that a recta have a functional significance. He then d the demonstration of the circulation in experi- renal cortical necrosis; cessation of the circula- the affected outer cortex and its continuance h the juxtamedullary glomeruli to the medulla early similar to the medulla-diverted circulation miquet experiments, and in experiments on sciatic- and splanchnic-nerve stimulation. He ended by strating the formation of vasa recta vera in arterio- tic and hypertensive human kidneys by stages in a of exquisite 'Neoprene' preparations.

J. F. HEGGIE gave an account of his studies in neasurement of the renal circulation-rates in the al rabbit and in rabbits in which cortical necrosis een produced by intravenous injection of staphylo- s toxin. He illustrated (by filmstrip) the normal lar channels in the kidney and emphasised the tially glomerular nature of the circulation. From vations on the structure, volume, and number of lomeruli and on the total renal blood-flow it had calculated that the normal glomerular capillary ne was changed five times each second (if all glomeruli functioning, as possibly they were) and the velocity ch glomerular capillary loop was probably at least nm. per sec.—i.e., higher than the average capillary lsewhere (0·5–1·0 mm. per sec.)—but this was not ising in view of the fact that the glomerular laries were interposed between arterioles and the ure in them was high. In renal cortical necrosis of origin the initial lesion (with the doses employed) lemonstrated to be an inflammation of the glomeruli e strict sense, proceeding through capillary hyper- , slowing of the flow and diapedesis, to stasis in the x save in the boundary zone where the glomeruli, ased fivefold in volume, maintained an augmented at approximately normal rate (velocity). This was ar demonstration of the blood-supply to the renal ulla, and to the concerned glomeruli he had in 1941 n the name *juxtamedullary;* and from these findings ad indicated to the workers in Oxford that the short- ut they had discovered and demonstrated in vivo via these juxtamedullary glomeruli. These changes ked one extreme of a wide range; at the other were normal variations of the renal circulation, and een were alterations which occurred in a variety of litions, with varying degrees of derangement of ation and reabsorption rates, and of electrolyte and retention; these required further study.

Dr. E. M. DARMADY had studied about 1000 cases following injury or crush injury and had found certain lesions histologically which appeared to fit in very well with the circulatory findings just described—relative ischæmia in the renal cortex, congestion of the juxtamedullary area, and engorgement of the vessels in the medullary zone. He considered, however, that it was unwise to translate directly the findings in the rabbit to man at this stage, particularly as he knew from his experiments that the renal pedicle in the rabbit was very sensitive to traction and that ischæmia readily resulted.

Mr. R. H. PARAMORE was interested in alterations of the renal circulation particularly in relation to urinary secretion, to which no reference had been made. Several years ago he had reported in the *Proceedings* of the society that when the ureters were clamped the kidney became almost bloodless. He had ascribed the relative ischæmia of the cortex which occurs in eclampsia, despite the hypertension, to increasing back-pressure, which, within the kidney, brings about diminution of the renal circulation-rate and blood-flow, through the agency of the pressure of distended tubules.

Prof. H. P. HIMSWORTH had been studying the intralobular circulation of the liver in dietetic deficiency experiments and had seen a few hæmorrhages occur in the portal tracts as the initial stage of necrosis; by following the stages of these circulatory changes he had concluded that the hæmorrhages resulted from swollen liver cells damming back the blood in the portal system. The relation to the kidney was that these hæmorrhages could be produced in rats of 40–50 g. (only). At a recent meeting in New York, Dr. Baxter of the Best Laboratory, Toronto, showed pictures of the circulation in the kidney after the injection of choline into the circulation of these choline-deficient animals. There was great swelling of the cells of the tubules, and these pressing on the intertubular capillaries had obstructed the circulation and so dammed the blood back that small hæmorrhages resulted.

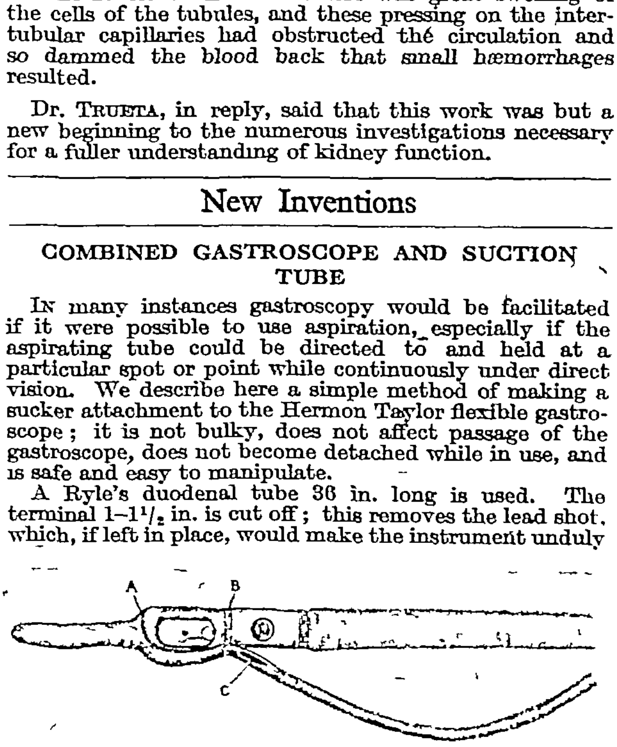
Dr. TRUETA, in reply, said that this work was but a new beginning to the numerous investigations necessary for a fuller understanding of kidney function.

New Inventions

COMBINED GASTROSCOPE AND SUCTION TUBE

IN many instances gastroscopy would be facilitated if it were possible to use aspiration, especially if the aspirating tube could be directed to and held at a particular spot or point while continuously under direct vision. We describe here a simple method of making a sucker attachment to the Hermon Taylor flexible gastroscope; it is not bulky, does not affect passage of the gastroscope, does not become detached while in use, and is safe and easy to manipulate.

A Ryle's duodenal tube 36 in. long is used. The terminal 1–$1\frac{1}{2}$ in. is cut off; this removes the lead shot, which, if left in place, would make the instrument unduly bulky. The tube is now laid alongside the gastroscope and glued lightly in place with rubber solution, such as is used in repairing rubber gloves. The terminal part of the Ryle's tube and the flexible rubber tip of the gastroscope (it is necessary to use a lamp with a rubber finger-tip and not a rounded metal end) are then firmly bound together with fine silk thread by whipping. The thread is then covered with rubber solution. A slit finger from



Combined gastroscope and suction tube: A, junction between new tip of gastroscope and lamp; B, lashing of Ryle's tube to gastroscope; C, new aperture made in Ryle's tube.

a rubber glove is then placed over the gastroscope tip and terminal end of the Ryle's tube and is glued in position, its edges being carefully trimmed to leave a perfectly smooth surface and a smooth junction between the new gastroscope tip thus formed and the lamp (see figure). The Ryle's tube is then tightly bound to the gastroscope with silk thread just proximal to the lamp, shutting off the lumen of the Ryle's tube from the holes in its end. A new hole is now cut with curved scissors immediately adjacent to the lens of the gastroscope.

It is unnecessary to attach the Ryle's tube to any other parts of the gastroscope; attempts to do so lead only to dangerous surface projections and to occlusion of the Ryle's tube. While the gastroscope is in use, the proximal end of the Ryle's tube must be kept closed with a spigot. If this is not done, each time air is introduced into the stomach with the blower some of it will escape up the Ryle's tube, tending to deflate the stomach when inflation is desired.

Some of the advantages of using this instrument are as follows:

(1) Intubation and emptying of the stomach before gastroscopy, even in the presence of pyloroduodenal obstruction, is eliminated, any aspiration necessary to obtain a clear field being done at the under visual control.

(2) Doubtful spots on the mucosa, covered by under which may lie an ulcer or erosion, can be by manipulating the hole in the Ryle's tube to and applying suction. If this fails, a syringe air can be attached to the proximal end of the tube, and a stream of air can then be directed spot and used to dislodge the mucus.

(3) In some patients who have had partial or gastro-enterostomy performed the vision is obscured by regurgitation into the from the jejunum. The introduction of more as often as not, to the formation of bubbles obscuring the field. Aspiration, continuous o mittent, will expose the stoma to view.

(4) Under various stimuli—e.g., histamine and —the behaviour of the actively secreting viewed, while at the same time specimens can be continuously or intermittently, as desired.

We are indebted to Miss Prudence Craig for diagram.

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Reviews of Books

Food Poisoning

(2nd ed.) Elliot B. Dewberry, F.R.S.I. London: Leonard Hill. 1947. Pp. 246. 17*s*. 6*d*.

Food hygiene is an important part of preventive medicine, and much remains to be done in educating those engaged in food production and distribution. A good gauge of the practice of food hygiene is the true incidence of food-poisoning. Field workers constantly uncover outbreaks which the general practitioner either does not hear about or, if he does, fails to report to the authorities. Apart from the occasional deaths, these preventable illnesses cause much suffering and loss of time. For this reason Mr. Dewberry's general review of food-poisoning should be of wide interest. As he points out, food-poisoning can be caused by metals, poisonous plants, fungi, and fish, besides bacteria. Lead, arsenic, and especially zinc poisoning, which is usually caused by cooking acid fruits in galvanised containers, still occur, though less commonly. The fallacy persists that tinned foods are specially dangerous, either from the metal or from their bacterial content, though all recent evidence points the other way. At the time of year when wild mushrooms are in season, *Amanita phalloides*, with its incubation period of 6–18 hours, as well as the various species which produce a muscarine effect after a shorter time, lies in wait for the unwary gatherer. Enteric fever from eating contaminated shellfish is not as rare as it should be, but there are few cases of severe fish-poisoning in this country. Mussels have killed several people in California, and outbreaks are reported from both sides of the Atlantic. Typical cases of poisoning by the well-known poisonous plants containing alkaloids, such as coniine and hyoscyamine, are briefly described.

Bacterial food-poisoning is evidently increasing. New tools, particularly the phage-typing technique, enable us to establish the cause and to trace the source of outbreaks which in the past would have remained unknown. Poisoning by staphylococcal enterotoxin is so common and the symptoms so characteristic that the practitioner should seldom miss the opportunity to have outbreaks investigated. As Dewberry points out, much has still to be learnt about the nature and mode of action of enterotoxin but a great deal can be done to eliminate its consequences. Despite our wealth of bacteriological information about the salmonella group of organisms, present methods of controlling this type of food infection are obviously inadequate. On the other hand, only a few family outbreaks of botulism have occurred since the Loch Maree tragedy in 1922; but as long as bottling remains a national duty some householders may rashly bottle vegetables—which are more likely than fruits to contain spores of *Cl. botulinum*—and so run the botulism. Dewberry describes all of these food in a manner which will perhaps interest the reader more than the expert; but his aim is to information about food-poisoning, and so to reduc

Freud: Master and Friend

Hanns Sachs. *London: Imago* Publishing Co Pp. 192. 9*s*.

The personality of a man who threw such personality and its origins as Freud did has interest. Hanns Sachs was on intimate terms for nearly thirty-five years and here presents a and attractive picture of the man who, he says, great event and adventure of my life." Sing ness, tenacity, courage, intellectual honesty, and were outstanding traits in Freud which partly the *originality and fruitfulness* of his thought: relationship with his family and his friends complete integrity and constancy; and Dr. through a bare recital of the ways in which he saw qualities exhibited, succeeds in conveying to the his own conviction that Freud was a "great man sort that is not born in every century." Until Freud has written the biography of her father Dr. Sachs desiderates in his introduction, this book is likely to remain the most intimate account we have of an austerely devoted rev genius of our time.

Trend of National Intelligence (London: F Society and Hamish Hamilton. 1947. Pp. 35. 2*s*.)—first part of this booklet contains Prof. Godfrey Thom Galton lecture for 1946, in which he pointed to the in relation between size of family and intellectuality. second part reports a symposium in which was emph the need for more precise analysis of slow trends. lecture and symposium together throw light on a disqu question.

Physical Treatment of Injuries of the Brain (Lon *Baillière*. 1947. Pp. 96. 10*s*. 6*d*.).—Miss K. M. Hern charge of the physiotherapy department at the Mil Hospital for Head Injuries at Oxford throughout the and in this book she explains the *methods* which she f most useful in the treatment of residual paralysis and following cerebral and spinal injuries. She emphasises cardinal principle that electricity and passive move are of little value in these cases and that the patient be taught to make the best use of what neural func remains. The exercises are clearly described and illu and the great importance of rhythm in re-education of ment is emphasised. The book is of considerable inter neurologists and neurosurgeons and should be invaluable physiotherapists and medical officers in charge of rehabil departments.

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References: Shortage of space precludes list of references, but full documentation may be obtained on application to Clinical Research Dept.

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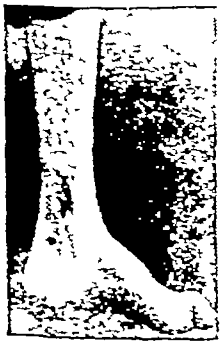


Fig. 1

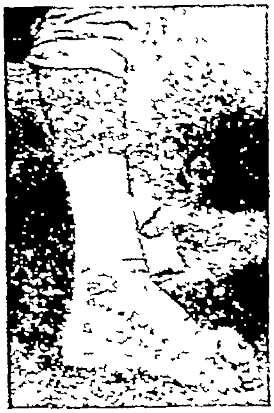


Fig. 2

Case History.

G.J. Aged 45. Grocery Assistant. The patient first attended the clinic with a deep punched-out ulcer above the left internal malleolus . . . surrounding skin inflamed. (Fig. 1).

Treatment. *August 16th*, 1946. Sulphanilamide powder was dusted into the ulcer, and calamine lotion applied to the inflamed area. An adhesive felt pressure pad was placed over the ulcer only, with a strip of 'Ichthopaste' to cover the ulcer and the inflamed area. 'Elastoplast' stirrups were applied and bandaging completed from toes upwards. (Fig.2).

Sept. 27th, 1946. The ulcer and the devitalised skin area completely healed. (Fig. 3). The patient was instructed to apply calamine lotion, pad of cotton-wool over the ulcer site, and to continue support with 'Elastocrepe' for a few weeks.

Details and illustrations above are of an actual case. T. J. SMITH & NEPHEW, LTD., Manufacturers of 'Elastoplast,' 'Elastocrepe' and 'Ichthopaste', are privileged to publish this instance, typical of many, in which their products have been used with success, in the belief that such authentic records will be of general interest.

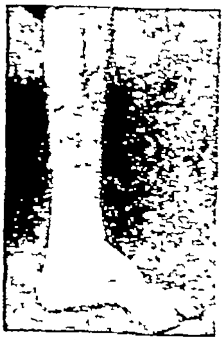
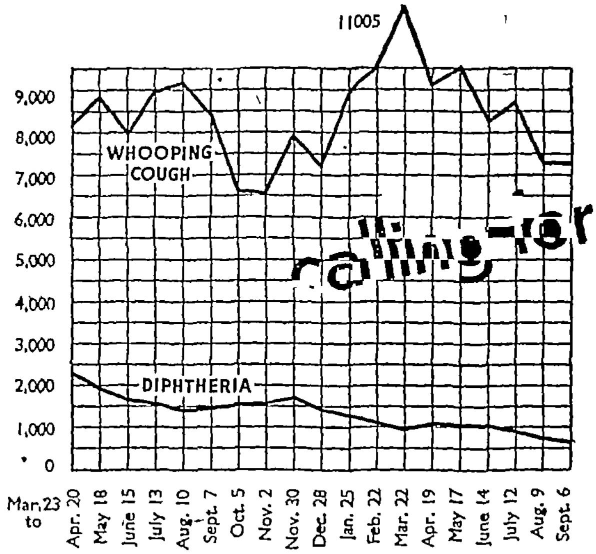


Fig. 3



STATISTICS: United Kingdom figures for reported cases; Mar. 23, 1946 to Sept 6, 1947, in 4-weekly periods, from the Registrar-General's returns.

calling for COMBINED action

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THE LANCET

LONDON: SATURDAY, NOV. 1, 1947

Cholera in Egypt

Monday, Sept. 22, the medical officer of health Korein, an isolated village east of the Nile delta me 60 km. west of the Suez Canal, reported lmission to Fakous district hospital of five ts with severe intestinal symptoms. Thus l an epidemic which in the first month involved nown cases, with 3230 deaths. A statement by Bey to the World Health Organisation's expert ttee on quarantine suggests that from the first yptian authorities were alert to the peril. On londay evening government officials visited rein and established that the disease was ; and next day a house-to-house search was all sick and suspected cases being sent to an on camp. Almost immediately, however, further were reported from both banks of the Ismailia ; and, although each infected area was cor- off, infection continued to spread. Its preva- is still greatest in the area north-east of Cairo it originated; Upper Egypt escaped infection the beginning of last week, and Cairo and ndria are still almost untouched.

predominance of the outbreak in rural areas is ly due to the primitive nature of village water- es. During cholera epidemics cases occasionally y contact or fly-borne infection, but the disease ally spread through water. Against such infec- an has a natural protection in the acid of his juice, which is capable of killing the ingested sms; but when large draughts of water are wed, especially on an empty stomach, the fluid ass with unaltered pH into the intestine. The f infected water was shown very clearly in the urg epidemic of 1892. In the city itself the -rate from cholera was 13·4 per 1000, while in ntiguous suburb of Altona the rate was only r 1000. Both city and suburb obtained their from the Elbe below Hamburg; but Altona, Hamburg, had an efficient filtration plant. nenace of deficient sanitation can be met only lucating the public to boil water and avoid minated food; and unhappily at least a section ypt's population is unlikely to coöperate in such res There have been accounts of ritualistic g of the air to ward off infection [1]; 27 people after drinking from a well down which the body oy had been cast; hidden under vegetables in a entering Cairo were two corpses of cholera ns [2]

olera prospers in the region of deltas; and in the delta, with its network of interlacing canals ied from the one great river, lies the threat of gthy outbreak. Here, however, history offers some comfort, for cholera has never yet obtained a permanent foothold in any country to the west of India; each epidemic has been traceable to its origin in the East, from which the organism has been conveyed by man. The route of infection in the present outbreak is still uncertain. There is no indication of an overland spread such as that which occurred more than once in the nineteenth century, when cholera reached Europe via Afghanistan, Persia, and south-east Russia. Egypt has commonly become infected by men and women returning from religious pilgrimages; but this year the epidemic began before the start of the pilgrimage season. The proximity of El Korein to the canal zone brings to mind the possibility of infection having been introduced by sea. The European epidemics of 1863–69 and of 1879–83 first reached Egypt via Bombay, Aden, and Mecca; and it was in Egypt in 1883 that ROBERT KOCH identified the cholera vibrio. A correspondent [3] has suggested that troop movements from India may have accounted for the outbreak. This to say the least is improbable, since troops are under continuous supervision and no cases have yet been reported among British military personnel. There remain, however, the possibilities of an undetected case in a ship trading with the East, and of infection having been carried by aircraft; Egypt, and for that matter England, can be reached by air within the incubation period of the disease. Cholera is one of the five infections against which the international conventions for sea and air travel are particularly directed, and the troubled state of some parts of the world should prompt redoubled attention to their observance. Whether the epidemic is now to spread round or across the Mediterranean into Europe depends on the efficacy of the measures taken by each country at its frontiers. Fortunately, efficient quarantine is an almost perfect bar to the entry of infection. Moreover, there has been no instance of a chronic cholera carrier producing groups of cases at intervals remote in time and place from his original infection, and it is now doubted by many whether an effective healthy carrier-state exists; in areas of Bengal where the disease is prevalent the vibrio, in the course of an extensive investigation, has been isolated only in close association with actual cases of cholera. Recent work suggests that earlier reports of protracted excretion of the vibrio may have been vitiated by fallacies in serological diagnosis; furthermore, isolation of the organism at intervals from the stools of cholera convalescents and contacts may result from successive reinfections without clinical symptoms. There is reliable evidence that in most cases of cholera the vibrio is not excreted beyond the fifth day although sometimes excretion continues up to two weeks or slightly longer.

Since 1902, it is said, only 5 cases of cholera, all in 1918, have been seen in Egypt [4]; and a fuller understanding of the epidemiology may emerge from observations in a country long untouched by serious outbreaks. In India Sir LEONARD ROGERS [5] had remarkable success in forecasting outbreaks, which, he said, are likely to start when the absolute humidity of the atmosphere exceeds 0·4; and it will be interesting to see whether his conclusions are confirmed in Egypt. The most heavily infected provinces are being divided into several separate sections, each under the charge of a doctor with sweeping powers. The authorities are also attempting to get each member of the population inoculated with anti-cholera vaccine. It is generally agreed that active immunisation, if repeated from time to time, is more or less effective; and it may be hoped that this impression will soon receive statistical backing when the results of a large-scale inoculation study in India are obtained. But immunisation, however effective for personal prophylaxis, will never eradicate cholera. The world can be freed of this scourge only by attack at its two sources—Lower Bengal and the Yangtse valley. The World Health Organisation, when it gets into its stride, might well set about this task through a programme of sanitation and education in these two areas. There could be no better proof of its value to mankind.

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[1] *Times*, Oct. 20.
[2] British United Press.
[3] Rida, A. *Lancet*, Oct. 25, p. 636.
[4] *Brux méd.* 1947, 27, 2312.
[5] Rogers, L., in British Encyclopædia of Medical Practice, London, 1937, vol. 3, p. 166.

Clinical Tropical Medicine in London

Sir Philip Manson-Bahr's informative and witty presidential address on Oct. 16 to the Royal Society of Tropical Medicine and Hygiene ended with a nostalgic picture of the old Endsleigh Gardens Hospital for Tropical Diseases, in which so much of his work has been done. At this point some of his hearers must have been moved to reflect on the many vicissitudes of clinical tropical medicine in London.

Great Britain has had colonies and settlements in the tropics for nearly three hundred years, but there was no institution in this country for the systematic teaching of tropical medicine and hygiene until less than fifty years ago. Towards the end of last century Sir Alfred Jones, leader of a group of West African merchants, formulated a scheme which ultimately led to the foundation of the Liverpool School of Tropical Medicine; and about the same time, in London, Sir Patrick Manson put before the secretary of the Seamen's Hospital Society the idea of using the Albert Dock Hospital for teaching tropical medicine. Joseph Chamberlain, then Colonial Secretary, gave his warm support to the scheme evolved at the Albert Dock, and on Oct. 3, 1899, the first teaching session there began with 27 students. Both in Liverpool and in London the clinical schools in tropical medicine started in general hospitals in the dock areas, but as they developed they moved nearer to the city and university centres. In 1920 the growing London school was transferred from the Albert Dock Hospital to a separate Hospital for Tropical Diseases established in Endsleigh Gardens. Conveniently and centrally situated, close to the academic centre in which the combined London School of Hygiene and Tropical Medicine was soon to arise, the work of this hospital rapidly expanded, and it stood as a vital monument to the spirit and foresight of Manson. But the late war struck two severe blows at its very heart: first, because of the threat of bombing, it had to be completely removed to various other hospitals—which destroyed its clinical unity—and secondly most of its staff were scattered on service throughout the world. Those interested soon saw that unless this process of gration could be reversed London would be after the war to resume the contribution to t teaching, and research in tropical medicine that i worthily made since the beginning of the cent

Early in 1945 a meeting composed of represen of Government departments, Dominion and interests, the Services, learned societies, and a hospital, and other bodies concerned met and recommendations. It was agreed on the highest that a suitable hospital of some 200–300 beds be established, near and linked to the teaching school and research laboratories and f a closely knit tropical centre. Thus the teac tropical medicine would be centralised, wit association between the clinicians and those in the related academic sciences, while the tration of patients suffering from tropical d would not only increase the scope and value of c teaching but would also provide material for de or large-scale research. In addition, such a would attract postgraduates from all countries form one of the focal points of tropical m Harmonious coöperation with the other great centre at Liverpool was envisaged, while liaison various research laboratories in different parts of tropics would enable workers to be intercha Pending realisation of these plans, an attempt made to fill the gap left by the closure of th hospital by acquiring a nursing-home at 23, D shire Street, W.1, and using it as a temporary hos Unfortunately, admirable though this temp hospital has proved from the standpoint of its vidual patients, it has not room for all the ap priate cases, many of which have to be sent to o hospitals within the Seamen's Hospital Society elsewhere. Moreover, it does not possess the sp and facilities required for teaching large classes students nor for research laboratories worthy of clinical material on hand. Notwithstanding th difficulties, large classes of medical and nur students are receiving instruction in tropical disea but the waste and trouble caused by the pre dispersion of patients is considerable, and the ne for the formation of a single centre is great.

Unhappily, hope for the major scheme now bu less bright. Controls, and the need for reduc capital expenditure, seem to make the possibility building remote, while uncertainty about the ex pattern of our future health service and econom status possibly has a restraining influence on plann and development. Nevertheless there are cog reasons for pressing on without further delay Though tropical disease must be studied in th tropics, it must also be studied, against an academ background, in major scientific centres, of whic London is outstandingly suited to the purpo Today the greater movement of peoples and th rapidity of modern transport are bringing about virtual contraction of the world that is bound t increase the interest taken in tropical diseases an necessitate further study and instruction in trop medicine. Likewise the development of new agri cultural and commercial undertakings in the Coloni whose importance for the welfare of Colonial peopl and for the very survival of our Commonwealth needs little emphasis, and the obligations that w to the Colonial peoples, make the restoration rery facility for treatment, research, and teaching ropical medicine a matter of true urgency. Like **Philip Manson-Bahr**, we trust therefore that e way will be found to enable the principal city he Commonwealth to resume its proper part in ancing and disseminating knowledge of clinical ical medicine.

Present Status of Disc Surgery

; 1934 **Mixter** and **Barr**[1] reported a series of atients operated on for prolapse of a lumbar interebral disc. If their observations were not novel, ny rate they marked the beginning of an epoch. y thousands of operations for disc anomalies have ı performed during the last decade by general eons, neurosurgeons, and orthopædic surgeons world over; and, as long-term results accumulate large series are recorded, it is possible to put this k in its right perspective. Yet the subject is young enough for surgeons to disagree widely often dogmatically on points which seem fundaıtal—such as the precise indications for operation; ther one should be as ready to operate for low k pain as for sciatica; the best surgical exposure; living pathological appearances of the exposed , and how much of it should be removed; and, least, the desirability of spinal fusion. These other matters are dealt with by **Murray coner** in his Hunterian lecture summarised in issue, and were discussed at the annual ting of the American Orthopedic Association last r.[2]

he difference between personal approaches is able. That enthusiast and individualist, the late **lter Dandy**, performed 843 operations in four rs, using a peephole interlaminar approach by ioving the ligamentum flavum on one side only.[3] tried to remove the whole disc and believed that vertebral surfaces left to approximate might spontaneously. He described the "concealed " as a common and important lesion; he regarded elography as unnecessary and unhelpful, and never ried out deliberate spinal fusion. On the other ıd, **Falconer**, another neurosurgeon, often uses elography and favours routine wide laminectomy. agrees on the common finding of an "intermittent lapse" equivalent to **Dandy**'s concealed disc— which is not obviously abnormal but is soft to the ıch and may be made to bulge by extending the ne. He does a very radical curettage from both es of the theca and is also entirely opposed to ion. In this country **Burns** and **Young**[4] have ten the increasingly accepted views that most es of low back pain and sciatica, together or)arate, are the result of a prolapsed disc; that elography is often useless and deceptive or actually rmful, so it should be done only when a rarity like auda equina tumour is suspected; that the neuroical picture is of no help in localisation; and that ıny cases will be missed unless the routine procedure a wide laminectomy with inspection of both 4th and h discs.

The question of spinal fusion, on which **Burns** and **Young** seem to have said nothing as yet, urgently needs clarification. The extensive laminectomy required for an adequate operation is bound to weaken the back. Moreover, the chronic derangement of an intervertebral joint which precedes the operation, even if it is not exacerbated by removal of the disc, may be enough to cause persistent low back trouble in the unfused spine during the years that follow. In some cases fusion must be called for, but the selection of these cases needs much care. One reason for neglecting fusion is given by **Barr**,[5] who remarks that "certain neurosurgeons . . . have been so impressed by the obvious relief of the patient's acute sciatica that they have failed to look carefully for late evidence of a mechanically unsound back"; this comment applies to all who are concerned merely with the short-term relief of the disabling symptom. **Barr** thinks that as technique improves a spinal fusion will be done in every patient at the time of laminectomy, and **Steindler**[6] is in general agreement with this view, because there is a significant rise in the percentage of cases permanently relieved of back symptoms when fusion has been performed. **Love**,[7] another of the pioneers in this field, would restrict the indications for fusion to cases with definite evidence of lumbosacral instability. An unspoken objection to fusion which must weigh heavily with the surgeon is that the standard orthopædic procedure requires three months in a plaster bed and protracted support and reablement thereafter. The laminectomy alone is such a common operation nowadays that there is a natural temptation to save hospital beds by declaring that fusion is unnecessary—it would, indeed, be impracticable. As was said in these columns two years ago,[8] what is needed is a revolutionary method of securing rapid stable fusion, and the Bosworth clothes-peg graft was then put forward as such a method. **Falconer** gave up having alternate cases grafted by his orthopædic colleagues because the grafts often failed to fuse to the spine, and it may well be that the standard orthopædic procedure is not only a long job but is not a fusion. Merely to slip a cortical graft on either side of the spinous processes without the most careful preparation of the bed will not suffice, and apparent success may be due only to fibrous scarring in the soft tissues of the low back. **Barr** and **Steindler** both recommend the Bosworth operation, which gives rigid fixation of the spine with no more than the usual three or four weeks in bed, and without the need for a plaster jacket or other support. This H-shaped graft, cut from ilium or tibia, is wedged tightly between the 4th lumbar and 1st sacral spines while they are held apart in acute flexion, so it is firmly locked in place when the spine is again extended.[9] There seems to be every reason for running properly controlled series in the larger orthopædic and neurosurgical centres, doing fusion in this or a similar way in alternate cases. Then, in five or ten years' time, we shall know whether fusion is necessary or not.

Mixter, W. J., Barr, J. S. *New Engl. J. Med.* 1934, 211, 210.
J. Bone Jt Surg 1947, 29, 424 et seq.
Lenhard, R. E. *Ibid*, p. 425.
Burns, B. H., Young, R. H. *Lancet*, 1945, ii, 424; 1947, i, 623.

[5] Barr, J. S. *J. Bone Jt Surg.* 1947, 29, 429.
[6] Steindler, A. *Ibid*, p. 455.
[7] Love, J. G. *Ibid*, p. 438.
[8] *Lancet*, 1945, ii. 436.
[9] Bosworth, D. M. *Surg. Gynec. Obstet.* 1942, 75, 593; *Amer. J. Surg.* 1945, 67, 61.

Annotations

THE NEW FOOD CUTS

A WEEK ago Sir Stafford Cripps, in outlining the measures projected by the Government to save dollars, announced a further reduction in our expenditure on foods imported from dollar countries. The only rationed foods immediately affected by this reduction are sugar and eggs. The weekly sugar ration, which was raised from 8 oz. to 10 oz. a month ago, reverts to 8 oz., and there is to be a saving on imports of Canadian eggs, which will severely restrict the supplies to bakers, though the allocation of shell eggs to the public in the coming year is expected to be 66 per head compared with 58 last year. Meat remains at 1s. and bacon at 1 oz. a week. Sir Stafford Cripps promised that every effort would be made to offset the reductions by increased imports from soft-currency countries. But if these attempts fail the effect would be to reduce the average calorie intake per head of the population from its present level of about 2870 a day to 2700.

This is a significant fall, and it was not clear from Sir Stafford's speech how it will come about. Presumably his calculations include among the "other changes brought about for quite other reasons" the likely reduction in potato supplies consequent on the poor harvest. The average of 2700 remains above the requirement level estimated in the recent Ministry of Food white-paper,[1] which was 2550; but the reduction will bring us uncomfortably near to that basic level, and there will be an increasing danger that where distribution is faulty some will not get enough to maintain their health and efficiency. This is particularly likely in the "family pool," where the mother is apt to deny herself for the sake of the wage-earners and children, and cannot compensate for this by getting food at a restaurant or canteen.

COMPATIBILITY OF ANTIBIOTICS AND STYPTICS

THE compatibility or otherwise of the antibiotics and the styptics—two groups of substances often used simultaneously in surgery—is clearly of practical importance. One would have expected to see the subject thoroughly investigated as part of the routine study of the new styptics before their release for general use. Yet, judging from the published work, the investigations seem even now to be incomplete.

Fleming and Fish[2] have studied the effect of locally applied sodium penicillin on the coagulation of blood. They find in oral surgery that sodium penicillin powder interferes both with clot-formation and with the maintenance of the firmness of a previously formed clot. Their results were much the same with commercial sodium penicillin and with the lately developed pure crystalline salt. Blockley,[3] on the other hand, reports that calcium penicillin in combination with sodium alginate, in powder form, locally applied in the same type of case, is a rapid and satisfactory styptic which also exhibits the known action of penicillin. Correll and Wise[4] have investigated the stability of penicillin, streptomycin, and thrombin in the presence of two styptics developed in the United States—gelatin sponge and oxidised cellulose. They find that oxidised cellulose ('Oxycel') rapidly destroys thrombin and penicillin, whereas streptomycin is unaffected by it. Gelatin sponge has no deleterious effect on either penicillin or streptomycin. The penicillin which was used in their experiments was the calcium salt. Their observation on the destruction of thrombin activity by oxycellulose corroborates the earlier findings of Seegers and Doub,[5] and they agree with workers that the destructive effect of oxidised is due to its acid reaction, which can be corrected sodium bicarbonate. This may explain why other find that oxidised cellulose and penicillin are co

It is not easy to link up even the few in that have been made on these lines. Some workers used only sodium penicillin and others only penicillin, and different methods of assay have adopted. There is clearly a need for exact studi these compatibilities which will tell the surgeon c sively whether he can use the various substances to It might further be of interest to find out how the of antibiotics and styptics is affected by the changes in pH level taking place in extravasated clot, and tissues during healing under various met with in practice (e.g., in the presence or a infection); and to decide the optimum pH fo different substances. More information on the or anticoagulant mechanisms involved would also welcome.

MODERN EDUCATION OF THE DEAF

DEAFNESS and partial deafness are among the which can be mastered. Children born deaf or be deaf early in life often make a poor start in learnin overcome their disability, either because it is not noti in good time—a child with high-tone deafness is of thought to hear normally by his parents and fri —or because their parents think there is no way of them until they reach school age. In these last week, Mr. A. W. G. Ewing, PH.D., and Mrs. Ewing, M.SC., outlined the principles of home tra adopted experimentally for such children referred the research unit at Manchester University. The th is developed more fully in their book, *Opportunity the Deaf Child.*[6] This training is an exercise in for the parents. The mother especially must learn think in terms of the child's experience as co with that of the normal child, and to supplement deliberately. The Ewings have found that, given suitable opportunities, some children begin learning to lip-read when they are even as young as eighteen months; and some are trying to say words when they are still under two years. To do this they must have plenty of chances to see the mother speaking.

The mother begins with routine requests which call for the child's coöperation; thus at bath-time she always says "Give me the soap," "Bring me the towel," "Stand up," and other appropriate things, until he is doing them quickly in whatever order they are spoken. Then she begins to speak familiar words in new situations: she tells him to "stand up" at times other than bath-time, or gets him to fetch the soap when she is washing up. The next stage is the learning of new words, and this depends on the interest she has roused in the child; he begins to point at objects and to watch for their names on his mother's lips. All deaf children babble at first, and they must be encouraged to use their voices, for if they once fall silent it is difficult to get them to start speaking. The mother should always look pleased when the child makes sounds, and especially when he tries to speak words, though she should not attempt, the Ewings think, to teach him to say the words properly —that is a job for a trained teacher of the deaf. The deaf child's chances of seeing speech cannot compare in number with the normal child's chances of hearing it, because the normal child hears speech going on around him even when his eyes and hands are engaged on something else, whereas the deaf child must interrupt his pursuits to watch his mother's face. His progress thus largely depends on her ingenuity in creating opporities for him to see her speaking, her perseverance, her ability to secure his interest. His early years of ning are thus very much a joint affair.

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[1] See *Lancet*, Sept. 13, p. 407.
[2] Fleming, A., Fish, E. W. *Brit. med. J.* 1947, ii, 242.
[3] Blockley, C. H. *Brit. dent. J.* 1947, 82, 243.
[4] Correll, J. L., Wise, E. C. *Surg. Gynec. Obstet.* 1947, 85, 211.
[5] Seegers, W. H., Doub, L. *Proc. Soc. exp. Biol., N.Y.* 1944, 56, 72.
[6] University of London Press. Pp. 252. 8s. 6d.

o learn to speak is much more of an undertaking n to learn to lip-read; and many deaf people who lip- d easily enough place their friends at a disadvantage speaking barely intelligibly. Their relative failure due in part to the soft monotony of their tone; and ew equipment devised by the Bell Telephone Labora- es in America, and described in a new book,[7] may help anced deaf students to overcome this difficulty. By ins of a cathode-ray translator, luminous patterns peech are thrown on a screen and move across it at te which allows them to be identified. The patterns striking, divergent, and reasonably easily learned. y are *phonetic symbols*: thus the words "one" "won" produce the same pattern, and another tern gives "two," "to," and "too." Speech can ily be read off by anyone who has learned the terns. By speaking back what he has read, the deaf dent should be able to compare his own pronunciation h that of the model, and so correct it. Moreover, instrument gives some indications of pitch, and if e can be developed more fully they should help the f person to modulate his voice according to normal es and inflections. The device is clearly only suitable for anced training at present, and in any case is still in the perimental stage; but it offers promise for the future.

HE EPIDEMIOLOGIST AND CHRONIC DISEASE

LAST spring, at a conference held by the New York demy of Medicine, Dr. J. W. Mountin, of the U.S. blic Health Service, chided epidemiologists for their occupation with acute infectious disease—their "Broad reet Pump fixation"—and appealed for greater tention to the chronic disorders. Prof. A. D. Langmuir, Johns Hopkins, returned to this criticism at the recently ncluded meeting of the American Public Health sociation, and discussed the reasons why progress has en slow. The epidemiologist, he said, is concerned ith all people in defined universes, both the sick and e well, in relation to each other and to their environ- ent. In all types of disease the epidemiologist wishes count cases accurately, both manifest illness and apparent disease; he needs to follow the dynamic ow of these cases through his population; he wishes determine the many selective factors, such as age, x, genetic background, susceptibility, immunity, and vironment, that may influence this dynamic process. acute epidemic disease simple incidence and mortality tes may be a sufficient basis for such investigations nd results may often be quickly obtained. In the ronic diseases, though the essential principles of study main the same, the time-factor conditions and compli- ates every method of inquiry. The determination of cidence-rates may be extremely difficult because the rcumstances of onset are often obscure. Discovery tes and prevalence ratios must often be substituted. erson-years analyses and modified life-table procedures ay need to be employed. Long-term follow-up is ecessary. And the problem of the index case is always resent to plague the investigator.

Professor Langmuir illustrated these difficulties by a onsideration of rheumatic fever, a typical chronic isease, where, despite innumerable inquiries, little in he epidemiology—or ætiology—is well enough established o find general acceptance. The opportunities for study evertheless exist in the epidemics which arise from ime to time in military camps, in food-borne epidemics f septic sore throat, and in institutional outbreaks of treptococcal infection. The rheumatism schemes (much nfluenced by the example of the London County Council and now, if slowly, being developed in America) should also promote much-needed epidemiological investigation. Rheumatism registers, accurately kept and up to date, recording all cases occurring and recurring through the years and related to a defined and measurable population at risk, can, for the first time, provide the material needed for examining the spread of rheumatic fever through a community. Such morbidity statistics are incomparably more effective tools for the epidemiologist than hospital and clinic data derived from an unknown and biased population sample, or the results of static surveys of small sections of a population, or studies confined to rheumatic families.

Not content with this extension of the field of epidemiology, Professor Dublin, of Long Island, pleaded for the *application of epidemiological principles to rheumatism schemes* as well as to rheumatism—to the explanation why, with the need so demonstrable, some communities have comprehensive programmes and many do not.

SEXUAL ABNORMALITY AND THE LAW

THE great bulk of sexual aberrations do not concern the law; but those which do—notably exhibitionism and homosexuality—arouse in many people, doctors and lawyers not excluded, so much conscious and unconscious prejudice that the subject is not approached with proper detachment. In an address originally given to the Medico-Legal Society last year, Dr. Edward Glover[1] argues that abnormal sexual conduct needs suitable psychological observation and treatment, and that no other form of treatment has the slightest chance of doing good. Most of us will agree with him; but we have to recognise that the law is concerned with the well-being of society rather than that of the individual. Dr. Glover admits the difficulties of legislating for the kind of sexual offences which include, for example, assault on unknown persons: unless the offenders can be rapidly cured, society must be protected by their segregation, even though they might be treated more successfully at home or at a clinic. But he urges that every sexual offender without exception should be psychologically examined and given the opportunity of receiving psychological treatment; and that preferably both examination and treatment should be carried out by medical psychologists who are not officially connected with the court. Whenever possible the patient should be allowed to live at home, whether on probation or not, and encouraged to follow his usual work. If in the public interest it is necessary to segregate him, he should be put into an institution where he can have expert psychological aid—e.g., in an inpatient psychiatric centre. Even in favourable cases, suitable for treatment at home, immediate recovery cannot be expected; it is in the nature of compulsions that even under treatment they are liable to be repeated. The courts, Dr. Glover thinks, too readily assume that because an offence is repeated "the case is to be written off as a failure suitable only for condign measures of punishment." Good results are to be hoped from placing the patient in a county foster-home within easy reach of a psychiatric centre; and an ascending scale of supervision could be drawn up, from probationary control up to temporary segregation.

There is much to be said, in Dr. Glover's opinion, for reforming the present system of charging sexual offenders: they could more suitably be charged with offences against public decency, and bound over on set terms for treatment and supervision. Subsequent offences would then constitute contempt of court, the penalties for which would be suspended *until all efforts* at treatment had failed.

Visible Speech. New York: D. Van Nostrand. London agents: Macmillan. 1947. Pp. 441. 25s.

[1] Social and Legal Aspects of Sexual Abnormality. Reprinted as a brochure by the Institute for the Scientific Treatment of Delinquency, 8, Bourdon Street, Davies Street, London, W.1. Pp. 16. 1s.

Annotations

THE NEW FOOD CUTS

A WEEK ago Sir Stafford Cripps, in outlining the measures projected by the Government to save dollars, announced a further reduction in our expenditure on foods imported from dollar countries. The only rationed foods immediately affected by this reduction are sugar and eggs. The weekly sugar ration, which was raised from 8 oz. to 10 oz. a month ago, reverts to 8 oz., and there is to be a saving on imports of Canadian eggs, which will severely restrict the supplies to bakers, though the allocation of shell eggs to the public in the coming year is expected to be 66 per head compared with 58 last year. Meat remains at 1*s.* and bacon at 1 oz. a week. Sir Stafford Cripps promised that every effort would be made to offset the reductions by increased imports from soft-currency countries. But if these attempts fail the effect would be to reduce the average calorie intake per head of the population from its present level of about 2870 a day to 2700.

This is a significant fall, and it was not clear from Sir Stafford's speech how it will come about. Presumably his calculations include among the "other changes brought about for quite other reasons" the likely reduction in potato supplies consequent on the poor harvest. The average of 2700 remains above the requirement level estimated in the recent Ministry of Food white-paper,[1] which was 2550; but the reduction will bring us uncomfortably near to that basic level, and there will be an increasing danger that where distribution is faulty some will not get enough to maintain their health and efficiency. This is particularly likely in the "family pool," where the mother is apt to deny herself for the sake of the wage-earners and children, and cannot compensate for this by getting food at a restaurant or canteen.

COMPATIBILITY OF ANTIBIOTICS AND STYPTICS

THE compatibility or otherwise of the antibiotics and the styptics—two groups of substances often used simultaneously in surgery—is clearly of practical importance. One would have expected to see the subject thoroughly investigated as part of the routine study of the new styptics before their release for general use. Yet, judging from the published work, the investigations seem even now to be incomplete.

Fleming and Fish [2] have studied the effect of locally applied sodium penicillin on the coagulation of blood. They find in oral surgery that sodium penicillin powder interferes both with clot-formation and with the maintenance of the firmness of a previously formed clot. Their results were much the same with commercial sodium penicillin and with the lately developed pure crystalline salt. Blockley,[3] on the other hand, reports that calcium penicillin in combination with sodium alginate, in powder form, locally applied in the same type of case, is a rapid and satisfactory styptic which also exhibits the known action of penicillin. Correll and Wise [4] have investigated the stability of penicillin, streptomycin, and thrombin in the presence of two styptics developed in the United States—gelatin sponge and oxidised cellulose. They find that oxidised cellulose ('Oxycel') rapidly destroys thrombin and penicillin, whereas streptomycin is unaffected by it. Gelatin sponge has no deleterious effect on either penicillin or streptomycin. The penicillin which was used in their experiments was the calcium salt. Their observation on the destruction of thrombin activity by oxycellulose corroborates the earlier findings of Seegers and Doub,[5] and they agree with workers that the destructive effect of oxidised c is due to its acid reaction, which can be corrected sodium bicarbonate. This may explain why other find that oxidised cellulose and penicillin are com

It is not easy to link up even the few investi that have been made on these lines. Some workers used only *sodium penicillin* and others only c penicillin, and different methods of assay have adopted. There is clearly a need for exact studie these compatibilities which will tell the surgeon co sively whether he can use the various substances tog It might further be of interest to find out how the ac of antibiotics and styptics is affected by the v changes in pH level taking place in extravasated b clot, and tissues during healing under various condi met with in practice (e.g., in the presence or abse infection); and to decide the optimum pH fo different substances. More information on the hæm or anticoagulant mechanisms involved would also welcome.

MODERN EDUCATION OF THE DEAF

DEAFNESS and partial deafness are among the de which can be mastered. Children born deaf or beco deaf early in life often make a poor start in learning overcome their disability, either because it is not noti in good time—a child with high-tone deafness is o thought to hear normally by his parents and fri —or because their parents think there is no way of hel them until they reach school age. In these col last week, Mr. A. W. G. Ewing, PH.D., and Mrs. I Ewing, M.SC., outlined the principles of home trai adopted experimentally for such children referred the research unit at Manchester University. The the is developed more fully in their book, *Opportunity the Deaf Child.*[6] This training is an exercise in imagina for the parents. The mother especially must learn think in terms of the child's experience as compa with that of the normal child, and to supplement it deliberately. The Ewings have found that, given suitable opportunities, some children begin learning to lip-read when they are even as young as eighteen months; and some are trying to say words when they are still under two years. To do this they must have plenty of chances to see the mother speaking.

The mother begins with routine requests which call for the child's coöperation; thus at bath-time she always says "Give me the soap," "Bring me the towel," "Stand up," and other appropriate things, until he is doing them quickly in whatever order they are spoken. Then she begins to speak familiar words in new situations: she tells him to "stand up" at times other than bath-time, or gets him to fetch the soap when she is washing up. The next stage is the learning of new words, and this depends on the interest she has roused in the child; he begins to point at objects and to watch for their names on his mother's lips. All deaf children babble at first, and they must be encouraged to use their voices for if they once fall silent it is difficult to get them to start speaking. The mother should always look pleased when the child makes sounds, and especially when he tries to speak words, though she should not attempt, the Ewings think, to teach him to say the words properly —that is a job for a trained teacher of the deaf. The deaf child's chances of seeing speech cannot compare in number with the normal child's chances of hearing it, because the normal child hears speech going on around him even when his eyes and hands are engaged on something else, whereas the deaf child must interrupt his pursuits to watch his mother's face. His progress thus largely depends on her ingenuity in creating oppor-

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1. See *Lancet*, Sept. 13, p. 407.
2. Fleming, A., Fish, E. W. *Brit. med. J.* 1947, ii, 242.
3. Blockley, C. H. *Brit. dent. J.* 1947, 82, 213.
4. Correll, J. L., Wise, E. C. *Surg. Gynec. Obstet.* 1947, 85, 211.
5. Seegers, W. H., Doub, L. *Proc. Soc. exp. Biol., N.Y.* 1944, 56, 72.
6. University of London Press. Pp. 252. 9*s.* 6*d.*

Special Articles

APPLIED PHOTOGRAPHY

TION OF THE PHOTOGRAPHIC DEPARTMENT TO THE TEACHING HOSPITAL

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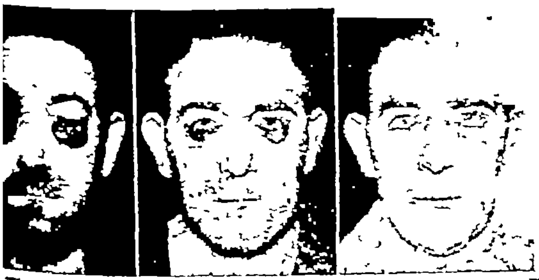
r year the state of medical photography as it
xisted was reviewed (Hansell 1946). Today the
n has materially altered and many new depart-
are arising. In some hospitals the enthusiasm
ant on the establishment of a photographic unit
ring; in others it is declining; in a third group,
unately all too small, it is undergoing an evolu-
y process consequent on a growing understanding
real function of such a unit within the parent
anity. This paper is directed to the first two
, lest their energies be diverted into channels
y easy but ultimately barren.

inauguration of a medical photographic depart-
is probably brought about by a realisation of its
ng potentialities. This being so, the future must
eguarded by ensuring that it is staffed by *experts.*
nstitute of British Photographers has devoted a
n of its Final Examination to medical photography,
t it should soon be possible to recognise the expert
alified medical photographer just as it is now
le to recognise the qualified physician or surgeon.
important, however, to ensure that ultimate
l, even though indirect, should not be exercised
a merely technical level, for the potentialities are
usly wider than this.

s fairly easy to see how false steps may be made.
of the hospital staff will never use the department;
will probably allow their enthusiasm to outweigh
judgment, and their requests will too often fall
he "clinical rarity" or the "remarkable recovery"
; yet another group will use the department for
production of purely personal material either for
cation or for their private memoirs. To the new
rtment every request brings at least the encourage-
of recognition. It is only when unthinking
nds are continually made at the expense of valuable
d and teaching material that frustration and an
matic technical service appear.

e are concerned here with those functions of a
ographic unit within the teaching hospital which
to us to be of chief importance. Omissions cannot



Three of a set of six serial records showing the progress of an arteriovenous aneurysm (cavernous sinus).

but be numerous. To quote from a letter from the United States:

> "At a recent A.M.A. convention . . . the pictures fell into only four of the forty-four medical photographic techniques. . . . If this use can be made of four techniques, there are still plenty of endeavours to encourage along the lines of the other forty."

A fully established medical photographic department has two primary functions: (1) the production of routine record photographs of the highest quality; and (2) the adaptation and application of those records to medical education in its widest sense.

ROUTINE RECORDING

Many processes fall under this heading. First, though not foremost, the rarity. There is a place for this type of record; it is indeed very necessary for the publication of unusual cases, and there will inevitably be places in the curriculum when conditions are mentioned whose rarity involves an absence of clinical material. The indications for this type of record are therefore fairly well defined; they should, however, form only a small proportion of the total.

The mainstay of recorded material will be the normal or usual type of case. Suitable cases should be recorded before, during, and after treatment; for, apart from increasing the available teaching material, the photographs provide a record of progress which can rarely be conveyed with comparable accuracy by the written word. An example of this type is seen in fig. 1.

True serial photographs form a subdivision of this group. These differ from the records just described in that an attempt is made not only to produce strictly comparable pictures but also to introduce a clinically significant time-interval between each. Whereas the former aims primarily at tangible material for future use, the series now under consideration is of use in the direct assessment of progress and may have an influence on treatment. The following two examples will illustrate this point:

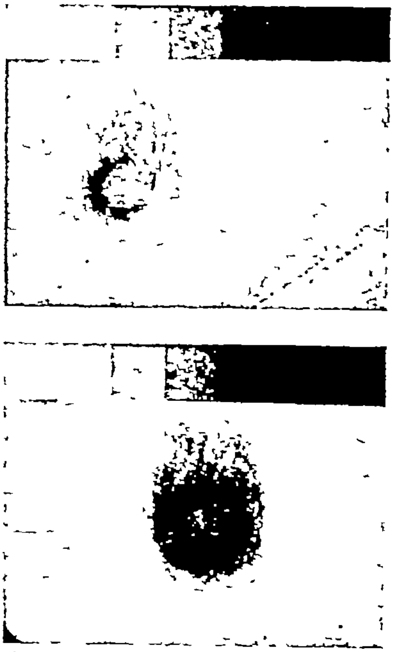


Fig. 2—Œstrogen therapy: pigmentation changes of nipple in six weeks.

(1) *Œstrogen Therapy.*—Œstrogens are now widely used in the non-operative treatment of malignant disease. It has been noted that a side-effect is progressive pigmentation, especially of the areola.

At the Christie Hospital, Manchester, possible correlation of this effect with tumour response is being investigated. Annotations being unreliable, the areola is now photographed at each attendance, a stepped density wedge being included in the picture area.

Prints are filed with the history, and the negative is measured on a densitometer, a note being made of the step of the wedge corresponding to the image of the areola.

ECONOMICS OF PUBLIC HEALTH

A PLEA for priority for public-health services—especially those that maintain and raise physical and mental fitness—was made by Dr. F. Hall, M.O.H. for Lancashire, in his presidential address on Oct. 23 to the Society of Medical Officers of Health. He quoted with approval the remark of the Working Party on Nursing that we must "ascertain the optimal effort that needs to be devoted to preventive and curative services respectively." The passing of the National Health Service Act, he said, is a recognition of the advances made in all branches of medical science, "and in one sense may be regarded as a compliment to the profession"; but its emphasis, he feels, is on medical treatment rather than on public-health measures. However, he foresees that when the expense of treating sickness in hospitals and other institutions is no longer masked by gifts, either of money or service, but appears publicly in the nation's accounts, the administrator will pay more attention to preventive methods, and there will be more likelihood of these being intensively applied both in the medical field and in home and factory.

Today, said Dr. Hall, there are special reasons why we should develop means of improving the health of the people, and their productive capacity. But even when our immediate economic difficulties have been overcome there will still be problems, arising from the effects of two wars and the ageing of the population, which it will be hard to solve unless the public health is raised to a far higher level than now obtains. While not wishing to underestimate the importance of providing for members of the community who become unfit by reason of age or infirmity, he urged that their care and welfare "depend in the long run upon the soundness of the national economy, to which a high standard of public health makes the most valuable contribution." Of the measures proved useful for preventing ill health some can be carried out by central authorities, but the majority demand local investigation and personal contacts.

The appointment of the first medical officer of health a hundred years ago was, in Dr. Hall's view, a business proposition; and he clearly believes that it is through Duncan's successors that medicine could make its greatest contribution to the nation's economic well-being.

THE NOBEL PRIZEMEN

THE Nobel prize for medicine for 1947 is shared between Prof. Bernardo A. Houssay, of Buenos Aires, and Prof. Carl F. Cori and Dr. Gerty T. Cori, of the department of biochemistry, Washington University, St. Louis.

The value of Professor Houssay's work is recognised by all interested in the problems of the endocrine control of metabolism in general and of carbohydrate metabolism in particular. It is now over twenty years since he first demonstrated the importance of the pituitary gland in carbohydrate metabolism, and his observation that removal of the anterior portion of that gland reduces the severity of experimental diabetes mellitus was responsible for a rapid advance in our knowledge of the metabolic defect in diabetes. Before Houssay's experiments it was widely accepted that the fully depancreatised dog could combust no carbohydrate at all, since it was believed that insulin was essential for any oxidation of carbohydrate. Houssay's experiments demonstrated in a straightforward manner that carbohydrate oxidation can take place in the animal body, in the apparently complete absence of insulin. Furthermore, his demonstration that the hypophysectomised-depancreatised dog (the "Houssay" animal) can survive much longer than the dog from which the pancreas alone has been removed, revealed an antagonism between the effects of anterior-pituitary extract and of insulin. Subsequently he and his school, and also other investigators, were able to induce a temporarily diabetic condition in animals treated with anterior-pi extract, and this has again led to fundamental adr

Dr. and Mrs. Cori have worked for many years field which has now merged to some extent with studied from a different angle by Houssay and his Since the early 1920's the Coris have pursued the gl molecule in its peregrinations round the animal into glycogen, into lactic acid, into hexose phosp and into many other intermediary compounds. demonstration of the in-vitro synthesis of glycogen of starch from glucose-1-phosphate by approp enzyme systems was a most useful contribution in field, and more recently they have shown the an nistic influences of anterior-pituitary extract and i in the formation of the glucose-6-phosphate from gl in vitro under the action of the enzyme hexok This demonstration has gone a long way towards viding the explanation in terms of enzyme syste the observations of Houssay and others on the an nistic action of anterior-pituitary extracts and of i and has opened a new approach to the action of horm on enzyme systems in general.

WORLD CONGRESS ON MENTAL HEALTH

THERE have already been two world congresses mental health: one at Washington in 1930, and other in Paris in 1937. The third congress, to be hel London next year from Aug. 11 to 21, has been des on ambitious lines, and will, it is hoped, attract 3000 people from over fifty countries. The diffic of reaching this country may be eased by the support promised by UNESCO and the World H Organisation.

The congress will embody international confe on child psychiatry and medical psychotherapy (Aug 15) and on mental hygiene (Aug. 16–21). The th will be, in the first conference, foundations of m health in childhood; in the second, guilt; and the third, mental health and world citizenship. congress committee, headed by Dr. J. R. Rees, is exe itself to ensure that the communications on this topic shall represent all shades of opinion in each coun Sociologists, psychologists, educationists, and oth are being invited to participate; and already discu groups, or preparatory commissions, have been set in this country and in North America to synth different individual views. The work of these c missions is coordinated from *London by* means monthly digest of activity in all countries. The orga hope is that international comparisons will lead t clearer understanding of the social relationships bearing the well-being of the individual and of society. Info tion may be had from the congress office at 39, Q Anne Street, London, W.1.

NEGOTIATIONS WITH THE MINISTER

ANSWERING a question in Parliament last week Minister of Health explained that he has not yet the Negotiating Committee but intends to do so soo Arrangements for the National Health Service hav been discussed with officers of the Ministry; but the committee will now present a statement to the Minist himself. A meeting with Mr. Bevan has been arranged for the week after next, and it is expected that t committee's statement and the Minister's reply will be published shortly afterwards.

THE death is announced on Oct. 24 of Lieutenant-General Sir HAROLD FAWCUS, director-general of Army Medical Services from 1929 to 1934, and director-general of the British Red Cross Society from 1934 to 1938. He was 71 years of age.

THE next session of the General Medical Council will be held on Tuesday, Nov. 25, at 2 P.M., when Sir Herbert Eason, the president, will take the chair.

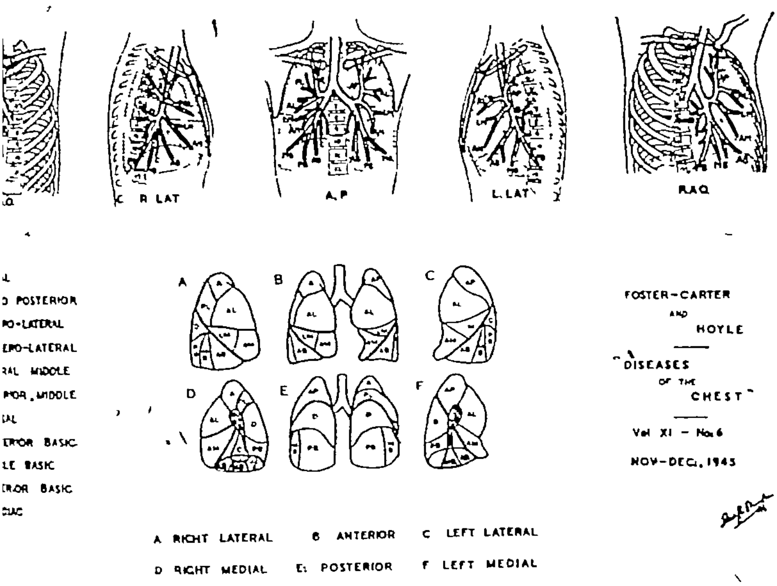


Fig. 5—The segments of the lungs. Mass-produced reflex print for notebook illustration.

licine. - It is still rare to find good use made of
m medical schools (fig. 3). Only in large institu-
ich as the Wellcome Foundation, does the matter
o have been given much thought; possibly the
nt magnitude of the task has been frightening.
exhibitions and displays are widely known; yet,
gh the same principles apply, the teaching com-
es have lagged. A tradesman exhibiting his
calculates that a potential customer will pass his
in a moment, and his display is planned accordingly;
f only one of his large slogans is remembered he
l satisfied. Similarly the essential elements of
medical display are clarity and simplicity. The
is to stimulate the appetite, not to satisfy it.

ary Card.—Closely comparable and often using
me tricks of showmanship, these are displays in
ture. An extensive set of photographs can be
ted on large cards to supplement the necessarily
d illustrations of the textbooks (fig. 4). These may
rn themselves with single cases but can well be
osite, using photograph, radiogram, micrograph,
am, and so on. They are placed in the library
e student to study alongside his textbooks.

ebook Illustrations.—A good department should be
to produce batches of illustrations for issue to
nts. Prints or reflex copies can be produced
y and cheaply from existing material. Where very
line copies are required the Gestetner "Gestefilm
Process" has been used with success. Photo-
ic reproduction is especially useful for the illustra-
which is too elaborate for rapid individual copying,
is likely to show its greatest value in advanced
raduate teaching (fig. 5).

ntern Slide.—The $3^1/_4$ in. square transparency is so
iar that it need hardly be mentioned. It has
its disadvantages compared with the miniature
square slide. Apart from the rapidity and economy
which the latter can be made, their small size and
ht and their greater relative strength cannot be
red. The large slide cannot yet be abandoned for
lay, since its image is large enough to be examined
an illuminated panel, but mechanised projectors
promised for the small slide; and, when these are
ily available, the large type may well disappear.

Filmstrip.—The Royal Society of Medicine recently discussed the use of filmstrip in medical teaching. Other articles (Hansell 1947) have appeared in the journals, and it is unnecessary here to do more than attempt to rectify certain misconceptions. Conservative criticisms are often levelled at filmstrip, which, quite unreasonably, are not raised in connexion with motion-picture film. A good filmstrip is scripted and produced along lines strictly comparable with those of a film, yet the critics object to the rigidity of filmstrip, forgetting that far less effort is involved in alterations of sequence in a strip than in recutting a film. The close technical connexion between filmstrip and the miniature slide is overlooked; and, unless they are considered together, artificial limitations will be ascribed to one or the other. With a growing understanding of these media, 35 mm. technique promises to play as important a part in our medical teaching as it already does in the United States.

Motion Picture.—Reference has been made to the film as a recording medium. When a recorded case is dismissed, not only have the films intrinsic value for teaching but selected frames can be enlarged and either filed with the history or used to illustrate published work. Fig. 6 shows the extremes of movement in a case of slipped femoral epiphysis. Under such conditions photographic quality of the prints is not good, but they are of value when the film itself cannot be projected (Ollerenshaw 1938). As clinical material accumulates, addition of suitable continuity sequences, caption, and diagram makes possible the building up of complete teaching films (Ollerenshaw 1939, 1947).

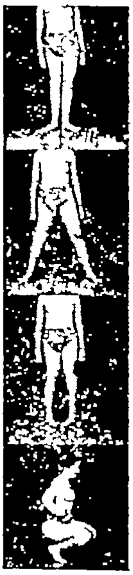


Fig. 6—Frames from a 16 mm. motion picture case-record: extremes of postoperative movement in slipped epiphysis.

THE MEDICAL ARTIST

Although not photographic, the work of the draughtsman is germane to the discussion. The medical artist is a most important member of the team. Many teachers favour this method of illustration, for unwanted detail may be eliminated with comparative ease, and a drawing may embody facets of several cases. If the artist works alone he may have to work from rapid and inadequate sketches, with much consequent revision, and it can be to his advantage to collaborate with the photographer in the production of a series of small key-prints from which he can work at leisure. The draughtsman has a very definite place in the production of teaching-aids; in the layout of displays, in the production of continuity frames for filmstrip, and in the supervision of animation sequences for motion pictures his essential value to the department will not be overlooked by his colleagues.

SUMMARY AND CONCLUSION

Photography is playing an increasingly important rôle in the medical sciences. So far, few teaching hospitals

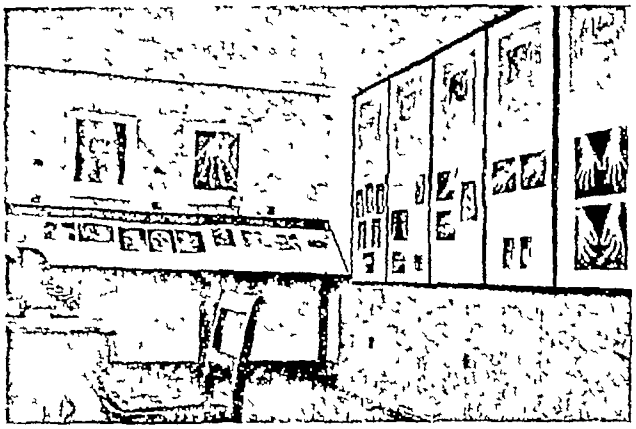


Fig. 3—Static display.

Fig. 2 shows two such records at an interval of six weeks: the change in pigmentation is not only obvious but is also measurable with reasonable accuracy.

(2) *Radium Workers' Survey.*—Accurate assessment of early changes due to radiation is of importance to workers who pack and handle radium and radioactive substances.

Recently a half-yearly survey of such workers was started at Westminster Hospital, for human fallibility has made it almost impossible to describe in words any but fairly obvious changes. The process is essentially slow, and time tends to erase the visual memory.

Scale records of the dorsal and palmar aspects of the fingers are made, attention being paid to the rendering of fine detail. A series of six-monthly records enables the clinician to detect minor atrophic changes.

Written notes are also kept, and it is interesting to note that a few cases were thought to have progressed, when in fact inspection of previous photographs showed that they had not. Workers were not therefore involved in a change of employment through the unreliability of memory and clinical notes.

Other uses for routine recording will doubtless suggest themselves to the reader.

Motion pictures are of the greatest value in assessing the progress of cases in which movement is involved; their appeal is thus mainly to the orthopædic surgeon and the neurologist. Periodic records are spliced together for routine checking while the patient is under treatment, and the resultant condensation of time conveys an impression of progress which cannot be approached either by the most perfect clinical notes or even by still photographs.

FILING

Attention has been drawn elsewhere to the important subject of filing systems; passing reference has been made to the subsequent use of records in teaching, and it follows that filing forms a link between pure recording and education. The strength of this link will be reflected in the second function of the medical graphic department—the production of teaching

In view of previous publications (Hansell 1946, photo" 1947) it is not intended to discuss the pr great length. Files or registers will be needed for reference, but such systems should not become so in that a change of directorship will involve breakdown. punch-card system was adopted by the Services of its speed and flexibility, but it is expensive to and, if it is used, the coöperation of the teaching should be sought so that initial planning should adequate for the future. It has the added adv that it can embrace all material in satellite s which are themselves constantly undergoing (Donnison 1947).

PHOTOGRAPHY IN MEDICAL EDUCATION

A department capable of recording, and of cl its records, having been evolved, the question of in medical education arises. In the following the files of records are considered as raw materi indications are given for the use of this material the minimum of additional labour. Successive involve an increase in technical processes and there in expenditure of time and materials.

Display in teaching has been widely discussed educational literature, but without much direct refer

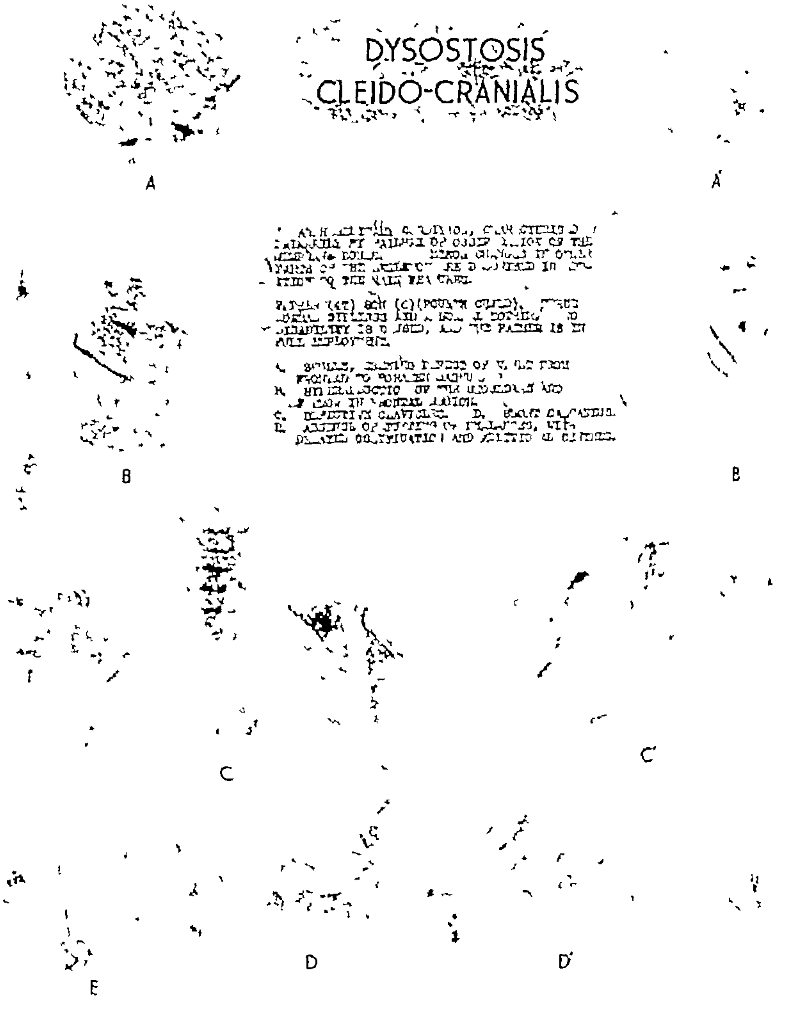


Fig. 4—A typical library card.

The new club for those in training.

QUARTERS

hile taking the course members live in a clubhouse the estate. Victorian stables have been converted quarters which have the atmosphere of a college er than a training centre. Financed by British indus- and by generous donations from various American ls—including the Rockefeller, the Vesey, and the mmonwealth Funds—and some American business s, this building is a harmonious background for free ussion in the evenings and at odd moments. Since y of the furnishings come from America it has ped the air of austerity investing most British erprises nowadays.

he aim of the courses at Roffey Park is to bring to life material collected laboriously into Government and er reports—*notably those of the Industrial Health* earch Board—and too often forgotten before a year ut. This is a first attempt to disseminate the findings uch bodies among those who can use them practically, in fact to study and teach all of mental health in ustry. It deserves success.

INTERVERTEBRAL DISC SURGERY

Principles and Results

s a Hunterian lecture at the Royal College of Surgeons Oct. 17, Mr. MURRAY FALCONER said that the results operations on the intervertebral discs in the past e been inexplicably variable. Large prolapses may removed with an indifferent result, while great relief often followed a disappointing exploration. Surveys large series have always shown satisfactory results less than 75–80 % and often in as few as 50 % of cases. mpetent surgeons have recorded negative explorations as many as a fifth to a third of their cases, and in ny patients symptoms have persisted whatever the erative findings.

Mr. Falconer has analysed the first 100 consecutive erations performed at the neurosurgical unit established Otago in 1943. In every one of 77 patients with severe atica one or more prolapses were found, and all timately benefited, though 9 had to be operated on ain. In 23 with low back pain alone only 1 explora- n was negative, and all but 2 were relieved by operation. ctors governing the success or failure of disc operations d under the control of the surgeon include selection of ses, exposure, recognition and removal of the lesion, d management of convalescence. In selecting cases must be remembered that acute symptoms mostly ear up spontaneously—only 1 in 9 of these came to eration—and intervention is indicated only if four eeks' complete rest in bed leaves the patient unrelieved d unfit for light work, and if the radiogram excludes berculosis and neoplasm of the spine. Cases should ot be excluded because psychoneurotic features develop n a physical basis; many of these have done surprisingly ell. In patients with low back pain alone selection ust be much more cautious; only when, besides a rigid spine and intractable symptoms, there is a positive myelogram should exploration be performed.

Regarding surgical exposure, Mr. Falconer holds that the old interlaminar approach gave an inadequate peephole view which was often the cause of failure to detect the lesion. A full laminectomy, with removal of the 5th lumbar arch and the lower part of the 4th, was done in most of his cases and gave the best results, leaving no disability or incapacity for hard work. Recognition of the lesion demands acquaintance with the four main types of pathology. There is the simple protrusion, covered with a thinned annulus, and the extrusion through the annulus, often pedunculated. Then there is the important intermittent prolapse, equivalent to Dandy's "concealed disc," which looks normal, though it is soft to the probe and may not even bulge until the spine is hyperextended on the table; it is important to recognise and remove these, for they formed 20 % of the whole series. Finally there are the 5 % of scarred discs, greatly narrowed over the years and associated with osteophytic outgrowths on the adjacent vertebral borders. It is necessary to explore both the 4th and 5th spaces in all cases, and 27 patients had a double lesion. Thorough curettage is essential, for any loose material left in the interior of the disc may be extruded later through the operative gap in the annulus under the stress of weight-bearing. So curettage should be done from both sides of the theca whenever the prolapse extends towards or beyond the midline. Removal became more radical with experience in the Otago series, and it should include the cartilage plates so as to leave bare bone approximated. Cadaver experiments have shown that much more material can be removed by a bilateral approach, though this still leaves a blind angle directly in front of the theca. There is a real, though very small, risk of the curette emerging anteriorly and endangering the great vessels.

Spinal fusion is unnecessary, in Mr. Falconer's opinion. At first, in his operations for low back pain, his orthopædic colleagues fused alternate cases as a control; but this was soon abandoned because the grafts often broke or demonstrably failed to fuse to the sacrum, owing to the great stresses at this level, and the unfused cases had a smoother convalescence. It is important to begin exercises for the wasted erector-spinæ muscles at the eighth to tenth day; light work is resumed in two to four months and heavy work in four to six months.

From the aspect of differential diagnosis, the hypertrophied ligamentum flavum is merely the thickening of a relaxed ligament associated with a disc prolapse; it has never been seen without prolapse. Arachnoiditis and radiculitis are always secondary to the root compression. Cauda-equina tumours can be differentiated by myelography, and spinal tumours are usually sufficiently obvious; but a real, though rare, hazard is the small tuberculous focus encysted partly in the disc and partly in the adjacent vertebral body. In one such case death from miliary tuberculosis ensued after curettage.

Re-operation is called for whenever disabling symptoms persist or recur, and was done on 14 occasions. Such persistence or recurrence must indicate residual loose fragments whether they were missed at the first operation or have developed since, or have appeared at another level. A 100 % follow-up has shown results very similar to those generally reported with another mechanical, non-lethal, incapacitating skeletal disorder—internal derangement of the knee-joint. Good (60–75 %), fair (15–25 %), and poor (5–10 %) results were much the same in both. In both groups re-education of muscle is important and there may be late osteo-arthritis of the joint, though in the spine there is the added risk of pathological changes in another disc.

The essential points in disc surgery, Mr. Falconer summarised, are these. Adequate exposure usually calls for a laminectomy. The pathological appearances must be familiar, especially those of the intermittent prolapse. All readily detachable material must be removed, if need be from both sides. The erectores spinæ must be re-educated. Finally, there must be no hesitation to re-operate if disabling symptoms persist or recur.

are making the best use of their photographic units. Means of improvement are suggested. The subject as a whole has been divided into the following three main headings: (1) routine recording with (2) filing as the logical connecting link between records thus obtained and (3) the adaptation of records to education in medicine.

References to other work are given where it has been felt that insufficient information could be imparted in limited space, but there has been no attempt at a comprehensive bibliography. It is only through a complete understanding of the points mentioned, and to some extent of the processes involved, that imaginative use can be made of the photographic department. The hospital staff must coöperate freely, and in return they may expect high quality records and teaching material.

We wish to acknowledge with gratitude the assistance of Miss F. E. McAdoo, of Westminster Hospital; Mr. J. Kilshaw, of Manchester Royal Infirmary; and Mr. F. Wardlaw, of the Christie Hospital, Manchester.

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BRITAIN'S CALORIE REQUIREMENTS

NUTRITION SOCIETY CONFERENCE

A CONFERENCE on British needs and resources in calories, proteins, and calcium was held in London on Oct. 25, with Mr. WALTER ELLIOT, F.R.C.P., F.R.S., in the chair.

In a paper on food requirements Mr. E. R. BRANSBY, PH.D., Dr. H. E. MAGEE, and their co-workers took as a basis standards suggested by the Technical Commission of the League of Nations in 1926 and 1938. The commission's reports, while suggesting a desirable level of protein intake, did not define the proportion which should be first-class; but the Mixed Committee of the League recommended that 50% should be of animal origin. Dr. Bransby held that the recommendations which had been made on the amount of animal protein to be included in the diet had not been supported by experimental evidence; his estimates of requirements were based on prevailing dietary habits. He and his associates have worked out how these requirements may be met from a diet composed of milk, meat, fish, bacon, offal, eggs, cheese, potatoes, vegetables, fruit, pulses, sugar, preserves, sweets, cereals, and fats. To bring the nutritional level of the British people up to that considered desirable in the light of the League's recommendations the following percentage increases on pre-war consumption would be needed:

	Increase %
Dairy products or milk solids	48
Sugar	14
Meat, fish, eggs	5
Potatoes	56
Vegetables	27
Fruit (as fresh fruit equivalent)	1
Grain	6
Fats	Nil

Prof. JOHN BEATTIE had found in Germany that men fed on a diet of 1750 calories lost weight for about four months, at the end of which they reached nitrogenous equilibrium, in which it seemed they would remain indefinitely. They could in fact be maintained in equilibrium on a daily intake of 35 calories and 0·5 g. of protein per kg. body-weight. Placed on forestry work they lost weight even though given an extra 500 calories a day; this was because most of the extra calories were used not for work but for raising the basal metabolic rate. Professor Beattie felt that if the population of Britain were reduced to a low nutritional level, a great deal of extra food would be needed when the attempt was made to bring it back to a proper working level because of the amount required for raising the metabolic rate.

Mr. E. C. OWEN, PH.D., suggested that Dr. Bransby had been liberal in recommending 1 g. of calcium per day. He himself had observed that in elderly men calcium balance could be maintained on an intake of per day, and in very old men on 0·29 g. per individual requirements varied widely. He that care should be exercised in estimating of animal protein in the light of recent had shown that glycine was present in but absent from many vegetable proteins.

TRAINING COURSES AT ROFFEY

THE work of Roffey Park Rehabilitation already been reviewed in our columns.[1] under the direction of Dr. T. M. Ling, provides and reablement, in very good surroundings, for who break down, or prove unequal to their result of industrial fatigue, depression, nervous or other occupational and psychological Patients usually stay some six or seven attractive country house, set in beautiful wooded during that time they are studied physically and logically, are helped to find congenial occupat various workshops, are built up physically by a class diet and by physical training in the and enjoy rest and recreation as well as pleasant life. The centre is largely supported by industry, maintains direct contact with 180 leading firms as with the health services. It has now been runn nearly three years, and results of a follow-up show some 82% of those who come for reablement settled back into work without further difficulty.

A NEW SCHEME

A training and research department has now established at the centre, the aim being to material provided by the patients who pass and to spread a better understanding of them, the science of human relations, among doctors, managers, personnel managers and other officials, trade-union officials, and social w hospitals. Roffey Park can accommodate patients at a time; so more than 1000 pass th yearly, all of whom are suffering from ind ill health, often the result of psychological ment. They thus offer wide opportunities for st

Training courses last a fortnight, and the falls under two heads: (1) maintenance of fitne work; and (2) special problems of reablement resettlement. The members—who are drawn from the classes mentioned above—attend lectures and cussions, see films and filmstrips, study case-his and have appropriate cases demonstrated to Plenty of time is allowed for free discussion among members, for they have much to teach each other often much to learn. Members with special expe are asked to give talks on their own subjects.

In the current course, for example, a member tal "Training Within Industry" (T.W.I.) which many firms are now introducing. The first step, he explai the training of trainers; and he discussed in outline the of course which supervisors—whether they are or charge-hands—need to take. They must, he familiar with the work and with responsibility, and be skilled in instructing, in improving methods, and in Each supervisor must prepare the worker for the new demonstrate the operation, watch him try the and follow his progress. To improve training methods, must know how to "break down" the job, so that consider it at every stage. These common-sense prin however, are not always easy to apply in the rush of day's work; and in the keen discussion which followed talk it became clear that supervisors sometimes slip and also that some managements pay lip-service to without giving it real support. Yet a good adjustment new job depends greatly on good preparation for it; bad start may be the making of a "misfit."

The team conducting the course consists of Dr. R. Tredgold, psychiatrist; Mr. Jerome F. Scott, an Ame industrial sociologist who trained at Harvard under Elton Mayo; and Miss J. Kirby, the social worker to the centre.

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[1] *Lancet*, 1945, ii, 607.

Letters to the Editor

ICILLIN AND INFECTIONS OF THE FINGER

R,—I was interested that Dr. Webster (Oct. 25) treated paronychias by infiltrating the nail-fold with cillin solution but had found the treatment an mfortable one for the patient. Nevertheless an riment of this kind would be well worth while if, e not being too painful, it could obviate the necessity removal of part or all of the nail, as is so often mmended. The pulp of the finger has lost much of sefulness to a manual worker if the strong support counter-pressure afforded by the nail is removed.

here in these chronic paronychias pus is discharging the sulcus between fold and nail, an effective treat- is to instil gently a few drops of penicillin solution this sulcus. A hypodermic needle from which the has been filed is a useful means of doing this. sulcus is surprisingly deep in these cases, and if a patience is exercised it is possible to slide the needle down and perform the instillation with no discomfort. But the nail-fold itself is not infiltrated. or two treatments are often quite sufficient to cure, ially if an adhesive waterproof dressing is applied ediately after the treatment.

lo not think that the hospital treatment of late cases systemic penicillin reflects the great advance that treatment has bestowed upon the early case. My strial experience is that more cases resolve than before without suppuration; but the chief benefit at further spread of infection is discouraged. The hylococcus would seem to produce necrosis very kly, so that an "early" septic finger may already a slough in the tissues by the time that treatment arted. In fact the clinical appearance of an early n is possibly as much due to reaction to slough as to ion to infection. But in industry one can catch so early that this necrosis should be minimal.

ford. G. WHITWELL.

BUSE OF THE EMERGENCY BED SERVICE

R,—Nobody cavils at Dr. Herbert (Oct. 11) ing a suspected case of appendicitis to hospital. surely it is helpful both to the patient and to the eon, who has to make the final decision, to transmit ossible information about the case. It would have n but a few minutes to note the time of onset and ite of the pain, and the temperature, together with abdominal and rectal findings. Since the patient not arrive at hospital until "several hours later," value of such a record would have been so much greater.

remember a patient I admitted once for an outside or. He arrived one Sunday afternoon while I was ged on an accident case and was sent straight up he ward. Half an hour later he was dead from emia. The doctor's laconic note said: "Septic d for two days—requires hospital treatment." For pleasantry I had to answer in the coroner's court.

Dr. Herbert wonder, therefore, that Dr. Kagan ld have reached the conclusions he gave in his letter Oct. 4?

t the same time I should like to remark on the y feud that appears to exist between some general titioners and casualty officers. Even one of your patetic correspondents vented his spleen along these s recently. Casualty officers are not appointed for sole purpose of vexing their seniors in general ctice. Even with the help of nurses and almoners are as busy as, if not busier than, the average eral practitioner. Westminster Hospital is one of smaller London teaching hospitals; but I recall t, when I was R.M.O. there, two other casualty officers myself saw between 3000 and 7000 patients a month, ording to the season of year. Those are figures for ual attendances—not possible attendances from a el list. Of these, a higher proportion needed admission n in general practice. Casualty officers often have ater difficulty than G.P.'s in finding a bed for a patient, many a time have my colleagues and I been pro- ndly thankful for the services of those courteous ies of the E.B.S.

We "omniscient juniors" are fully aware of our shortcomings and realise that we can learn only by experience and the example of others. But what can we learn from a case of "appendicular colic" sent "for observation and, if necessary, surgery" with an illegible note describing it as "acute appendicitis" but without reference to a single relevant clinical finding? We might do much worse than "wag a finger"—we might imitate.

London, S.W.17. CHARLES M. FLOOD.

ORIGIN OF CEREBRAL SURGERY

SIR,—As a student at King's College Hospital in the earlier '80s I was present when Sir Joseph Lister, as he then was, operated on a case of cerebral tumour. I can see now Ferrier (for whom I "clerked") proceeding to indicate the position of the tumour in the left parietal region, and the restraining hand of Lister preventing actual contact with the patient.

As to the precise date I cannot certify, but doubtless the surgical registrar at King's College Hospital could establish the priority or otherwise of Rickman Godlee's operation. We understood at the time that it was the first operation of the kind.

Farnborough. M. P. HOLT.

SECOND ATTACKS OF POLIOMYELITIS

SIR,—The interesting letter from Colonel F. M. Lipscomb and the annotation in your issue of Oct. 11 prompt me to record briefly a further case, which is at present under my care.

The patient, a boy aged 9, was admitted to the Kingston County Hospital on Sept. 23 with a history of headache, vomiting, neck stiffness, photophobia, and general malaise for the past two days. The boy had had a definite attack of poliomyelitis in September, 1946, with involvement of muscles in the left arm and right leg, and residual weakness in the left deltoid and right anterior tibial muscles. On admission: temperature 100·2°F, pulse-rate 112 per min., respiratory rate 23 per min. The cerebrospinal fluid showed normal pressure and contained 69 cells per c.mm., all lymphocytes, and 30 mg. protein per 100 ml.; the Wassermann reaction was negative. Three days later the boy developed marked weakness of the muscles of the right forearm and hand—muscles which were not affected at any time in the previous attack of poliomyelitis. The pyrexia persisted for about seven days, but the temperature has since been normal.

This is a case in which a second attack of poliomyelitis has come on just over one year after the first attack.

Kingston County Hospital,
Kingston-on-Thames. A. A. CUNNINGHAM.

COAGULATION FACTORS

SIR,—My associates and I consider your leading article on Sept. 13 to be misleading and inaccurate.

Rhoads and Panzer,[1] not Quick, were the first to show that the prothrombin-time steadily increased as plasma storage was prolonged. This was cautiously interpreted to mean a decrease in prothrombin concentration. Quick[2] confirmed the erroneous interpretation. Those who used the more reliable two-stage method for measuring prothrombin activity found prothrombin to be relatively stable in blood-bank blood.[3] Quick abandoned his view which held that prothrombin disappears in blood-bank blood. He postulated that there are two prothrombins and that one of these disappears in storage plasma.[4]

Meanwhile isolation work on prothrombin described by Seegers, Loomis, and Vandenbelt[5] showed that Quick's theory could not be correct because their work showed no evidence for a second prothrombin. They stated: "It, therefore, seems to us that his experiments will eventually be reinterpreted." In his many subsequent communications Quick failed to cite the work of

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1. Rhoads, J. E., Panzer, L. M. *J. Amer. med. Ass.* 1939, 112, 390.
2. Quick, A. J. *Ibid*, 1940, 114, 1342.
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4. Quick, A. J. *Ibid*, 1943, 140, 212.
5. Seegers, W. H., Loomis, E. C., Vandenbelt, J. M. *Arch. Biochem.* 1945, 6, 85.

In England Now

A Running Commentary by Peripatetic Correspondents

MUCH has been written about the hazards of an assistant's life in general practice, but worst of all are the appalling vehicles with which one is expected to perform one's duties. At the end of one of my earliest locums for an irascible Irishman he inquired how I was getting on with his "so-and-so patients." "All right," I replied, "but not so well with your so-and-so car." (It was 17 years old and had been driven hard.) "Faith, an' it *is* a so-and-so car," he muttered complacently setting off for the pub in his new Lagonda. Once I had to greet him on his return from a holiday with the news that owing to my tardy diagnosis one of his pet private patients was very ill with diphtheria. He patted me consolingly on the back, saying "Never mind, my dear, we all make mistakes. Now when I was a young doctor I remember. . . ." His voice trailed away and then suddenly hardened as he caught sight of a minute dent on the mudguard of his 80,000-mile Standard. In an altered tone, he said "Really, Doctor, I think you might have been more careful with my car."

The new graduate about to take an assistantship "with car provided" should not be put off with the statement, "It has just had a new engine." There are plenty of things besides the engine which can go wrong, as you'll find out. Beware of the employer who tells you, "There's nothing radically wrong with this car." There must be, or he wouldn't need to mention it. Always put the leading question, "How does it start in the mornings." If the answer is "Oh, very well, if you leave it on a hill," look out for another job or buy your own car.

I will end with a story which contains a warning for all mothers about to undertake general practice. The boss was talking about the difficulties of getting an adequate diet for the nursing mother. "I take off my hat," he remarked, "to any woman who can breast-feed a baby on present-day rations." I reminded him that I had breast-fed three in the last four years and awaited a murmur of admiration. It came, but in an unexpected form. "Why, you must be as strong as a horse, doctor." And after a pause, "You won't mind starting the car with the handle in the morning; it would be expensive to get the self-starter repaired."

* * *

The day after I was demobbed I went through my old trunk to get rid of the accumulated junk, and a charming letter from Leading-seaman B reminded me of that day in June, 1944.

It was about 10 days after D-day, off the Normandy coast, and the ship was rolling and pitching when I was called to the sick-bay to see B who presented typical early symptoms of acute appendicitis. I put him to bed and then asked the Old Man how soon we could get him ashore—but not a hope. We were Senior Officer of a group of frigates (how annoyed I used to get when people asked me how many sails a frigate had!), and we had to remain on patrol. I then read up appendicitis and examined the patient again and became even more worried as I decided it was retrocæcal.

I surveyed my equipment—or lack of it—and made plans. No steriliser, no sterile gowns, &c.; so I sent for the Chief P.O. cook and we wrapped some gowns and sheets in canvas and put them in his oven, and I commandeered his steamer for instruments, gloves, and swabs. Returning to the sick-bay I was just in time to save the patient from being castrated by a shaky S.B.A. who was trying to "prep" him with a fiendish-looking knife. How easy it would all have been in hospital, I thought. Just a few words on the phone and all this is done—ready for the surgeon's arrival. It would do some surgeons good to do the preparations for their own operations once in a while.

After some argument, I persuaded the First Lieutenant to be anæsthetist and a couple of subbies to be "dirty nurses"; the S.B.A. would assist. The Old Man slowed to 9 knots, and put her bows into it, and I, having read up appendicitis for the tenth time, started the anæsthetic at 2300 with the patient strapped to the table. The patient "under" I scrubbed up, picked up the scalpel, and made the incision—right paramedian—much annoyance of the patient, who was quite Number one had decided that I had given too ether and thought that one drop a minute was having persuaded him to be more liberal, I started

Things proceeded nicely until one of the fainted, and later when I was reaching for a Wells the other subby put his dirty fist into the and gracefully presented me with one. I only had so I had to use it.

The appendix *was* retrocæcal and the very to get out, but wasn't I pleased when I saw horribly pathological thing it was? I popped it spirit afterwards and kept it.

I was just finishing the purse-string when a came from the Old Man with a warning that we altering course and speed; a moment later " Stations" rang. Away dashed my anæsthetist dirty nurses, leaving the S.B.A., the patient, and As we swayed and reeled, I managed to stitch up the ship did a depth-charge attack. Eventually finished, and for good measure I fixed up a saline drip with the bottle tied to the deck-head my braces. Three days later we landed our Falmouth and a fortnight after that he went on leave.

I never told anybody that it was my first app cectomy. After qualifying I'd done H.P. only for months. But I thanked my lucky stars for that stud H.S. I did before qualifying. I had at any rate often enough.

* * *

No doubt, Mr. Editor, you imagine that, as soon your journal arrives, we readers turn avidly to leading articles and gratefully imbibe your latest on the political crisis or on some new and discovery. You may find it hard to credit that is so misguided as to begin with the correspondence. As a man of method, this is, I my custom. But, unlike the weaker brethren, I add that I do not stop there. My second port of is Letters to the Editor—sometimes made less by my inability to remember what was said last Thence I turn back to the annotations and so to leaders, which (now that I am old) I read with in Duly strengthened, I go back yet further to the Orig Articles, finishing, contrarily, with the first, and no days skipping the gynæcological and surgical o unless a new operation on the prostate is describ Finally—you will never forgive this, Sir—I proceed tear out the articles which concern me. (I am af it is too much to hope for, but I do wish you would put two articles on different medical or patholog subjects on successive pages; it makes the filing difficult.) If an article is lucky it goes at once into appropriate folder, or into a lecture folder for car re-reading when next I am to talk on its subject; oth wise it goes into a drawer to wait until I have the time distribute the pages in my filing cabinet. (My draw is very full.) The rest goes into the wastepaper basket and if I am not too busy, or on holiday, the whole *La* is thus disposed of by Monday night.

I just thought you might like to know.

* * *

He said he had bronchitis; but when he had take off his turban and voluminous garabeya all I found wa that he had my mosquito-net and sheets as a fine set of underclothing. What is the medical etiquette in such a situation? I felt I must observe the secrecy that is the right of every patient. After all, he only revealed my property en passant, on his way down to his chest. I wistfully snipped my name from his vest and sent him back to duty—for he had nothing (else) the matter with him. Why should I give him both a holiday and the finest linen combinations in the Sudan?

* * *

The discovery of a new clinical phenomenon is a sufficiently rare event to be worth recording.

In the history of a patient newly admitted to hospital I read that he had noticed that his urine had turned green. I observed to my house-physician that he had no doubt been taking backache pills containing methylene-blue, but was informed that the patient had hæmaturia and was colour-blind.

MEDICAL JOURNALS FOR GERMANY

ir,—We frequently receive appeals from German tors for copies of The Lancet and other medical rnals. They know that in many fields advances re been made since 1939, but since then foreign medical iodicals have been practically unobtainable.

May I appeal to your readers to send any issues of e Lancet (or other journals) which they do not require doctors in Germany? We shall be glad to receive them this office, or would send the name and address of octor or hospital on hearing from interested readers.

rman Educational Reconstruction,
15, James Street, Long Acre,
London, W.C.2.

Erich Hirsch
Secretary.

A DESCRIPTIVE ATLAS OF RADIOGRAPHS

ir.—Your review of May 17, in quoting my remark at "vociferous radiologists who wish to keep radiology a closed art, a mystic rite," omits to mention that I cribed them as a "fortunately dwindling number." he radiographs in my descriptive atlas are as poor as e reviewer suggests, it is indeed brave of him to doubt accuracy of the diagnosis, which in most instances s made by the clinician in charge of the case. I mit that many of the figures, especially in the bone tion, are old. During the last twenty years treatment has advanced so much that what were once common eases are now almost museum pieces—e.g., rickets, philis, osteomalacia, osteomyelitis, varicose-ulcer nges in bone, and Ewing's tumour.

axwelltown, Dumfries.

A. P. Bertwistle.

Parliament

FROM THE PRESS GALLERY

Debate on the Address

n the House of Commons on Oct 21, in moving that humble Address be presented to the King thanking n for the Gracious Speech from the Throne at the ening of the new session, Mr. W. R. Blyton welcomed e proposals made in it for ending the poor-law. That t, which originated in the reign of Queen Elizabeth, d been revised and amended many times, but the sic principle had always been that poverty was a crime. ople had shunned receiving assistance under the or-law and he was pleased to be able to play some part burying the Act. Miss M. Herbison, who seconded e Address, welcomed the Government's continued pport of the United Nations Organisation, and of the n of the Food and Agriculture Organisation to give adequate diet to every person in the world no matter at might be his race, creed, or colour. We must e to it, she added, that Sir John Boyd Orr's fears at this organisation would merely be a collector of tistics and data were not realised.

Mr. C. Attlee, the Prime Minister, said the Govern- ent's legislative programme for the coming session mpleted a system of social security by the abolition the remnants of the poor-law. Another important easure which the Minister of Health would introduce alt with the reform of the block-grant system. This uld be of great assistance to necessitous local thorities.

Sir H. Morris-Jones questioned whether we could aintain a population of 47 million people in this country the standard of life which we used to have in the old ys, and in particular he doubted whether the insurance islation passed last session could be brought into eration on July 1 next. In regard to the health rvices alone it seemed to him completely impossible view of the lack of accommodation in hospitals, the ck of medical and nursing personnel, and the lack of uipment to bring into force the scheme which was pposed to guarantee to every individual, man, woman, d child, in this country expert medical attention, rsing, dental services, and so on. If the Govern- ent were not in a position to bring these things about, would be very much better for them to be quite frank th the people and say so.

Mr. R. A. Butler, speaking for the Opposition, said at the proposal to reform the poor-law entailed the completion of social security work undertaken by the Coalition Government. The real threat to the social services came from the maladministration of the Socialist Party. If the Chancellor of the Exchequer should decide to reduce the range of the food subsidies the Conservative Party would be in favour of considering the interests of the most needy sections of the population in view of the heavy rise in the cost of living which would result.

Sir Stafford Cripps, Minister for Economic Affairs, said we must take steps to prevent the large adverse balance in dollars being realised. There was an ever-present danger that continued difficulties, and the lack of food and raw materials with its consequent tragic lowering of the living standards, might lead people, as had been seen in Germany after the first world war, to adopt methods and follow political creeds which were destructive of democracy and which accentuated those dangers of war against which we believed that a true democracy provided the greatest safeguard.

It was on our own efforts, said Sir Stafford, that we intended primarily to rely, and the most effective way of saving dollars was by the production of more food in this country. Food was the largest single item among our present dollar purchases and any food that we could grow ourselves would save dollars. But there must also be some immediate further reduction of dollar expenditure on food, which, if not replaced from elsewhere, would—with other changes brought about for quite other reasons—reduce our standard to just below 2700 calories a day, which, though highly unpleasant, should certainly not be disastrous. That would enable us to save about £66 million a year in dollars. In making these adjustments in our imports, the Government had to take into account the fact that the country had suffered the grave misfortune of a bad potato harvest. They must take strict measures to see that supplies lasted till the next crop was available. The saving would entail the following reductions in our food:

Sugar would revert to 8 oz. a week from the 10 oz. to which it was recently raised: meat would remain at 1s. a week: bacon would remain at 1 oz. a week, and there would be a saving on eggs which would enable a distribution to be made of 66 shell eggs compared with 58 last year, with an earlier exhaustion of dried egg stocks.

If circumstances improved, he added, or if matters were eased for Europe and the world by the adoption of some scheme under the Marshall Plan, then the British Government could always reconsider the matter, and, if necessary, increase our imports again. But he was convinced that it was necessary to take this step of further adjusting our consumptions and imports forthwith.

Mr. H. Dalton, Chancellor of the Exchequer, announced that the National Insurance Act and the National Health Act, both passed last session, would come into operation in July and would not be delayed. Taking account of the transfer of hospitals from local to national funds, the ending of the poor-law, and the new block-grant, there would be a substantial reduction of the rates in many parts of the country, and particularly in the poorer industrial and rural areas. This would be a valuable measure for laying a foundation for the recovery of industry.

QUESTION TIME

Meetings of the Negotiating Committee

Sir E. Graham-Little asked the Minister of Health how many times he had personally met the Negotiating Committee appointed with the approval of the Minister by the medical profession, to discuss regulations to be made under the National Health Service Act: and what was the date of the last such meeting.—Mr. A. Bevan: These discussions have so far taken place with my officials following a procedure which I believe to be entirely acceptable to the Negotiating Committee. At their request I have arranged to meet the committee myself next month.

Working Party on Nursing

Mr. G. R. Mitchison asked the Minister whether he had any statement to make on the report of the Working Party on the recruitment and training of nurses.—Mr. Bevan: The Secretary of State for Scotland and I have promised to consider the views of the nursing organisations and other

Seegers, Loomis, and Vandenbelt. Fantl and Nance [6] confirmed the conclusion of Seegers, Loomis, and Vandenbelt and not, as you state, the work of Quick. Fantl and Nance also showed that an accelerator factor increases the activation rate of prothrombin. This observation has been confirmed by Owren [7] and by Ware, Guest, and Seegers.[8] The fact that prothrombin-conversion rate is profoundly affected by the plasma was repeatedly referred to by Smith and his associates,[9] and in one communication Smith stated: "Recent work indicates that the rate may also be determined by a 'convertibility factor' of unknown nature."[10]

In 1946 Quick [11] abandoned the theory of two prothrombins, and referred to the old prothrombin A as "component A." This component A now becomes the labile factor.[12] In another communication Quick [13] presumes that component A is identical with the accelerator factor of Owren. The accelerator factor would then need to be labile. Owren reports that 60–70% of the accelerator factor remains at the end of one week of storage. The question is whether Quick would adjudge that to qualify the accelerator as a labile factor. Our own work with bovine plasma shows that the accelerator is stable and can be isolated after 18 days' storage.[14]

From all this work we can now conclude with certainty that only one prothrombin exists and that a factor accelerates the interaction of prothrombin and thromboplastin. The account given above records who established these facts.

WALTER H. SEEGERS.

Wayne University, Detroit, Michigan.

PRIVATE WARDS IN HOLLAND

SIR,—The concluding sentence of my previous letter (Oct. 4) did not make my point clear enough.

Your correspondent in his article on Sept. 6 (p. 363) expressed the view that if private wards or private rooms for patients who pay higher rates are incorporated in hospitals with ordinary wards, these private wards and rooms should not be brought together in separate blocks or units but should be distributed over the units with ordinary wards.

Our experience in Holland (where there is a strong feeling against nursing-homes and where for a number of years very many hospitals have had combined ordinary and private wards) is that combining private and ordinary wards in one nursing unit makes for difficulty in nursing and administration and provokes jealousy among patients in ordinary wards, due to different visiting hours. Our experience shows that the separation of ordinary wards from private wards does not interfere with the achievement of the same standard of nursing and care in both units; and it does not mean that in the same hospital the one department is better managed than the other.

Deaconess Hospital, Meppel, The Netherlands.

J. C. J. BURKENS
Medical Director.

THYROID AND LACTATION

SIR,—I should like to comment on Dr. Margaret Robinson's article in your issue of Sept. 13.

Table II gives the mean daily output of breast-milk for each group of 20 mothers, but not the variance of the individual figures; this makes it impossible to apply the precise *t*-test for the significance of the variations between the means. The absence of the detailed data also makes it impossible to work out a correlation coefficient for the effect of thyroid on breast-milk; calculation of the coefficient for the means as given suggests that the effect, though definite, is but slight. There is obviously no correlation between milk and the dose of thyroxine (table III).

Is it not possible that these huge doses of thyroid have spilled over into the breast-milk, stimulat nursling to suckle more vigorously, and so i the milk-flow? And is Dr. Robinson satisfied lactation is established, when the daily output a month is 13–14 ounces (the average of the figures) doubt if the month-old baby would be. I consider her interesting experiment does not warrant her conclusion; it would be more accurate to say thyroid produces a variable and inconstant in the milk-flow, and to leave it at that.

London, N.W.3.

E. H

THE NEW ZEALAND SCENE

SIR,—Further advices from New Zealand reveal all the schemes for the (partial) general- service which have been essayed from time t during the past eight or ten years are now in the A new committee is to be established to review the situation afresh, and it is perhaps significant t minister of health who held this office throughout period in question has now been replaced. The with the past seems to be complete.

A letter in the *Daily Telegraph* of Oct. 1 from a in New Zealand fully supports the statements I my letter of Sept. 20 to you (p. 452). I have further communication, dated Sept. 30, from a in the R.N.Z.M.C. who also confirms those st He adds that "no young doctors will join the R.N.Z for service in Japan" (where he is now stationed) the prospects of general practice are too attractive, their seven and sixpences ad infinitum for even the junior man," and in consequence of the absence of teers from New Zealand it has been decided to further medical replacements for this corps in

House of Commons.

E. GRAHAM-L

MANGANESE TREATMENT OF BOILS

SIR,—There seems to be a growing tendency, with almost daily introduction of new treatments, to older and well-proved methods. For many have found the best, easiest, and most econo treatment of furunculosis and allied staphyloco conditions to be manganese. During more than years' service in the Royal Air Force large number men and women came under my care, including, of co many cases of staphylococcal infections and furuncul especially among the younger and adolescent gro The important thing was to keep as many as po on the job while still undergoing treatment. No atte at a controlled trial was made, but the treatment choice was agreed to be colloidal manganese, except in rare acute cases where admission to hospital for penici treatment was resorted to.

Dosage varied according to the predilection of diffe medical officers, but in my own experience a course of injections of 1 ml. at three-day intervals was the successful and produced no toxic effects. The in was given intramuscularly into the upper deltoid, muscle well massaged, and the patient told to use arm as much as possible. It was rarely necessary a second course of treatment to be given, and I do remember a third course being embarked on, with the constant movement of personnel this have happened without my knowledge.

Colloidal manganese is easily stored, easily and economical; change of temperature does affect its efficacy, and its non-viscous nature allows ordinary hypodermic needle to be used for the inject

There is no precise rationale for the use of man therapy in staphylococcal infections, though, since metal plays an essential rôle in certain enzyme syst it seems possible that it acts by interfering with nutrition of bacteria by some mechanism not unlike of sulphonamides. But the proof of the pudding is the eating, and I should be sorry to see this form of ment disappear from the armoury of the gen practitioner.

Sheffield.

E. C. FOOT

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12. Quick, A. J. *Lancet*, Sept. 13, p. 382.
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1. See *Nutr. Rev.* 1945, 3, 174.

ch joined the staff of the hospital my admiration clinical wisdom, for his humanist outlook, and for ady and complete command he always showed over h clinical experience, never ceased to grow.

was singularly good company; his dry humour ned his conversation, and made those too brief eeting contacts, snatched from busy professional that his friends made with him, delightful oases which they returned, refreshed, to work again. s his contemporaries, therefore, something precious ave departed from the hospital community in which we shared, and from that body of recollections make up so much of the satisfactions of life as aw towards its later years. To leave such a sense s is perhaps the last and truest test of a man's

F. M. R. W.

those many neurologists who benefited from dier Riddoch's guiding hand during the war years, dden death must be felt as a great personal loss. nsulting neurologist to the Army he acted as a link in the application of the knowledge gained in 18 to the problems presented in the second world while his additional consultant appointments to .M.S. and Ministry of Pensions enabled him to ate the military and civilian effort.

development of centres for the treatment of ds of the brain, spine, and peripheral nerves proved an essential part of the medical war effort, but the Dr. Riddoch played in insisting on the need for centres and in guiding their development may have me extent been forgotten. His tireless round of to these special centres was of great value in oping the remarkably high standard of treatment was achieved, and this has often been acknowd by the surgeons in charge of these special units. ept a watching eye on all the neurological and surgical services in this country, and with Sir Hugh s planned the staffing and placing of neurological overseas. Those of us who played a part in this isation, however humble, always felt grateful to der Dr. Riddoch's considerate and friendly direction. ite of indifferent health during the latter part of the his energy and enthusiasm never flagged, but the of work and travelling under war-time conditions have contributed to his illness. After an operahe insisted on returning to duty within a few weeks. he continued in uniform until the end of the war. orge Riddoch was known throughout the world as of Britain's leading neurologists, and his self-sacrificdevotion to duty during the war years was an ration to us all.

W. R. R.

. Riddoch married in 1916 Margaret, daughter of the late Ledingham of Aberdeen. They had a daughter and two , one of whom is a member of the medical profession.

Appointments

r, W. H.-P., M.D. Lond., M.R.C.P.: physician to outpatients, The Children's Hospital, Birmingham.

MER, M. H., M.B. Camb., F.R.C.S.: surgical registrar, The Royal Cancer Hospital (Free), London.

NSTON, J. O., M.B. Belf.: asst. county M.O.H. and M.O.H., Docking, Walsingham, and Wells.

TIN, J. J. B., M.D. Edin., F.R.C.P.E., D.P.M.: senior asst. physician, St. James Hospital, Portsmouth.

don County Council Mental Health Service:

RAUPL, FRITZ, M.D. Prague, D.P.M.: senior registrar, Maudsley Hospital.

MACDONALD, C. K., M.B. Edin., D.P.H.: asst. pathologist, Epsom Pathological Laboratory.

OST, FELIX, M.B. Lond., M.R.C.P., D.P.M.: asst. physician, Maudsley Hospital.

LEY, J. H., M.B. Lond.: senior registrar, Maudsley Hospital.

don County Council School Health Service:

RIMALDI, C. B., B.M. Oxfd: asst. M.O.

EUSTATTER, W. L., B SC., M.D. Lond., M.R.C.P.. consultant psychiatrist.

onial Service:

BLACKABY, E. J., O.B.E., M.R.C.S., D.T.M. & H.: senior M.O., Uganda.

HILLARY, BRIGID, M.B. N.U.I.: lady M.O., Malaya.

LITTLEJOHN, JOHN, L.R.C.P.E.: M.O., Kenya.

O'DWYER, J. J., M.B. N.U.I.: M.O., Nigeria.

THOMSON, G. M., M.C., M.D. Edin., M.R.C.P., D.P.H.: adviser on venereal disease control, West Indies.

Public Health

Disinfestation by Municipal Authorities

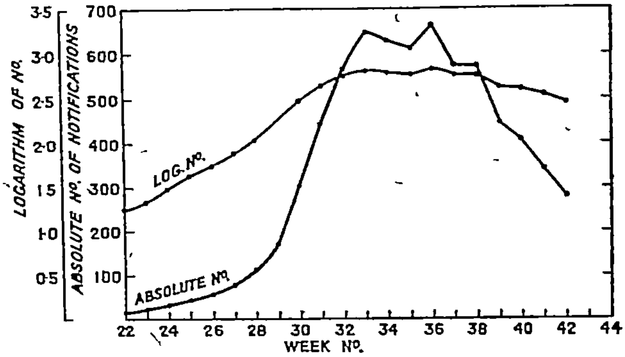
A DISINFESTATION service provided by the Salford health department has proved its value over the last three years. It comprises two men, a motor-van, and spraying and dusting equipment.

The demand has been sufficiently strong for the service to pay its way; nearly a thousand jobs are done each year. The corporation housing department, landlords, and the general public seem nowadays to be more willing to have premises disinfested, and moreover to pay for this; and workers in school and factory canteens are eager to see that the premises in which they work are reasonably fly-free. With new remedies such as D.D.T. and gammexane, and simple methods of application, the cost is low. In Salford typical charges are of the order of 21*s.* for eradication of bugs in a dwelling-house, 5–15*s.* for eradication of cockroaches, and 12*s.* 6*d.* for fly-proofing of a canteen kitchen.

A solution of 3% D.D.T. in kerosene has been found a useful insecticide against the bed-bug and house-fly; one application has proved sufficient for complete eradication of bed-bugs. Running insects appear to be more susceptible to D.D.T. in dust form; but in the case of cockroaches more than one application is often needed. Two treatments at an interval of three months maintain premises reasonably fly-free throughout the summer.

Poliomyelitis and Polioencephalitis

Notifications of poliomyelitis in England and Wales in the week ended Oct. 18 fell to 276, a reduction of about 18% on the figure for the previous week (338). The decline has now been established for six weeks. There was no obvious difference in the decline registered in different parts of the country, but it was perhaps more noticeable in the South than in the Midlands and North.



The Third Quarter

The Registrar-General [1] reports that 216,310 live births were registered in England and Wales in the third quarter of this year—18,727 fewer than in the second quarter. The birth-rate of 20·0 per 1000 population reflects the continued decline in the rate, which, having risen steadily since the end of the war to a peak of 22·8 in the first quarter of this year, began to fall in the second quarter when it was 22·0. It may be compared, however, with an average rate of 15·7 for the September quarters of the five years 1941–45. Stillbirths registered in the quarter numbered 5024, giving a rate of 22·7 per 1000 total births or 0·46 per 1000 population, compared with 26·6 or 0·53 in the September quarter of last year.

There were 97,066 deaths, the death-rate of 9·0 being 0·3 below that of the corresponding period a year ago.

Infectious Disease in England and Wales

WEEK ENDED OCT. 18

Notifications.—Smallpox, 0; scarlet fever, 1352; whooping-cough, 1009; diphtheria, 202; paratyphoid, interested bodies before policy is finally formulated and these views are now being obtained. The Working Party's recommendations concern, however, long-term policy and cannot be expected to produce an immediate increase in the supply of nurses. We trust hospital authorities will, therefore, at once examine interim measures to reduce wastage and will make the maximum use of part-time and married nurses and build up their domestic staffs to relieve nurses of domestic duties.

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[1] Registrar-General's Weekly Return of Births, Deaths, and Infectious Diseases for the week ended Oct. 18. H.M. Stationery Office. 6*d.*

Obituary

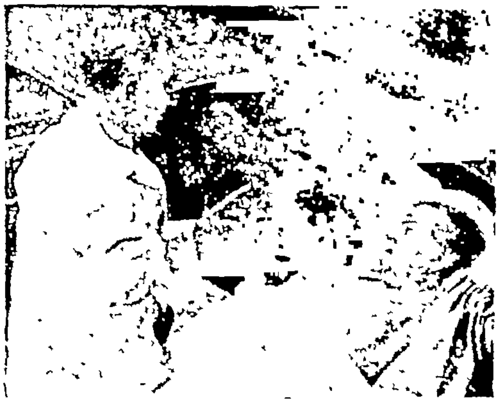
GEORGE RIDDOCH

M.D. ABERD., F.R.C.P.

At the age of 58 Dr. Riddoch died in the London Hospital on Oct. 24 after an operation. He was a distinguished neurologist and an able teacher: but his pupils and his patients will think of him first as a person and a friend—a man of singular kindness and a good doctor. Much of what he taught is remembered because he said it, and because of the way he said it; and through his teaching at the London and the National Hospital, Queen Square, he did a great deal to improve standards of practice. To his work at these two hospitals and in two wars the following appreciations pay tribute.

* * *

George Riddoch was born at Keith in Banffshire. After a distinguished career as a student he qualified at Aberdeen University and came to London just before the 1914 war. He obtained his introduction to neurology as a resident at the West End Hospital for Nervous Diseases. During the 1914 war he served in the R.A.M.C. as medical officer in charge of the Empire Hospital for injuries of the nervous system, and this brought him into contact with Henry Head who at once recognised his outstanding ability. Riddoch was already well trained in anatomy, having been demonstrator in the anatomy department at Aberdeen. His association with Head launched him into the main stream of the British tradition of neurology, springing from Ferrier and Hughlings Jackson, with its dynamic approach to the subject and its intimate relationship with neurophysiology.



During the years immediately before 1914 Head, with various collaborators, had been working on problems connected with sensation at all levels of the nervous system, and not many years previously Sherrington had published *The Integrative Action of the Nervous System* which had so greatly illuminated the reflex functions of the spinal cord. The time was ripe, therefore, for the application of these new ideas to the interpretation of the rich clinical material provided by war injuries, particularly of the spinal cord. Encouraged by Head, Riddoch in 1917 published papers on "the reflex functions of the completely divided spinal cord in man compared with those associated with less severe lesions," and in the same year, in collaboration with Head, he wrote on visual perception after occipital injuries and on "the automatic bladder, excessive sweating, and some other reflex conditions in gross injuries of the spinal cord." Though opinions are still divided as to the nature of the "mass reflex" and the interpretation of some of the reflex phenomena described, his work was a valuable contribution physiological interpretation of human nervous and this remained his approach in his later publ of which the chief were his Lumleian lectures to Royal College of Physicians, on pain of central and his presidential address to the neurological of the Royal Society of Medicine, on phantom limb body shape.

The end of the war saw him at the age of 30 established reputation as a neurologist. He r the need for enlarging his clinical experience and t the Medical Research Council joined the staff of the founded medical unit at the London Hospital, shortly afterwards he became assistant physician to Hospital for Epilepsy and Paralysis, Maida Vale. now shows that he possessed the powers of analysis and lucid exposition of a first-rate even though at that time his native Doric was at somewhat difficult for southerners to understand. teacher he laid great stress upon thoroughness in taking and clinical examination, and maintained there was no better subject than neurology for teaching of clinical methods in general. His ability so well recognised at the London Hospital that in he was elected a supernumerary assistant ph there being at the time no vacancy on the staff.

He now decided to enter consulting practice; few, if any, can have attained success in that diff sphere in so short a time. He worked indefatig His precision of thought not only made him a diagnostician but enabled him to give clear-cut as to treatment, and his attention to detail him from neglecting any measure that was for his p benefit. Moreover, he possessed great charm of a warmth of feeling for people and an intuitive of their difficulties.

His election to the staff of the National Queen Square, added to his opportunities for te and he welcomed the international contacts which brought.

When the last war broke out Riddoch became head the E.M.S. neurological unit at Chase Farm H to which the neurological department of the Lo Hospital was evacuated. He had already been mad civilian consultant in neurology to the Army, and 1941 he accepted a commission and devoted hims to the organisation of the Army medical neurologi service. In this position he worked as unsparingly ever and did much to help those treating periph nerve injuries and traumatic paraplegia.

But he was a tired man when he took up this work and before long his health began to break down. He would not give in, but struggled on courageously, though latterly he must often have been in constant pain; and he was doing his hospital work and seeing patients till the week before his death.

Riddoch's place in neurology is secure, even though the very plenitude of his gifts came to favour the doctor at the expense of the investigator. In committee he was liberal in his ideas and wise in his counsel. His friends will recall his gaiety and humour; his stories, many of them Aberdonian, which set the table in a roar and at which he laughed himself till he had to wipe his eyes; and in quieter moments his love of fishing and the Rothiemay countryside, of birds, books, and, above all, music. But he lived for his work and died too young, because he spent his life so generously. It is hard to believe that he has hurried away for the last time.

W. R. B.

The untimely loss of George Riddoch will be grievously felt by his contemporaries and colleagues at Queen Square. I had the privilege of being his colleague at the National Hospital for over twenty years; years during which I came to have a deep respect for his generosity of mind and his sagacity in all the diverse problems which the life and work of a teaching hospital present to its medical staff.

In a special hospital, such as the National, there is a closer community of intellectual interests than is possible in a general hospital, and one comes to have a deeper appreciation of a colleague's personality and of his gifts, in consequence. From the time when

rsity of Oxford

Oct. 16 the following degrees were conferred:

—*D. C. Bernstein, W. L. Gordon, Mercy I. Heatley, N. C.
Jones, G. E. Mann, O. M. Wrong.

* In absentia.

rsity of Cambridge

)ct. 18 the following degrees were conferred .

—C. W. A. Searle.
, *B.Chir.*—* A. P. C. Bacon, * H. B. Barlow, * D. M. Evans,
Fairbairn, J. L. Harris, * C. F. Hingston, * P. E. Hughesdon,
Mackenzie, * E. T. Roberts, I. B. Smith, * Walter Spector,
. D. Veale, * J. S. W. Whitehead, * R. H. L. Wolfsohn,
W. Woodroffe.
—N. C. London.

* By proxy.

. H. R. Dean has been re-elected representative of the ity on the General Medical Council for a further five

rsity of London

Victor Dix has been appointed to the university chair ery at the London Hospital.

Dix received his medical education at the University of dge, the London Hospital, and Berlin, where he worked as ry assistant to Prof. A. von Lichtenberg. He qualified in d took his M.B. two years later, and the following year he d both his M.R.C.P. and his F.R.C.S. After holding house- ments at the London Hospital he became surgical first it, later joining the staff as surgeon with charge of out- s and assistant surgeon to the genito-urinary department. also lecturer in surgical pathology at the medical college. late war he was in charge of a urological centre in the Middle nd in 1946 he was appointed consulting surgeon to the South la command. He has published papers on calculus, hydro- sis, pyelitis, prostatic enlargement, and temporary drainage idney.

. Henry Barcroft has been appointed to the university f physiology at St. Thomas's Hospital.

Barcroft, who is 43 years of age, and is a son of the late ph Barcroft, was educated at Marlborough College and King's , Cambridge, where he obtained a first-class in both parts of tural sciences tripos. At Cambridge he was awarded the Fry and George Henry Lewis studentships, and at St. Mary's al, London, where he went to complete his medical studies, the Harmsworth scholarship. In 1932 he took the Conjoint ation and in the same year was appointed lecturer in ogy at University College, London. He took his M.B. the g year and his M.D. in 1935, the year in which he was also ted to the Dunville chair of physiology at Queen's University, . Professor Barcroft is a member of the North Ireland al Hospitals Council. His recent work, undertaken with . G. Edholm and others, has been largely concerned with the ion of blood-flow through muscle (*Lancet* 1944, i, 489; i, 513).

T. D. Day has been appointed to the university reader- pathology at St. Thomas's Hospital.

Day studied medicine at the University of Cambridge and g Cross Hospital, graduating M.B. in 1932. In 1936 he became stant pathologist at the Central Histological Laboratory of C.C. and in 1938 he was appointed research assistant to the professor of physic in Cambridge. From 1939 to 1945 he was rge of the laboratory of a general field hospital and since ilisation he has been lecturer in pathology at St. Thomas's.

T. Russell Fraser has been appointed to the university ship in medicine tenable at the Postgraduate Medical l of London.

Fraser graduated M.B. with distinction at Otago in 1932 e has held a New Zealand University travelling fellowship. 5 he was awarded the Hallett prize and three years later a feller travelling fellowship. He has also worked as a research at Harvard University. In 1940 he was appointed psychiatrist l Hill E.M.S. Hospital, where for the next two years he was rge of a team investigating for the Ministry of Home Security ychiatric effects of bombing, and he reported the results aper to the Royal Society of Medicine. In 1943 he became gator in charge of a team for the Industrial Research Board, 1946 he joined the staff of the Maudsley Hospital. Since he has been registrar and lecturer in medicine at the school. s published papers on insulin therapy and on Simmonds's e.

. C. J. O. R. Morris, PH.D., F.R.I.C., has been appointed e university readership in chemical pathology at the on Hospital. Since 1944 he has directed the chemical rch of the endocrine unit of the hospital, and since 1945 een chemist to the medical unit.

onal Boards' Appointments

ffield region: Dr. W. A. Ramsay (superintendent, psall Hospital, Manchester) has been appointed senior nistrative medical officer of the region.

uth-west Metropolitan region: For reasons of health Dr. neth Cowan will not after all take up his appointment as r administrative medical officer of this region. He will inue to serve as M.O.H. for Gloucestershire.

University of Glasgow

Mr. Walter Elliot, M.P., has been elected rector of the university. Mr. Elliot headed the poll with 1022 votes, and Dr. O. H. Mavor (James Bridie), the other medical candidate, was second with 521 votes.

University of Edinburgh

Mr. Norman Dott has been appointed to the new Forbes chair of neurological surgery.

Mr. Dott, who is 50 years of age, was educated at George Heriot's School, Edinburgh, and the University of Edinburgh, where he graduated M.B. in 1919. After holding house-appointments at the Deaconess Hospital, the Royal Infirmary, and the Royal Hospital for Sick Children in Edinburgh, he was awarded the Syme surgical fellowship in 1922. The following year with a Rockefeller fellowship he worked at the Peter Bent Brigham Hospital in Boston as a junior associate in surgery. On his return to Edinburgh he was appointed assistant surgeon to the Deaconess Hospital and to the Chalmers Hospital, later becoming neurological surgeon to the Royal Infirmary and Jordanburn Nerve Hospital. He is also lecturer in neurological surgery in the university. During the late war he was director of the neurological and neurosurgical brain injuries unit at Bangour E.M.S. Hospital, and consultant in neurological surgery to the Army in Scotland. His published work includes papers on the management of head injuries and on surgery of the brain and skull.

University of Aberdeen

Dr. John Craig has been appointed to the new chair of child health in the university.

Dr. Craig was educated at Robert Gordon's College and the University of Aberdeen, where his medical studies were interrupted during the 1914–18 war by his service as a lieutenant in the Royal Garrison Artillery. He graduated M.B. in 1921 with honours and held house appointments at Aberdeen Royal Infirmary and at the Hospital for Sick Children, Great Ormond Street. In 1922 with a George Thompson fellowship he worked at the Hôpital des Enfants Malades in Paris, and on his return to this country he spent several months in general practice in Keith. In 1924 he was appointed as assistant physician to the Royal Aberdeen Hospital for Sick Children, and the following year he obtained his M.R.C.P.E. and was appointed clinical tutor in the wards of the Aberdeen Royal Infirmary, whose staff he joined in 1932. From 1928 to 1935 he was also assistant in the department of medicine of the university. In 1937 Dr. Craig took up his present appointments of senior physician to the Royal Hospital for Sick Children, university lecturer in diseases of children, and consulting pædiatrician to the Aberdeen Maternity Hospital. His published work includes papers on spinal tumours and on malignant hypertension in childhood, on basophil adenoma of the pituitary, and on the treatment of calcinosis in children. He has also done research work on the incidence of acute rheumatism in Aberdeen and of recurrent bronchitis in children.

Dr. James Walker has been appointed lecturer in midwifery and gynæcology.

Royal College of Physicians of London

On Tuesday and Thursday, Dec. 9 and 11, at 5 P.M., Sir Arthur MacNalty will deliver the FitzPatrick lectures at the college, Pall Mall East, S.W.1. His subject is to be the History of State Medicine in England; in his first lecture he will deal with the medical department of the Local Government Board, and in his second with the foundations of the national health services.

On Oct. 18 the Bisset Hawkins medal was presented to Dr. C. H. Andrewes, F.R.S., for his researches in typhus and in influenza.

Royal College of Surgeons of England

On Thursday, Nov. 13, Sir Cecil Wakeley will deliver the Bradshaw lecture on Vogue and Fashion in Abdominal Surgery. On Friday, Nov. 21, Dr. I. Harvey Flack will give the Thomas Vicary lecture. He is to speak on Lawson Tait. Both lectures will be held at the college, Lincoln's Inn Fields, London, W.C.2, at 5 P.M.

Royal College of Physicians of Ireland

The following officers have been elected: *President*, Dr. Bethel Solomons; *censors*, Dr. Alan Thompson, Dr. D. M. Mitchell, Dr. M. Crowe, Dr. E. A. Keelan; *treasurer*, Dr. G. Bewley: *registrar*, Dr. T. P. C. Kirkpatrick. The president nominated Dr. Keelan as vice-president.

Royal Sanitary Institute

On Thursday, Nov. 6, at 10 A.M., in the City Hall, Belfast, Dr. Samuel Barron, Dr. W. G. Swann, and Dr. G. F. W. Tinsdale will open a discussion on the Control of the Manufacture and Sale of Ice-cream. On Saturday, Nov. 22, at 10.15 A.M., at the Town Hall, Dewsbury, Dr. E. D. Irvine will speak on the Local Authority and the Promotion of Health.

16; typhoid, 7; measles (excluding rubella), 1797; pneumonia (primary or influenzal), 531; cerebrospinal fever, 44; poliomyelitis, 276; polioencephalitis, 12; encephalitis lethargica, 0; dysentery, 46; puerperal pyrexia, 113; ophthalmia neonatorum, 67. No case *of cholera, plague, or typhus was notified during the* week.

Deaths.—In 126 great towns there were no deaths from enteric fever or scarlet fever, 1 (0) from measles, 2 (0) from diphtheria, 2 (0) from whooping-cough, 60 (2) from diarrhœa and enteritis under two years, and 11 (5) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 222 (corresponding to a rate of 27 per thousand total births), including 25 in London.

Diary of the Week

NOV. 2 TO 8

Monday, 3rd

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.2
6.15 P.M. Mr. J. Angell James: Acute Rhinitis.
ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
4.30 P.M. *Epidemiology and State Medicine.* Dr. E. Ashworth Underwood: History of Cholera in Great Britain. Major-General Sir John Taylor: Cholera Control. Mr. P. Bruce-White: *Bacteriological and Immunological Aspects of* Cholera.
SOCIETY OF APOTHECARIES OF LONDON, Black Friars Lane, E.C.4
5 P.M. Dr. Peter Bishop: Hormone Therapy in Gynæcology.
INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, W.C.1
2.30 P.M. Miss D. J. Collier: *Facial Paralysis.*
ROYAL MEDICAL SOCIETY, 7, Melbourne Place, Edinburgh
8 P.M. Dr. John Gillies: Simpson—a Pioneer of Anæsthesia.

Tuesday, 4th

ROYAL COLLEGE OF SURGEONS
6.15 P.M. Dr. F. S. Cooksey: Physical Treatment in Otolaryngology.
SOCIETY OF APOTHECARIES
5 P.M. Prof. E. C. Dodds, F.R.S.: Hormones as Therapeutic Agents Apart from Gynæcology.
INSTITUTE OF DERMATOLOGY, 5, Lisle Street, W.C.2
5 P.M. Dr. A. D. Porter: Vitamins in Skin Diseases.

Wednesday, 5th

ROYAL COLLEGE OF SURGEONS
6.15 P.M. Mr. Myles Formby: Acute Infections of the Pharynx and Parapharyngeal Space.
ROYAL SOCIETY OF MEDICINE
2.30 P.M. *History of Medicine.* Dr. H. P. Bayon: Karl Marx (1818–83)—His Ailments and Relations with Medicine.
8 P.M. *Surgery.* Sir Max Page: Surgical Records. (Presidential address.)
SOCIETY OF APOTHECARIES
5 P.M. Dr. R. R. Trail: Diagnosis and Treatment of Pulmonary Tuberculosis.

Thursday, 6th

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.1
5 P.M. Dr. Janet Vaughan: Anæmia Associated with Trauma and Sepsis. (Bradshaw lecture.)
ROYAL COLLEGE OF SURGEONS
6.15 P.M. Dr. Hugh Davies: X-ray Diagnosis in Otolaryngology.
ROYAL SOCIETY OF MEDICINE
8 P.M. *Neurology.* Dr. C. Worster-Drought: Charcot's Arthropathy. (Presidential address.)
UNIVERSITY OF LONDON
5 P.M. (1, Wimpole Street, W.1.) Mr. E. D. D. Davis: Applied Anatomy and Physiology of the Pharynx and Œsophagus. (Semon lecture.)
SOCIETY OF APOTHECARIES
5 P.M. Dr. James Craigie, F.R.S.: Virus Diseases—Treatment. (Second lecture.)
INSTITUTE OF DERMATOLOGY
5 P.M. Dr. G. B. Mitchell-Heggs: Erythemato-papular and Erythemato-squamous Eruptions.
HONYMAN GILLESPIE LECTURE
4.30 P.M. (Edinburgh Royal Infirmary.) Prof. G. F. Marrian, F.R.S.: Corpus Luteum Hormone.

Friday 7th

ROYAL COLLEGE OF SURGEONS
6.15 P.M. Mr. James Crooks: Sinusitis in Childhood.
ROYAL SOCIETY OF MEDICINE
10.30 A.M. *Otology.* Mr. Donald Watson: Mastoid Infection. (Presidential address.)
2.30 P.M. *Laryngology.* Mr. A. J. M. Wright: Milestones in Laryngology. (Presidential address.) Mr. Ian Robin: Snoring.
5.30 P.M. *Anæsthetics.* Dr. J. H. T. Challis: Teaching of Anæsthesia to Medical Students. (Presidential address.)
NATIONAL HOSPITAL, Queen Square, W.C.1
4.30 P.M. Prof. J. Lhermitte: Relation of Neurology to Psychiatry.
LONDON CHEST HOSPITAL, Victoria Park, E.2
5 P.M. Dr. R. A. Beaver: Anæsthesia for Thoracotomy.

Notes and News

THREE-POINT PLAN FOR NURSING

SPEAKING at Middlesex Hospital, London, on Oct. Mr. Aneurin Bevan, Minister of Health, described the of the Working Party on the Recruitment and Traini Nurses as the most stimulating and challenging docume nursing yet produced. The report, he said, was con with *long-term measures, and immediate action* mu taken towards: (1) reviewing factors likely to contrib wastage among nursing recruits; (2) relieving nur domestic work; and (3) part-time nursing. The p average rate of wastage of 54% among nursing recruits he held, indefensible. The use by some hospitals of for domestic work was unfair to other hospitals faced the prospect of having to close wards. On some points report, such as the duties and conditions of service *suggested new orderly grade, selection tests for student* better provision for training sister-tutors, more detailed was being undertaken before final decisions were Mr. Bevan said that over 12,600 nursing staff, incl 1740 midwives, had so far responded to the appeal for time service. There were now nearly 100,000 full-time 18,000 part-time domestic workers in hospitals, inclu nearly 3000 European volunteer workers; this was increase of some thousands since 1946.

INTERNATIONAL SOCIETY OF MEDICAL HYDROLOGY

THE annual meeting of this society, held in Rheinfeld Switzerland, on Sept. 10–14, was attended by memb representing nine countries. Dr. Barnes Burt (Bath) elected chairman of council, with Prof. Franistek Le (Prague), Dr. G. D. Kersley (Bath), and Prof. K. Walt (Geneva) as vice-chairmen. The treasurer is Dr. F. Clay (Leamington), and the secretary Dr. Donald *Wilson* (B

Subjects discussed included the neurohumoral effects irritation of the skin (Professor Staub); the physiology high altitude (Professor Verzar); spa treatment of sequelæ of poliomyelitis (Professor Fanconi); the treatm of asthma at an altitude of 5500 ft. (Professor Campe balneotherapy in the treatment of peripheral vascular orders (Dr. Wilson and Professor Lenoch); balneother with sulphur water in non-rheumatic diseases (Dr. Nichol and Professor Buergi); and spa treatment *in* rehabilitat after accidents and war injuries. The discussion on t last subject opened with a paper by Dr. McClellan, of Sarato Springs, outlining the scheme evolved by the Americ army during the war, for the use of spas in the reablement the injured, and emphasising the importance of continuing scheme during years of peace. Dr. Barnes Burt gave account of his experience with injuries during the war, read a communication from the U.S.S.R. on the treatm of frost-bite. *Demonstrations* were given at Schinzn Bad and Rheinfelden, and some of the visitors toured s in the Engadine, finishing at Locarno. Several sessions the society were held in the various spas, and a demonstrati of the treatment of poliomyelitis was given at Ragaz. Memb had much private hospitality offered to them, *both* by t Swiss members of the society and by the members of t Swiss Society of Medical Hydrology and Climatology.

This meeting coincided with the 25th anniversary of th I.S.M.H.; and despite the many difficulties it was unanimou agreed that it still plays a useful part in the internation recognition of balneotherapy.

HOW EUROPE FEEDS

A SPECIAL issue of *Picture Post* for Nov. 1 *describes* pictures and short articles the findings of a team investigators who have spent three months in studying the food position of Europe as seen in the homes of the peopl The main lesson that emerges is the contrasting position different countries.

Hospital for Diseases of the Skin

War damage to this hospital has now been repaired, and it is once more open for postgraduate *teaching.* Doctor are welcome as guests at the clinics held from Mondays to Fridays at 2 P.M., and on Tuesdays and Fridays at 5.30 P.M. Further details may be had from the secretary of the hospital, Blackfriars Road, S.E.1.

SIQUE AND GROWTH OF SCHOOLBOYS

G. E Friend
I.A. Oxfd, M.R.C.S.
IE MEDICAL OFFICER,
CHRIST'S HOSPITAL

E. R. Bransby
Ph.D. Lond
SOCIAL ECONOMIST,
MINISTRY OF HEALTH

investigation was started in 1936 to obtain informa- on the physique of adolescent schoolboys belonging milies of differing economic standing, and on the h of boys attending boarding-schools and day ls during school terms and holidays. There was no published information, apart from that of d (1935), on their growth and practically none on physique. Subsequent studies have been published lan (1937, 1939) and Widdowson and McCance (1944) owth in term and holiday, and by Orr (1936) and an (1939) on physique according to economic status. ring the seven school terms from September, 1936, ecember, 1938, we collected anthropometric data ys aged 11–18 years attending thirteen public ing-schools and six day secondary schools. The were to be weighed at the beginning, middle, and f each school term and measured in height at the ning and end of each term, and in chest girth each nber. Of the nineteen schools, thirteen followed rogramme, though all of them did not do so for the even terms. The other six schools varied from the amme in some particular, such as omitting the mid- weighing. The boys were weighed and measured ng shorts only; directions were issued to the cal-training instructors to ensure, so far as possible, form measuring of the chest in each school. The ge of chest girths at nipple level during expansion ontraction was taken as the chest girth, and the ence of these two measurements as the amount of expansion.

e average weight, height, and chest girth and nsion of boys in yearly age-groups in each school calculated from the measurements of the boys e respective ages taken during the whole period of tudy. Thus, in schools where the weighings were thrice a term the averages were based on twenty- sets of figures—i.e., three sets a term, for each of terms; for schools where the mid-term weighings not taken the averages were based on fourteen sets gures. The average ages of the yearly age-groups also calculated, and from these data the average its, weights, and chest girth and expansion at ly yearly intervals were calculated by interpolation. e thirteen boarding-schools were then divided into groups, A, B, and C, according to the school fees status, as a probable reflection of the economic ing of the parents of the boys attending the schools. classification is not the same as that based on the l standing of the school. It is appreciated that at some of the better-known public schools are attended cholars of different economic and social standing, t was thought that such a division would be adequate grouping the schools according to the economic ing of the parents. Two schools were classed as p A, of highest economic standing; seven schools as p B, of intermediate economic standing; and four ols, including Christ's Hospital, as group C, of lowest omic standing. The day secondary schools were dly of the same type, and no division according conomic status was possible. For each of the four ps—i.e., the three groups of boarding-schools and ay schools—averages for the different sets of anthro- etric data were calculated from the data of the schools prising the groups.

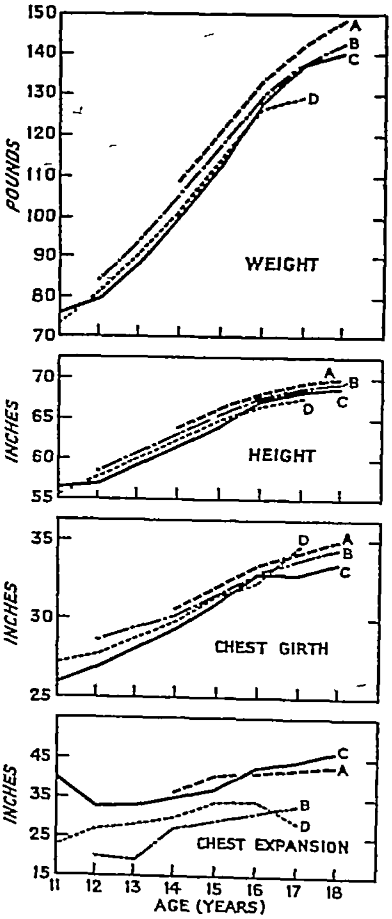
mong other aims we tried to find out whether the uations in growth-rates in different parts of the schools s and holidays were the same in boarding-schools as in day schools, and whether there were differences between individual boarding-schools and day schools. For those schools in which the boys were weighed at the beginning, middle, and end of each term a calculation was made of the number of boys who lost, gained, or remained stationary in weight in the first and second halves of each term and in the holiday, for each of the seven terms. From a scrutiny of the resulting figures it was decided that the data of boys of all ages and for the same parts of the different years could be combined to give a picture of the results for the individual schools as a whole. Few of the boys remained stationary in weight in the various parts of the year; so they were combined with those who gained weight, and it is the percentages for these two groups combined which are given in tables III and IV.

Two of the boarding-schools had some day boys, and in the analyses comparing growth during term and holiday the data of the day boys and boarders of these two schools were considered separately. One of the day schools had a few boarders, not sufficient, however, to warrant separate analyses for the day boys and boarders.

RESULTS

Physique According to Economic Status.—Table I and the accompanying figure show the average anthropometric data according to age for the four groups of schools and the number of boys on which the averages were based. The number of measurements on which the averages were based was many times the number of boys, because of the frequency with which the boys were weighed and measured.

Weight.—For boys aged 14–18 years the weights in group A exceeded those in group B, age for age, by 2·7–6 4 lb., the difference tending to become bigger at the older ages. The weight of group-B boys aged 12–18 years exceeded that of group-C boys of the same age by 1·2–6 1 lb., except that at 17 years the group-C boys were very slightly heavier. Throughout the age-range 13–18 years the differences between the group-C and day-school boys were not consistent, and taken as a whole there was probably no difference between these two groups. On the average the weight of the group-A boys exceeded that of



Average measurements according to age of boys and type of school. A, boarding-schools of highest economic standing; B, boarding-schools of intermediate economic standing; C, boarding-schools of lowest economic standing; D, day schools.

National Hospital, Queen Square

Prof. J. Lhermitte will deliver a lecture at the hospital, on Friday, Nov. 7, at 4.30 P.M., on the Relation of Neurology to Psychiatry. He will speak in English.

Dr. Jessie Macgregor Prize

This triennial prize, of the value of £75, has been awarded for the present period to Dr. Sheila Sherlock, for her work on liver, purpura, and malnutrition in the Ruhr.

New Zealand Appointment

Dr. F. Bielschowsky, who has been working in the department of pathology of the University of Sheffield under the British Empire Cancer Campaign, has been appointed director of cancer research for New Zealand.

Faculty of Homœopathy

A meeting of the faculty will be held at the London Homœopathic Hospital, Great Ormond Street, W.C.1, on Thursday, Nov. 6, at 5 P.M., when Dr. Andrew Kellner will speak on Artificial Hazards in Prescribing.

Factory Instals Mass-radiography Unit

A mass-radiography service, said to be the first to be installed by a factory, has been started by the Ford Motor Company at Dagenham. Examinations will be free and voluntary, and reports are to be confidential.

Lecture on Contraception

On Thursday, Nov. 6, at 2.30 P.M., at the Mothers' Clinics, 108, Whitfield Street, London, W.1, Mrs. Marie Stopes, D.SC., will give a lecture on contraception, and Dr. M. B. Bayly will afterwards give a demonstration. Admission by ticket only to be obtained in advance from the secretary of the clinics.

South-West Metropolitan Regional Board

At a meeting of psychiatrists of this region, it was resolved to form a psychiatric advisory group. The group will take the initiative in forwarding to the board proposals for the development of the mental health services in the region, and be available for consultation with the subcommittee on matters of psychiatric importance. Membership of the group is open to all psychiatrists in the region, and all who are interested are asked to communicate with Dr. T. P. Rees, of Warlingham Park Hospital, Warlingham, Surrey.

International Course for the Emergencies of Medicine and Surgery

This course, which met in Lisbon and Oporto from Oct. 1 to 15, was organised by the civil hospitals in Lisbon under the ægis of the Portuguese ministry of the interior. The British representatives who spoke were Sir Archibald McIndoe (Maxillofacial Injuries and Burns); Mr. H. A. Brittain (the Acutely Prolapsed Intervertebral Disc and Compound Fractures of the Femur); Mr. R. G. Pulvertaft (Tendon Injuries in the Hand); and Mr. H. Osmond Clarke (Compound Fractures and Rehabilitation).

Glasgow and West of Scotland Blood Transfusion Service

A symposium on blood-transfusion will be held by this service in the Royal Technical College, George Street, Glasgow, C.1, on Friday, Nov. 14, at 2.30 P.M. Discussions have been arranged on the Care of the Blood Bank (openers: Mr. G. R. Milne, Prof. J. P. Todd, PH.D.); Transfusion in Practice (Dr. J. Bruce Dewar, Dr. John Wallace); and the Importance of the Rhesus Factor (Prof. D. F. Cappell, Dr. A. W. Abramson). Further information may be had from the director of the service, 15, North Portland Street, Glasgow, C.1.

School Meals in London

The education committee of the L.C.C. has found itself unable to meet the growing demand for school dinners. It has therefore decided to experiment with a scheme of priorities under which some children will be given in rotation on one or two days each week a meal consisting of sandwiches and a sweet course; on the remaining days they will have the normal school dinner. The Ministry of Education have agreed to recognise these sandwich lunches as school meals for grant purposes; and an additional allocation of bread units has been secured.

British Psycho-Analytical Society

On Wednesday, Nov. 19, at 8 P.M., Prof. C. H. W F.R.S., will deliver the Ernest Jones lecture at 1, Street, London, W.1. His subject is to be Science Belief.

New York Academy of Medicine

The 1947–48 series of the academy's lectures to the includes addresses by Dr. G. R. Hargreaves on the of Leadership in War and Peace (Nov. 19); and by Raphael Cilento, M.D., on Food and Civilisation (Dec. Further information about the series may be had Dr. Iago Galdston, 2, East 103 Street, New York, 29,

Return to Practice

The Central Medical War Committee anno Mr. A. J. HERIOT, F.R.C.S., has resumed civilian 152, Harley Street, London, W.1 (Welbeck 9030).

Dr. W. W. Mushin, director of the department of thetics at the Royal Infirmary, Cardiff, attended the of Anæsthesiology in Buenos Aires between Oct. 20 at the invitation of the Argentine Association of A logy and under arrangements made by the British C

Dr. H. Graham Hodgson, director of the diagnostic department at Middlesex Hospital, London, is leaving three weeks' lecture tour in Turkey on behalf of the

CORRIGENDA. *Surgery of Hyperthyroidism.*—Our article of Oct. 4 said that in 1921 Dr. Frank H. Lahey mended complete thyroidectomy in cases of hyper with advanced cardiac failure. We understand that he never favoured complete thyroidectomy but the subtotal operation.

Whaling Today.—In last week's account (p. 639) discussion by the Universities Federation for Animal on methods of killing whales, Sir Robert Robinson, F.R. incorrectly reported as having spoken: the speaker Robert Robertson, F.R.S.

Births, Marriages, and Deaths

BIRTHS

BARWELL.—On Oct. 22, the wife of Dr. A. H. Barwell—a

BROWN.—On Oct. 22, at Colac, Victoria, Australia, the Dr. A. Graham Brown—a son.

DANIEL.—On Oct. 13, at Oxford, the wife of Dr. P. M. —a son.

FRANCIS.—On Oct. 15, the wife of Dr. R. S. Francis—a d

HASLER.—On Oct. 21, in London, the wife of Dr. J. K. —a daughter.

HENSON.—On Oct. 26, in London, the wife of Dr. R. A. He a daughter.

KENNEDY.—On Oct. 22, the wife of Dr. David Kennedy—a

MALLETT.—On Oct. 16, at Stourfield, Wimborne, Dorset, the Dr. A. E. de la T. Mallett—a daughter.

RICHARDS.—On Oct. 21, in London, the wife of Major H. J. Richards, R.A.M.C.—a daughter.

ROSE.—On Oct. 20, at Blackburn, the wife of Dr. D. J. —a daughter.

SHEPHERD.—On Oct. 17, at Birmingham, the wife of Dr. H. M. Shepherd—a son.

WALSH.—On Oct. 21, in London, the wife of Dr. R. Crosbie —a son.

MARRIAGES

MOON—LANG.—On Oct. 18, at Reigate, Anthony James M M.B., to Joan Vease Lang, M.B.

ODBERT—STOVIN-BRADFORD.—On Oct. 25, in London, F. Sidney Odbert, M.B., to Daisy Stovin-Bradford.

DEATHS

CROUCH.—On Oct. 10, in London, Harold Armstrong Cr O.B.E., M.C., M.A. Camb., M.R.C.S., D.P.H., lieut.-colonel

FAWCUS.—On Oct. 24, Sir Harold Fawcus, K.C.B., C.M.G., D.C.L., M.B. Durh., D.P.H., aged 71.

FOSKETT.—On Oct. 4, at Karamea, New Zealand, Walter M.C., M.D. Durh., squadron-leader, R.A.F.V.R., aged 57.

GORDON.—On Oct. 25, George Gordon, M.B. Glasg.

HALLIDIE.—On Oct. 19, Andrew Hallidie Smith Hallidie, M.B. Camb., F.R.C.S., aged 86.

LE FEUVRE.—On Oct. 16, at Kenilworth, Cape Town, Philip Le Feuvre, M.R.C.S., aged 88.

MACCORMICK.—On Oct. 25, at St. Brelade, Jersey, Sir Alex MacCormick, K.C.M.G., K.B., M.D. Edin., F.R.C.S.I., aged 91

PHILLIPS.—On Oct. 21, at Danby, North Yorks, Wilfrid We Phillips, M.B. Edin.

PINHORN.—On Oct. 22, at Tunbridge Wells, Richard Pink M.R.C.S., aged 92.

RADCLIFFE.—On Oct. 19, Frank Radcliffe, M.D. Manc., aged 7

RIDDOCH.—On Oct. 24, in London, George Riddoch, M.D. A F.R.C.P., aged 58.

ıble III, a group-C boarding-school, has the highes of 94%, 87%, and 83% for the holidays, and the igures of 62%, 46%, and 32% for the first halves of erms. Another group-C school, no. 6 in table III, he high figures of 73%, 86%, and 74% for the first s of the terms. This consistency was noted for a school by Allan (1937). Taken as a whole, the for the boarders varied considerably from school hool, and to a greater extent than those of the oys. Thus, for the day boys, the numbers of those gained weight in the various schools varied from to 75% in the second half of the autumn term, 50% to 80% in the second half of the spring term, om 50% to 71% in the second half of the summer compared with 21–73%, 33–62%, and 21–66% boarding-schools.

schools 1 and 5 in table III data are available both arders and day boys who gained weight in the nd second halves of the terms and the holidays. ajor difference between these two groups of boys school was that one lived in the school and the it home. Hence there may have been differences n the groups not only in diet and sleeping condiut also in such matters as the amount of exercise hool hours. The number of day boys in school 1 boarders in school 5 was small, but a comparison attempted. The most marked feature is that in ond half of each term for each school, except autumn term for no. 5, the percentage of boys weight was greater by 6–20% for the day boys ed with the boarders. In school 1 there was ency for the percentages gaining weight in the lf of the term to be more for the boarders than day boys, but there was the reverse tendency ool 5.

III—PERCENTAGE OF BOYS GAINING WEIGHT IN THE AYS AND FIRST AND SECOND HALVES OF EACH TERM

oup nd ype	Summer holidays	Autumn term		Christmas holidays	Spring term		Easter holidays	Summer term	
		1st half	2nd half		1st half	2nd half		1st half	2nd half
Bdg	77	76	50	63	74	61	74	55	57
Day	83	74	54	80	55	70	76	35	67
Bdg	..	72	21	75	44	53	77	33	26
Bdg	64	73	51	66	68	59	79	59	44
Bdg	79	75	44	65	73	47	66	59	41
Bdg	..	68	67	69	79	44	80	48	41
Day	..	82	65	67	79	50	63	59	61
Bdg	86	73	73	67	86	37	74	74	66
Bdg	..	68	36	78	65	33	79	51	21
Bdg	94	62	42	87	46	58	83	32	51
Bdg	83	81	40	81	62	62	78	57	53
Day	79	85	51	67	83	61	..	..	..
Day	..	80	75	79	82	..	..	..	..
Day	..	..	65	75	78	80	71	61	50
Day	82	52	58	..	..	..	..	..	..
Day	..	74	70	72	78	69	81	71	..
Day	83	77	58	81	73	61	55	62	71

DISCUSSION

man (1939) found that a group of public-school aged 14–18 years, compared with a group of ary-school boys in Durham, an area selected as ly affected by a severe economic depression and loyment, was about 30 lb. heavier and 3 in. and had a lumbar pull 30 lb. greater. Cathcart (1935) found that employed male adolescents were both taller and heavier than unemployed male adolescents, and that both groups were shorter and lighter than university students of corresponding ages. Orr (1936) showed that boys aged 13–18 years attending one public school were about 2 in. taller than Christ's Hospital boys, and that the latter were about 3 in. taller than the employed males of Cathcart et al. (1935).

The results of the above studies were obtained mainly by weighing and measuring the boys once only and are thus subject to variation according to the time of year at which the studies were made. Our results, based on data from nineteen schools and collected several times a year for two or three years, confirm that there are differences in the physique of adolescents according to economic class, though the differences were not so substantial as those found by Orr (1936) and Norman (1939). The public-school boys of both Orr and Norman were of better physique than our group-A public-school boys; the same school provided the data to both those workers, and that school would have been classed in group A in our study. This tends to confirm the superiority in physique of group A over that of group B. On the other hand, the physique of Norman's secondary-school boys was less than that of our day-school boys, perhaps because Norman's boys lived in Durham, a depressed area, whereas ours were drawn from six different localities. Further, there may be regional differences in physique which, for small samples, may exaggerate or diminish social class differences.

TABLE IV—PERCENTAGE OF BOYS GAINING WEIGHT

—	Summer holidays	Autumn term		Christmas holiday	Spring term		Easter holiday	Summer term	
		1st half	2nd half		1st half	2nd half		1st half	2nd half
Boarders ..	81	72	47	72	66	50	77	52	44
Day boys ..	82	75	62	74	75	65	69	58	62

We did not collect any data about the physique of employed or unemployed adolescents. However, the physique of each of our groups was better than that of employed and unemployed adolescents in 1929–32 (Cathcart et al. 1935). and of employed adolescents in 1943, as the following unpublished data (table V) collected by the Surveys Branch of the Ministry of Food show, when compared with the corresponding figures in table I. The adolescents in the Ministry of Food's body-weight survey were weighed and measured in indoor clothes and footwear, and the average heights and weights at the various ages must be reduced to enable a comparison to be made with our boys.

An interesting feature of the present study was the difference in physique between the groups of boarding-schools. The fees for all the boarding-schools, except Christ's Hospital and one other school in group C, ranged from about £100 to £250 a year. The boys must therefore have come from homes of good economic standing with good environmental conditions, such as food,

TABLE V—AVERAGE HEIGHTS AND WEIGHTS OF EMPLOYED ADOLESCENT MALES IN 1943: DATA COLLECTED IN THE MINISTRY OF FOOD'S BODY-WEIGHT SURVEY

Age (yr.)	Number	Av. height (in.)	Av. weight (lb.)
15	806	63·2	110·5
16	1310	65·4	121·2
17	1560	66·9	129·6
18	1240	67·3	134·4

The averages are based on data collected in April, July, and October, 1943. All measurements were taken in clothes and footwear.

d's Hospital, found that boys taking examinations ing scholarship work or other extra school activities more weight in the term than the average loss for espective ages.

e significance, from the health point of view, of the iations in the rate of growth during the term and ay has been discussed by Friend (1935), who states "my experience is that, provided a boy keeps his al rate of increase in weight at the beginning of school term, there is no need to worry about loss ight during the term, provided also that the loss ot go above the average loss of the school on the . In the very few cases where a boy weighs less beginning of one term than he did at the beginning preceding term there is obviously cause for investiga- It would, however, be valuable to obtain health ds and data on environmental factors such as diet, ity of exercise, and strain due to preparation for nations in schools with different patterns of growth ermine the relationship between them.

SUMMARY

a on the physique and growth during school terms olidays of boys attending thirteen public boarding- ls and six day secondary schools were obtained e period September, 1936, to December, 1938. boarding-schools were classed according to economic ing: A, highest; B, intermediate; and C, lowest. average height and weight of boys attending day s and group-C boarding-schools were about the but these were greater in group B, and still greater up A. In chest girth, group A were greatest, d by group B and day schools and then by group C. est expansion, group A and group C exceeded B and day schools.

ere were differences between the pattern of term and ay growth between boarders and day boys, the most ed difference being that a greater percentage of ders than of day boys did not gain weight in the second of each school term. There were greater differences een individual boarding-schools than between idual day schools.

e wish to thank the Leverhulme Foundation for a grant ne of us (G. E. F.) for this work; Mr. J. A. Strugnell, assistant master and games master at Queen Elizabeth's mar School, Barnet, and Mr. G. W. Murray, formerly tor of physical education, Mill Hill, and now director physical education, Marlborough College, for help in ing and executing the investigation; the headmasters of chools participating in the study, for permission to obtain growth records from the schools; the physical-training uctors, for weighing and measuring; Dr. H. E. Magee Major W. L. Giffard, for providing the dietary and other referred to in the discussion: and the Ministry of Food, roviding and allowing us to quote the data on the physique ployed adolescents in 1943.

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". . . Gastrectomy is quite frankly a physiological crime, . . . e first defences of normal man are lacking—teeth, common e and a good wife—the food may travel down the œsophagus through the curtailed stomach in a condition quite unfit further digestion. But while gastrectomy is an imperti- nce, it is at the present time the most satisfactory cure for rsistent peptic ulceration and is able to restore a wasted and erable patient to health and happiness."—Sir HENEAGE LVIE, *Aust. N.Z. J. Surg.* July, 1947.

THE PAROXYSMAL TACHYCARDIAS *

MAURICE CAMPBELL
O.B.E., D.M. Oxfd, F.R.C.P.
PHYSICIAN TO GUY'S HOSPITAL

(*Concluded from p. 647*)

Paroxysmal Ventricular Tachycardia

Ventricular tachycardia could be suspected on polygraphic curves (Mackenzie 1908), but its decisive diagnosis had to wait for electrocardiographic proof by Lewis (1909, short attacks with numerous extrasystoles; 1911, longer more ordinary attacks). In both of these forms of attack the auricular activity was undisturbed and easy to identify, but Hart (1912–13) recorded an attack where it was disturbed and there was retrograde condition with 2 : 1 block.

Gallavardin (1920, 1921, 1922) distinguished two varieties: the commonest occurring in seriously diseased hearts—the pre-fibrillatory type—and a less common one of no serious significance where the attacks were mostly short but very frequent with frequent ventricular extrasystoles also.

A sixth of my cases with cardiograms of the attack had ventricular tachycardia, and Hume (1930) gave the proportion as a fifth. But most of the 100 without cardiograms probably had supraventricular tachycardia; hence not more than 1 paroxysm in 15 is ventricular. Cooke and White (1943) collected their 27 cases from 25,000 patients with real or suspected heart disease, and at the same time used 750 patients with auricular tachycardia for discussing the prognosis. As four-fifths of all ventricular paroxysms occur in patients with serious heart disease, often with failure before the onset of their paroxysms, the proportion with ventricular tachycardia among those seeking advice because of their attacks will be still less—certainly not more than 1 in 50. Even with this small proportion a record of the attack to establish the diagnosis is important for prognosis.

ÆTIOLOGY

In four-fifths of the cases collected by Strauss (1930) the patients had serious heart disease. When his series are added to the 27 cases of Cooke and White (1943) and 15 of my own, 85 of 106 had serious heart disease and 21 were thought to have little else the matter with their hearts, though some had hyperthyroidism. Of those with heart disease 55% have congestive failure; 35% have a recent cardiac infarct and often both these factors; further, they have often been treated with digitalis. Levine (1945) found that 3% of patients with cardiac infarction had ventricular tachycardia soon after.

It was soon recognised that paroxysms were often caused by digitalis, not only by large doses but also by ordinary doses in a damaged heart. More than half the cases have had digitalis, and in more than a quarter—and in nearly all of the special bi-directional types—it was certainly the cause. Attacks have also been caused by adrenaline, atropine, and quinidine, and are not uncommon in severe diphtheria in children.

Ventricular tachycardia followed by standstill is the mechanism producing loss of consciousness in about a quarter of the cases of Stokes-Adams attacks, and ventricular tachycardia or fibrillation without standstill in another quarter.

Sex and Age Incidence.—Paroxysmal ventricular tachycardia is more common in men than in women. When the 94 reported cases of Lundy and McLellan (1934) are added to those of White and of myself, there were 95 men and 41 women—a higher male incidence than in the other paroxysmal tachycardias except flutter.

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* The Lumleian lecture delivered at the Royal College of Physicians on April 16 and 18, 1946.

housing, clothing, and heating. A possible explanation of this difference in physique is that a genetic factor was responsible, in that boys of genetically superior physique went to group-A schools. It might well be, for example, that a school with a good sports record would attract boys of good physique. Knowledge of the schools in groups A and B, however, suggests that this was probably not the cause. Bearing on this, Jacob (1938) found that the physique of girls attending St. Paul's Girls' School, Hammersmith, where the social class level remained stationary, improved between 1907 and 1937. It may therefore be that, even among those groups of the population for whom environmental conditions are generally considered satisfactory, there is still room for improvement with subsequent improvement in physique. There is in fact no evidence that the full potential physique of the group-A boys was being achieved, because there was no higher standard with which they could be compared.

There seems, however, to be no doubt that the great bulk of the adolescent population is not growing to its full potential. If proper growth is an indication that a child is in good health and consequently better able to resist illnesses of different kinds—a hypothesis for which there is little direct but a good deal of indirect support—it is interesting to speculate to what limits illness-rates among adolescents would be reduced if the environmental conditions were such as to enable the full potential physique to be achieved.

Three studies have been reported on the variations in growth-rates of boys during school terms and school holidays. Allan (1937, 1939), from data of about 1000 boys attending two secondary schools in Leeds in 1937–38 and from data from a small public school of 60–90 boys in the South of England during 1923–32, found a sudden decline in weight in the final month of each term. Widdowson and McCance (1944) found that in two well-known boys' public schools growth in height and weight was much more in the holidays than in the terms, but that in another public school growth was about the same in the terms as in the holidays. Allan, and Widdowson and McCance suggest that the poor growth during the terms was the reflexion of unsatisfactory environmental conditions in relation to the boys' needs. Our results lead to the conclusion that some factors of boarding-school life were responsible both for the differences between the boarding-schools and day schools and between the individual boarding-schools. In the war-time studies on growth by the Ministries of Education and Health (Bransby 1946) it was found that children living in residential camp schools did not grow so well as those living at home.

Data from another well-known boys' boarding-school not included in the present study have some bearing on the differences in growth during term and holidays. In 1934 Dr. H. E. Magee (personal communication), in a week's dietary survey in this school, found that a good diet with a great deal of variety was provided, including ten different varieties of meat, four kinds of fish, fifteen kinds of vegetable, and nine kinds of fruit. The boys could have as much as they liked of most foods and also had access to a tuck-shop. The average consumption of milk was about $^3/_4$ pint a day and of eggs just less than one a day. The diet provided 3300 calories, 106 g. of protein, 1 g. of calcium, 1·6 g. of phosphorus, and 21 mg. of iron per boy per day. No calculation was made of the vitamin content of the diet; but, from the amounts of foods consumed, it was likely to be considerable. Judged by the League of Nations' standard of requirements the diet was excellent. Between 1934 and 1939 the same kind of diet was provided under expert supervision.

TABLE VI—AVERAGE GAINS IN WEIGHT (LB.) PER
IN TERMS AND HOLIDAYS IN ONE BO
ACCORDING TO AGE

Age-group	Autumn		Spring		Summer	
	Term	Holidays	Term	Holidays	Term	Holidays
13–14 yr.:						
1934–35	0·28	0·70	0·17	0·44	−0·06	0·55
1935–36	0·18	0·42	0·24	0·40	0·0	0·41
1936–37	0·10	0·65	0·17	0·58	−0·07	0·63
1937–38	−0·03	1·17	−0·02	0·64	0·07	0·63
14–15 yr.:						
1934–35	0·21	0·99	0·14	0·79	−0·16	0·67
1935–36	0·22	0·63	0·23	0·66	−0·03	0·49
1936–37	0·10	0·75	0·24	0·53	−0·02	0·73
1937–38	0·0	0·99	−0·01	1·10	0·08	0·43
15–16 yr.:						
1934–35	0·14	1·02	0·11	0·60	−0·16	0·53
1935–36	0·09	0·72	0·15	0·79	−0·18	0·52
1936–37	*−0·06*	*0·69*	*0·17*	*0·52*	*−0·10*	*0·51*
1937–38	−0·01	0·96	0·14	0·77	0·09	0·25
16–17 yr.:						
1934–35	0·13	0·83	0·09	0·67	−0·27	0·55
1935–36	0·13	0·64	0·20	0·47	−0·13	0·32
1936–37	−0·06	0·63	0·08	0·61	−0·17	0·56
1937–38	−0·04	0·74	0·0	0·59	0·04	0·18
17–18 yr.:						
1934–35	0·04	1·19	−0·07	0·64	−0·33	0·46
1935–36	0·03	0·38	0·18	0·59	−0·29	0·22
1936–37	0·05	0·52	0·21	0·15	−0·13	0·06
1937–38	0·07	0·96	−0·14	0·81	−0·08	0·26

Two other matters relating to environmental conditions need to be mentioned. First, in the summer term of 1937 there was an influenza epidemic affecting three-quarters of the boarders. It began mildly became severe, and many of the boys were
Second, in the Michaelmas term of 1936 there changes in sports training involving greater strain than in previous years.

Table VI shows the monthly growth-rate in *during school terms and holidays for 1934–38,* in age-groups. The growth in the holidays was better than that in the term, this being parti *conspicuous for the summer term and* holidays. boys of all ages it was customary, on the av lose weight during the summer term. There were considerable differences in the growth pattern from to year. Thus, for all age-groups, growth in Michaelmas terms of 1934 and 1935 was greater than that in the Michaelmas terms of 1936 1937. This may have been due, to some extent, to greater physical strain arising from the modified training, a suggestion substantiated to some extent the data for the Lent term of the same years. influenza epidemic in the summer term of 1937 does appear to have reduced the average gain in weight that term compared with the same term in other This may have been due to a cessation of cricket, ming, and other activities during the period of valescence. For boys aged 15–18 years the annual in weight varied considerably from year to year. T for boys aged 15, 16, and 17 years the gains in 193 exceeded those in 1936–37 by 45%, 21%, and respectively.

The interesting point arising from these data is that *considerable losses in weight took place in the* term despite the fact that the boys were well Mumford (1927) remarks on the effect of physical mental strain on the development of children. In 191 the ordinary school physical instruction was in Manchester Grammar School, as was the routine work of preparing for higher examinations. The appearance of the members of the Officers' Training C was noticed when the boys returned from the drill at the end of the afternoon, and inquiries showed the weight and measurements of the cadet group fallen below those of the non-cadet group. F (unpublished), from data collected over some years

d that most risks could be abolished. Quinidine
then be used in larger doses, but some of the newer
dies can be tried more quickly and are often effective.
er (1936) found acetyl-β-methyl-choline chloride
cholyl') effective in most attacks; it often caused
age of the heart for a few seconds, but he recorded
rious trouble from this. It is contra-indicated in
s heart disease; and in asthma and other allergic
tions a hypodermic of atropine gr. 1/50 should be
for use. Mecholyl was not very successful in my
and often produced unpleasant symptoms of
ess and angina-like pains; perhaps too little was
and the unpleasant symptoms might have been
oted if it had been successful.

ostigmin' subcutaneously or intramuscularly has
more effective and harmless.

rbachol has also been successful in many cases,
ing some of my own. Birk et al. (1936) gave it
enously (0·05–0·12 mg.) with success.

cases without serious heart disease, the drugs
be tried in this order: mecholyl 20–40 mg.,
min 0·5–2·0 mg., carbachol 0·25–0·5 mg.; but
too early to decide their special indications and
tions.

e position is likely to be changed by the work of
(1946). Looking for quinidine substitutes for
ng fibrillation he measured the effect on the
tory period of auricular muscle and found many
, some in general use for local anæsthesia—e.g.,
e and amethocaine hydrochloride—much more
ve than quinidine. I do not know if clinical trials
et been made, but they seem likely to be effective.
re other remedies have failed Levine (1945) advises
ine sulphate 0·5 g. in 20 ml. of water intra-
ly, half this having been the minimal successful
; or 20 ml. of 10% calcium gluconate or 15 ml.
% magnesium sulphate intravenously. Morphine
desirable in ordinary recurrent attacks but may be
and may be effective if an attack lasts long and is
ng serious anxiety.

e cessation of attacks after digitalis has often been
ved, but it is doubtful if it is effective, and generally
uld not be given, unless indicated apart from the
ysms—e.g., by the development of failure in a
attack. But if the attack is thought to be flutter,
digitalisation is indicated.

oxysmal Auricular Fibrillation.—Quinidine in small
oderate doses is the treatment of choice. The arrest
roxysms by stimulation of the vagus has been
ted, but there does not seem to have been much
matic trial of this method. If the paroxysm is long.
most important to try and stop it with quinidine;
er these conditions full doses up to 0·8 g. three times
o-hourly intervals should be used.

e tendency for digitalis to favour the onset of
llation has been taken as a valid reason for not using
the treatment of such paroxysms. But they may
opped by it—not only short attacks where digitalisa-
is far from complete but also attacks of some days'
ation, where it is being given in fairly large doses.
does digitalis always convert paroxysmal to
blished fibrillation with ease; in some patients it
s the paroxysms and in others reduces their
uency.

aroxysmal Auricular Flutter.—The treatment of
e is digitalis. It should be given in full doses and
ted at once when flutter changes to fibrillation.
en the rhythm will then revert to normal; and,
n if it does not, the patient is generally better and
e easily controlled with regular digitalis. Some-
es it does not produce fibrillation, or flutter returns.
idine should then be tried in the same amounts as
fibrillation, provided the state of the heart is no
tra-indication.

Ventricular Tachycardia.—The treatment here is quinidine 0·4 g. repeated after two hours up to three or even five doses. Riseman and Linenthal (1941) have found intramuscular injection of quinidine bihydrochloride 0·5 g. in 5 ml. of water, repeated after two hours, effective in many cases where quinidine by mouth had failed. Bunn (1933) and Hepburn and Rykert (1937) reported favourably on the use of intravenous quinidine 4 g. (gr. 60) dissolved in 500 ml. of 5% glucose given at the rate of 100 ml. an hour. Magnesium salts (2–4 g.) intravenously may also succeed. Mecholyl has been used, but it is certainly dangerous and can only be recommended for young patients with normal hearts.

AFTER THE PAROXYSM

The first thing is to decide the nature of the underlying disease, if any. If thorough examination justifies it, reassurance about the nature of the attacks is sometimes all that is called for, and this alone may help to reduce their incidence. In fibrillation and flutter the possibility of hyperthyroidism must never be overlooked, for its correction by thyroidectomy often gives complete relief.

Dietetic and toxic factors must also be considered, and their treatment will sometimes succeed, though too much should not be expected of this. The avoidance of large meals will sometimes help. Similar considerations apply to the abuse of alcohol and tobacco, and reduction or even withdrawal will be found useful in a few cases. Work and exercise must also be reviewed, and in auricular tachycardia exercise may need increasing as well as diminishing when the heart is otherwise normal. A mild sedative may prove very useful.

If in spite of this the attacks are frequent and troublesome, the regular administration of quinidine 0·4 g. t.i.d. or less may greatly reduce or abolish the attacks. This may be effective in paroxysms of all sorts, least so perhaps in auricular tachycardia. So, besides its use in restoring normal rhythm, quinidine has won a rightful place in reducing the frequency of paroxysms. Occasionally the improvement is maintained when quinidine is withdrawn. Quinidine sometimes prevents fibrillation from becoming established.

Regular digitalisation has been recommended in paroxysmal auricular tachycardia, but it is rarely indicated and has not been useful in our experience. In ventricular tachycardia it must be avoided, as it is often the cause of attacks. In paroxysmal fibrillation digitalis has a more important place, though it should not be used till quinidine has failed. The production of fibrillation by digitalis has already been discussed, and it is only when the risk of established fibrillation has been accepted or is desired that digitalis should be used. Even then it is not always easy to produce fibrillation, and sometimes the attacks may be reduced.

SUMMARY

The paroxysmal tachycardias are an inconvenience rather than a sign of heart disease.

The prognosis should be judged by the state of the heart in the free intervals and not by the paroxysms.

Though ventricular tachycardia most often occurs with serious heart disease and is, in this sense only, of grave import, even it, and still more the other varieties, may occur with a normal heart and be of no significance for prognosis.

It is important to distinguish the different varieties, because the most effective treatment is somewhat different.

Often the condition cannot be cured, but generally treatment helps in reducing the length and frequency of attacks.

(*References at foot of next page*)

Most cases occur between the ages of 40 and 70 (Campbell unpublished, Strauss 1930, Cooke and White 1943). The last series (27 cases) and my own (15 cases) have been tabulated separately: under the age of 40 there were 8 with normal hearts and 3 with heart disease; over 40 there were 2 with normal hearts and 29 with heart disease.

SYMPTOMS

Generally the patients are already seriously ill, and the rapid rate may be the last straw for a heart already overburdened, but even so the symptoms may sometimes be slight. Where the patient was in good health before the attack, the symptoms are the same as in auricular tachycardia.

THE RATE

This does not help in distinguishing ventricular and auricular tachycardias. The faster rates were found with more healthy hearts, perhaps because they alone can survive long at these rates. Levine and Strong (1923) thought that some irregularity during ventricular paroxysms might help the diagnosis on clinical grounds alone. Sometimes, especially at the start, the rate is a little irregular, speeding up from 150 to 190 or falling from 270 to 220 in a few seconds, and a slight irregularity may be found on measurement, especially in paroxysms interrupting auricular fibrillation or when the patient is moribund (Cooke and White 1943). Any obvious irregularity, however, is likely to indicate paroxysmal flutter with various degrees of block.

DURATION OF PAROXYSMS

Very short paroxysms lasting a few beats are much more common than with supraventricular tachycardias, occurring sometimes in half the cases. Nevertheless in longer attacks of over four days ventricular tachycardia is also proportionately more common, though still only a small minority of all attacks of this length. The longest attack I have seen lasted sixteen days; Elliott and Fenn (1934) reported one of thirty-two days, and White one of four or six weeks.

PROGNOSIS

The cases must be divided into a small group with no heart disease and a large group with organic heart disease, generally serious. Following Gallavardin, Strauss (1930) found that the prognosis was good in patients with no heart disease but extremely bad in those with organic heart disease, 80% having died in an average period of only twenty-four days. Cooke and White found two groups of those with heart disease: half of them dying within three weeks of the paroxysms; and half making an immediate recovery and dying, sometimes suddenly, a few months later, the longest having lived eighteen months. Of the 5 with hearts that were normal, 4 were known to be alive from two to fourteen years later.

Of my own patients 8 have died, but in 6 of these death was to be expected from their heart disease. On the other hand, a woman of 56, with auricular fibrillation and frequent short and longer paroxysms in which she was incapacitated, was to my surprise much the same five years later; 4 others were of the type described by Gallavardin (1922) with numerous extrasystoles and short attacks. In none of these did the attacks seem of any significance for prognosis.

A third small but important group should be distinguished: patients apparently without much the matter except these paroxysms, who can only be diagnosed electrocardiographically, but with a grave prognosis owing to the risk of ventricular fibrillation. Gallavardin and Froment (1930) described such a case, and a similar mechanism probably explains some of the unexpected deaths among reported cases. Because of this possibility the outlook in ventricular paroxysms is more serious, and this is one reason for trying to obtain an gram of the paroxysm; fortunately they are rare.

Treatment

Some considerations common to all the will be taken first. The treatment of the patient attacks and the attempt to prevent their must be distinguished.

Quinidine is used so often that, to save repetition, points about it will be considered here. When diagnosis has been made, even between attacks, a dose of 0·2 g. should be given to detect any If this is all right, 0·4 g. may then be prescr repeated after two hours. These will be referred "small doses" and may safely be entrusted to the

If the attack persists, the dose may be giving the same amount at two-hourly intervals —i.e., 2 g.—but this should be done for the with the patient under observation and should be up to, except in an emergency. These will be to as "moderate doses."

Large doses—i.e., more than this—should only by those with experience of quinidine. The tion in the blood will be increased more giving 0·8 g. or even 1·0 g. three times at the usual hourly intervals. As soon as quinidine has normal rhythm it may be omitted, unless reasons for thinking the paroxysms likely to the near future.

Between attacks, when quinidine is used to them, the object is not to reach a high level but the quinidine constantly effective. The dose therefore not be at two-hourly intervals but through the day in three or four doses; 0·4 g. may be taken as the routine, but more may be

DURING ALL FORMS OF PAROXYSM

Rest should generally be advised, but past with a particular patient may show that relative enough. Bed is rarely needed, unless special or the condition of the heart at other times advisable. Reassurance will take an important as the prognosis is good. If an attack persists evening, rest in bed and a sedative or hypnotic often lead to its arrest. Other treatment will on the variety of the paroxysm.

Supraventricular Tachycardia.—Vagal stimulation pressure over the carotid sinus is perhaps the known method. Pressure should be maintained for a minute or so over the slight swelling of the just before its division into its two branches above omohyoid, where the artery comes out from under sternomastoid to lie in front. The vagus is lying external to the carotid. Pressure on either side successful, perhaps more often on the right. on the eyeball, invoking the oculocardiac reflex, may be effective.

But all patients cannot apply these methods. something that the patient can do himself is Tricks of sudden movement—e.g., bending down open a low drawer, and putting the head between knees—will often be effective; provided the succeeds once he will generally do so again and cease to be worred about his attacks. A forced tion with a closed glottis after a deep inspiration is constantly effective.

Quinidine in small or moderate doses is probably most useful drug. Such remedies will have their in the early phase of the paroxysm. The only risk of attack is its prolongation so that thrombosis and emb or congestive failure develop, and every attack four days should be regarded as a medical for admission to hospital or for treatment by with much experience of this disorder. In this way it remained about 11 st. 9 lb. The blood-pressure d the same, and there was no alteration in the physical

symptoms persisted irregularly during the ensuing despite administration of œstroform parenterally roid gland by mouth. An electrocardiogram revealed s deviation and inversion of P3 and T3. Her weight between 12 st. in August, 1938, and 11 st. $8^{1}/_{2}$ lb. in er, 1938, deep X-ray therapy to the left suprarenal ing followed by a return of menstruation in November year.

g 1939 further deep therapy was given to the supra- eas, and menstruation continued until November; but ary, 1940, her weight had increased to 12 st. $5^{1}/_{2}$ lb., l reappeared over the trunk, and her former symptoms d and remained despite another course of deep X-ray . She had swelling of the feet and ankles, swelling of uth, some dimness of vision, insomnia, numbness of ers, cramps in the feet, pain in the back and abdomen, daches. She was readmitted to hospital on March 6,

blood-pressure was now 230/145 mm. Hg, and the howed some enlargement. There were numerous neous ecchymoses on the arms and legs. Radiography turcica, suprarenal area, and chest showed nothing al. Bleeding and coagulation times were prolonged, blood-platelets numbered 89,000 per c.mm. The howed a hypertensive neuroretinitis, with woolly of exudate and hæmorrhages. The visual fields were ed. Blood chlorides 496 mg., phosphates 3·6 mg., olesterol 220 mg. per 100 ml. Urine contained a large t of albumin and many hyaline and epithelial casts. tient became almost completely blind, and after severe of cardiac asthma she died on May 14, 1940.

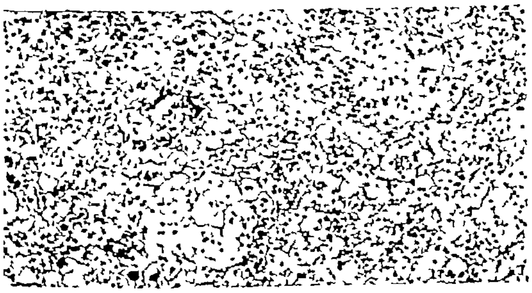

Fig. 2—Photomicrograph of suprarenal cortex. (× 75.)

sy

t weighed 450 g.; hypertrophy of left ventricle; pale red and firm; cavities dilated; valves normal; ry arteries patent but with moderate atheroma; aorta theromatous.

gs normal apart from congestion and œdema. Peri- a and alimentary tract normal. *Liver* large (1920 g.), ownish-red, with a regular pattern. *Gall-bladder, spleen, ncreas* normal. *Kidneys* normal in size (120 g. each), readily, leaving a red mottled surface. On section, narrowed in places, medulla fairly wide, substance d and firm; vessels somewhat thickened and pyramids hat irregular. *Uterus* small and fibrous; *ovaries* small rophic. *Skull* and *brain* normal. *Thyroid* gland normal e, with several small colloid areas; red and fleshy. *ymic tissue.*

h *suprarenals* bright yellow, firm, and very large (each 5 × 1 c.cm.); combined weight 20·5 g. Cortex wide, ypertrophy; medulla apparently normal; no tumour

a turcica normal in size; *pituitary gland* small, filling Anterior lobe yellowish, soft, and uniform; posterior replaced by small cyst (0·9 cm. at largest diameter) ining mucoid material.

scopy

tions stained with hæmatoxylin-eosin, Weigert's hæma- n-van Gieson, Weigert's elastin, and Crooke's modifica- of Mallory's acid-fuchsin aniline-blue method.

prarenals (fig. 2).—Hyperplasia of cells of cortex; normal arrangement largely retained. Zona glomerulosa narrow, zona fasciculata very wide, and zona reticularis slightly wider than normal. Except in zona glomerulosa, cells heavily loaded with lipoid. Medulla normal and small in amount.

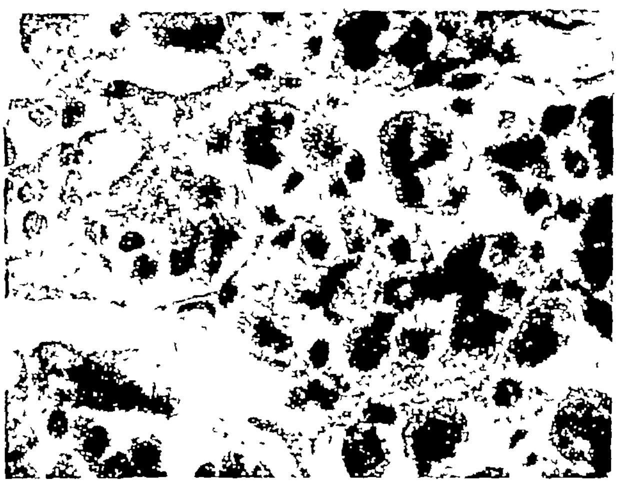

Fig. 3—Photomicrograph of pituitary gland showing hyaline change and vacuolation in basophil cells. (× 735.)

Pituitary.—Cyst in posterior lobe lined by ciliated columnar epithelium: appeared to have arisen in hypophyseal stalk. Separated from pars intermedia by small rim of posterior-lobe tissue. Relative proportions of acidophil, basophil, and chromophobe cells in anterior lobe apparently normal. Well-marked hyaline change in cytoplasm of basophil cells (fig. 3), many of which contained vacuoles. From most of these cells granules had disappeared, but a few showed a rim of granules at the periphery. No fine vacuolation of granules noted. No adenoma seen. No basophil cells in posterior lobe, which apart from cyst was of normal structure.

Kidneys.—Hyaline thickening of intima of afferent arterioles. In interlobular and medium-sized arteries intimal thickening and reduplication of internal elastic lamella, with narrowing of lumen. Glomerular atrophy, with hyaline fibrosis of Bowman's capsules and degeneration of tubules, beside areas of normal-looking renal tissue. Picture one of nephrosclerosis in essential hypertension.

Pancreas.—Hyaline thickening of intima of arterioles; smaller arteries sclerosed, with reduplication of internal elastic lamella. Parenchyma and islets of Langerhans normal.

Thyroid.—Hyperinvolution, with accumulation of colloid.

DISCUSSION

The clinical features initially pointed to the pituitary as the site of the disorders; and, as the right-sided suprarenal shadow could not be confirmed, it was decided to begin radiotherapy to the pituitary gland. Subsequent treatment and its effect is summarised in the table.

Date	Tissue dosage	Effect
January, 1936	1000 r to pituitary	No improvement
March, 1936 ..	600 r „ „	„ „
May, 1936 ..	1200 r to right and left suprarenals	Immediate improvement, maintained for 14 months
November, 1937	3100 r to right suprarenal	No improvement
March, 1938 ..	2400 r to pituitary	„ „
July, 1938 ..	2500 r to left suprarenal	Immediate improvement
November, 1938	1750 r to left suprarenal	Improvement maintained
May, 1939 ..	1850 r to left suprarenal	„ „
January, 1940	1520 r to left suprarenal	No improvement (Death in May, 1940)

PITUITARY BASOPHILISM

REPORT OF A CASE

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THE disease formerly known as Cushing's syndrome and now generally recognised as pituitary basophilism occurs, as Crooke (1935) has pointed out, in three distinct groups of cases: there may be (1) a basophil adenoma in the pituitary gland, (2) a neoplasm of the thymus, or (3) a neoplasm or hyperplasia of the suprarenal cortex without either basophil adenoma or thymic neoplasm. All three groups, however, show the same hyaline change in the basophil cells of the pituitary gland.

In the following case pituitary basophilism was associated with hyperplasia of the suprarenal cortex and a cyst in the posterior lobe of the pituitary.

CASE-RECORD

A woman, aged 23, was admitted to the Royal Melbourne Hospital on Nov. 22, 1935, with a history that in ten months her weight had increased by 22 lb. and her face, neck, and trunk had become larger, the waist line increasing by 5 in. During this period hair appeared on her back, abdomen, and limbs, and her skin became coarser. Her menses had been normal until two months before admission, since when there had been amenorrhœa. For three months she had had a sensation of pressure between the zygomata, with momentary hot flushes; but she had no headache. Sleep, appetite, and bowels were normal; there had been slight frequency of micturition. Childhood had been healthy. Her appendix was removed in 1931, and an abscess of the umbilicus was six months before admission.

Investigation

The patient was a large-faced sensible girl, with a beard and a growth of coarse hair on the limbs and (fig. 1). The pubic hair showed a male distribution. The also was of the male type, with the shoulders broader t hips. There was a well-marked increase of the subcut tissue of the face, neck, and trunk, but not of the Temperature 98°F; pulse-rate 70 per min., pulse full regular; respiratory rate 22 per min.; blood-140/90 mm. Hg. The breasts were small, and the skin trunk was coarse and greasy.

No abnormal physical signs were found in the heart lungs. There was some tenderness on the right side abdomen over the kidney. The vaginal orifice was ve making an examination of the genitalia difficult. Ex of the nervous system, and chemical and microscopical nation of the urine showed no abnormality. Glucose t test normal. The pituitary fossa had normal radi outlines. Basal metabolic rate −18%. A blood-count no abnormality except a slight shift to the left in the series. Blood-urea 20 mg., blood-cholesterol 175 m blood-calcium 11·8 mg. per 100 ml. Urea concen 3·75% in the third specimen. Chloride-balance tests n Visual fields and fundi normal. On radiography an ir rounded shadow was seen overlying the upper pole right kidney. This was thought to be consistent wi suprarenal tumour, but subsequent radiography did confirm the finding. Intravenous pyelograms showed n renal outlines and function. The patient was discha continued to gain weight.

Treatment and Progress

In February, 1936, deep X-ray therapy to the pit region was begun but had no beneficial effect, and in purple striæ over the iliac crests and in the right axilla noted. In April it was decided to give a course of X-ray therapy to both suprarenal areas. Her increased from 10 st. 10 lb. on Feb. 20, 1936, to 11 s on Aug. 31, 1936, but on this day she reported the rence of a normal menstrual flow after amen which had lasted twelve months, and some improv in her general state of health and in her physical st

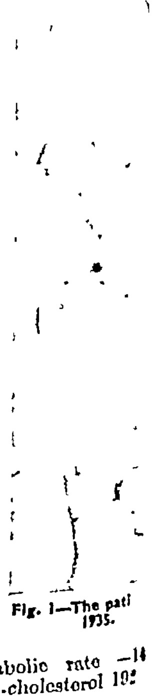

Fig. 1—The pati 1935.

During the succeeding year menstruation was normal, but there were frequent backache, headache, and generalised pains. The abnormal hair was progressively but not completely lost. Menstruation ceased again in August, 1937; hirsuties recurred; and her weight, which had fallen to 10 st. 13 lb. in December, 1936, rose to 11 st. 9 lb. by October, 1937. Examination under general anæsthesia in November revealed a small underdeveloped anteverted mobile uterus. The right ovary was small, and the left very small.

Deep X-ray therapy to the right suprarenal area in November, 1937, gave no benefit, and she was readmitted to hospital on Feb. 10, 1938. At this time she was complaining of unsteadiness in the legs, constricting pain in the chest, radiating to the back, and headache. She had been very short of breath, especially on exertion, and had a feeling of pressure in the throat. The growth of hair had increased, and amenorrhœa continued. She had had occasional cramp-like pains in the legs. There was no alteration in the physical signs, and the blood-pressure was 130/80 mm. Hg. Blood-urea 43 mg. per 100 ml.; urea concentration 3·20% in the third specimen. Basal metabolic rate −1 Aschheim-Zondek test negative. Blood-cholesterol 19 per 100 ml.

Deep X-ray therapy was given to the pituitary re without improvement. For the next three months the in the chest, back, and head continued, and pain in the fin wrists, and ankles developed. She felt drowsy and could walk without feeling tired. Her appetite was poor but

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* Dr. Wright-Smith has died since the preparation of this paper.

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remained about 11 st. 9 lb. The blood-pressure ed the same, and there was no alteration in the physical

symptoms persisted irregularly during the ensuing ; despite administration of œstroform parenterally yroid gland by mouth. An electrocardiogram revealed is deviation and inversion of P3 and T3. Her weight between 12 st. in August, 1938, and 11 st. $8^{1}/_{2}$ lb. in ber, 1938, deep X-ray therapy to the left suprarenal ing followed by a return of menstruation in November year.

ng 1939 further deep therapy was given to the suprareas, and menstruation continued until November; but ary, 1940, her weight had increased to 12 st. $5^{1}/_{2}$ lb., d reappeared over the trunk, and her former symptoms d and remained despite another course of deep X-ray . She had swelling of the feet and ankles, swelling of uth, some dimness of vision, insomnia, numbness of ers, cramps in the feet, pain in the back and abdomen, adaches. She was readmitted to hospital on March 6,

blood-pressure was now 230/145 mm. Hg, and the showed some enlargement. There were numerous aneous ecchymoses on the arms and legs. Radiography turcica, suprarenal area, and chest showed nothing al. Bleeding and coagulation times were prolonged, e blood-platelets numbered 89,000 per c.mm. The showed a hypertensive neuroretinitis, with woolly s of exudate and hæmorrhages. The visual fields were

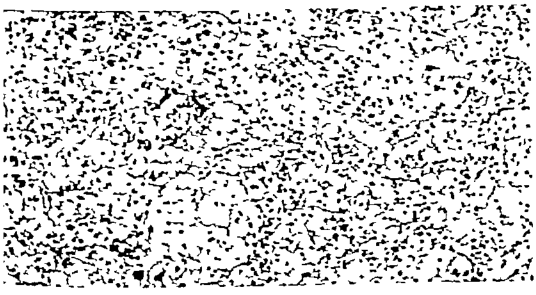

Fig. 2—Photomicrograph of suprarenal cortex. (× 75.)

ted. Blood chlorides 496 mg., phosphates 3·6 mg., olesterol 220 mg. per 100 ml. Urine contained a large t of albumin and many hyaline and epithelial casts. atient became almost completely blind, and after severe s of cardiac asthma she died on May 14, 1940.

psy

rt weighed 460 g.; hypertrophy of left ventricle; e pale red and firm; cavities dilated; valves normal; ary arteries patent but with moderate atheroma; aorta atheromatous.

gs normal apart from congestion and œdema. Perim and alimentary tract normal. *Liver* large (1920 g.), rownish-red, with a regular pattern. *Gall-bladder, spleen, ancreas* normal. *Kidneys* normal in size (120 g. each), g readily, leaving a red mottled surface. On section, narrowed in places, medulla fairly wide, substance ed and firm; vessels somewhat thickened and pyramids what irregular. *Uterus* small and fibrous; *ovaries* small trophic. *Skull* and *brain* normal. *Thyroid* gland normal ze, with several small colloid areas; red and fleshy. *ymic tissue.*

th *suprarenals* bright yellow, firm, and very large (each ·5 × 1 c.cm.); combined weight 20·5 g. Cortex wide, hypertrophy; medulla apparently normal; no tumour .

la turcica normal in size; *pituitary gland* small, filling Anterior lobe yellowish, soft, and uniform; posterior replaced by small cyst (0·9 cm. at largest diameter) ining mucoid material.

oscopy

ctions stained with hæmatoxylin-eosin, Weigert's hæmalin-van Gieson, Weigert's elastin, and Crooke's modification of Mallory's acid-fuchsin aniline-blue method.

prarenals (fig. 2).—Hyperplasia of cells of cortex; normal l arrangement largely retained. Zona glomerulosa

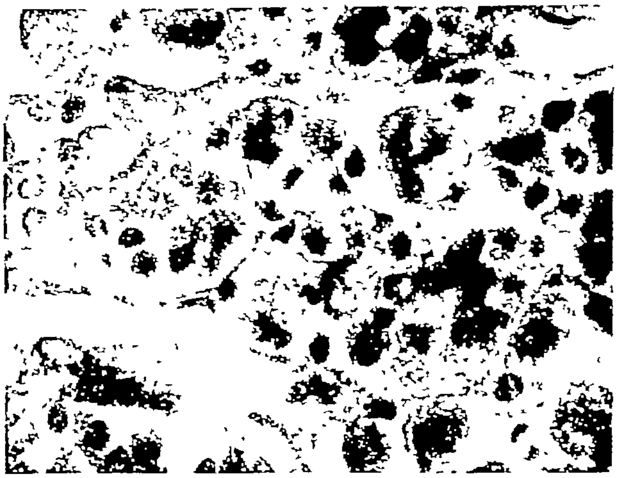

Fig. 3—Photomicrograph of pituitary gland showing hyaline change and vacuolation in basophil cells. (× 735.)

narrow, zona fasciculata very wide, and zona reticularis slightly wider than normal. Except in zona glomerulosa, cells heavily loaded with lipoid. Medulla normal and small in amount.

Pituitary.—Cyst in posterior lobe lined by ciliated columnar epithelium: appeared to have arisen in hypophyseal stalk. Separated from pars intermedia by small rim of posterior-lobe tissue. Relative proportions of acidophil, basophil, and chromophobe cells in anterior lobe apparently normal. Well-marked hyaline change in cytoplasm of basophil cells (fig. 3), many of which contained vacuoles. From most of these cells granules had disappeared, but a few showed a rim of granules at the periphery. No fine vacuolation of granules noted. No adenoma seen. No basophil cells in posterior lobe, which apart from cyst was of normal structure.

Kidneys.—Hyaline thickening of intima of afferent arterioles. In interlobular and medium-sized arteries intimal thickening and reduplication of internal elastic lamella, with narrowing of lumen. Glomerular atrophy, with hyaline fibrosis of Bowman's capsules and degeneration of tubules, beside areas of normal-looking renal tissue. Picture one of nephrosclerosis in essential hypertension.

Pancreas.—Hyaline thickening of intima of arterioles; smaller arteries sclerosed, with reduplication of internal elastic lamella. Parenchyma and islets of Langerhans normal.

Thyroid.—Hyperinvolution, with accumulation of colloid.

DISCUSSION

The clinical features initially pointed to the pituitary as the site of the disorders; and, as the right-sided suprarenal shadow could not be confirmed, it was decided to begin radiotherapy to the pituitary gland. Subsequent treatment and its effect is summarised in the table.

Date	Tissue dosage	Effect
January, 1936	1000 r to pituitary	No improvement
March, 1936 ..	600 r " "	" "
May, 1936 ..	1200 r to right and left suprarenals	Immediate improvement, maintained for 14 months
November, 1937	3100 r to right suprarenal	No improvement
March, 1938 ..	2400 r to pituitary	" "
July, 1938 ..	2500 r to left suprarenal	Immediate improvement
November, 1938	1750 r to left suprarenal	Improvement maintained
May, 1939 ..	1850 r to left suprarenal	" "
January, 1940	1520 r to left suprarenal	No improvement (Death in May, 1940)

It will be seen that irradiation of the pituitary did not bring improvement. Irradiation of both suprarenal gland areas in one field did so; but later radiation of one, the right suprarenal, did not reproduce the benefit, which was later again produced and maintained by irradiation of the left suprarenal. Finally the glandular symptoms recurred and renal failure took place.

Clinically this sequence seemed to justify the diagnosis of a left-sided suprarenal lesion; yet necropsy showed identical cortical hyperplasia in the two suprarenals. We can think of no reason for the failure of right-sided irradiation and the success of slightly smaller dosage directed to the left side. The possibility that a left-sided tumour was eradicated by the tissue dosage (2500 r) given in March, 1938, cannot be seriously considered, in view of the final recurrence of the original symptoms, the absence of tumour, and the bilateral cortical suprarenal hyperplasia found at autopsy. The higher tissue dosage given in the second and third courses to the suprarenal glands was an attempt to produce a maximal recession on a suprarenal tumour thought to be present.

Relation of Renal Damage to Irradiation.—The kidney is susceptible to damage by large doses of X rays. The initial changes are those of damage to the renal epithelium and to the vascular endothelium, and the epithelium of the convoluted tubules is said to be most sensitive. Œdema of the kidney, with vascular dilatation and degeneration and atrophy of the epithelial cells, is followed by diffuse fibrosis, thickening of the blood-vessels, and hyalinisation of the glomeruli; a contracted kidney results. Clinically these changes produce a syndrome of chronic nephritis with hypertension, retinitis, and albuminuria. The question therefore arises whether the irradiation had any ætiological connexion with the terminal nephritis and hypertension found in this case.

Assuming that each kidney received the same dosage as the corresponding suprarenal gland, the right kidney received two courses—i.e., 1200 r tissue dose, followed by 3100 r six months later—whereas the left kidney received tissue doses of 1200 r, 2500 r, 1750 r, 1850 r, and 1520 r, a total of about 9000 r in $3^1/_2$ years. Dosage of this order might cause degeneration, though the cumulative dosage is much less than that causing gross damage in the case described by Stanford Cade (1940), in which a dose of about 5000 r was administered during 50 hours by means of a radium bomb. But if the irradiation was responsible for the damage, one could expect this to be more obvious in the left kidney, which received more than twice as much as the right. The fact that the two were of identical size and weight (120 g.), and showed pathological changes of the same degree, makes it most unlikely that any significant renal damage was caused by the X-ray therapy, or that the malignant hypertension was originated by the irradiation. The renal failure of this case falls into its proper place as one well-recognised feature of Cushing's syndrome.

SUMMARY

In a young woman the symptoms of pituitary basophilism were not relieved by irradiation of the pituitary gland or of the right suprarenal gland. Considerable benefit, however, was obtained from irradiation of the left suprarenal.

At necropsy the condition of the two suprarenals (cortical hyperplasia) was identical.

The usual hyaline change was seen in the basophil cells of the anterior lobe of the pituitary gland, the posterior lobe of which contained a cyst.

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NEUROPATHY AFTER STILBAMID
TREATMENT OF KALA-AZAR

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KALA-AZAR may be seen in this country among
who have served in endemic areas, for its incu
may be as long as two years. Thus an account
after-effects which we have noted in patients
with diaminostilbene (stilbamidine) may be of int

Neither Adams and Yorke (1939), who first
stilbamidine in kala-azar, nor Kirk and Sati (1940)
any late effects of stilbamidine treatment, but Napi
(1942) found that several months after treatmen
stilbamidine 9 out of 101 patients developed a
nervous sequel, which had already been descri
Napier and Sen Gupta (1942). Sen Gupta (
further described the neuropathy, which by then
been detected in 17 out of 104 cases. It consist
areas of paræsthesiæ and of anæsthesia to light t
and occasionally to pain over the distribution of
trigeminal nerve, with preservation of sense of tem
ture and pressure. In a few cases these symptoms sp
to the neck.

Oastler and Fidler (1946) reported that 2 patients
Sudanese kala-azar treated with stilbamidine had
late in convalescence, from renal, hepatic, and pancr
damage, and that the same solution of stilbami
administered later to dogs, had caused hepatic and
lesions. No such lesions were produced in dogs
freshly prepared solutions of stilbamidine; so it
concluded that the original solution had become
with ageing. These observations were made in
before it was known that stilbamidine became
after exposure to light (Fulton and Yorke 1942, Fu
1943). However, though the freshly prepared solu
produced no significant changes in the liver, kidney
pancreas, lesions were found in the central ner
system of the dogs, associated with clinical signs.

The clinical picture resembled decerebrate rigidity,
macroscopic and microscopic lesions were found
mortem in the central nervous system, most comm
in the thalamus and caudate nucleus but also in
cerebral cortex, subcortical tissue, cerebellum, b
stem, and spinal cord. Microscopically the le
consisted of myelin degeneration and infiltration
polymorphs, small round cells, and erythrocytes.
was no apparent relationship between the degre
nervous damage and the amount of stilbamidine give

*Our first patient had been invalided to England f
Malta in November, 1943, because of protracted f*
with severe anæmia, leucopenia, and splenome
Kala-azar was diagnosed after sternal puncture, and
was transferred to the Queen Alexandra Military I
pital. After a blood-transfusion he was given two cou
of stibamine glucoside ('Neostam') intravenously,
first totalling 2·1 g. and the second 3·2 g., but a
from slight decrease of his fever he showed no impr
ment. He was then given intravenous stilbami
an initial dose of 0·1 g. in fresh solution being follo
by 0·15 g. on alternate days up to a total of 1·4
After the seventh injection the fever subsided and
general condition improved dramatically. A few w
later he was fit to leave hospital convalescent.

Meanwhile there was a steady flow into the hosp
of soldiers with kala-azar from North Africa, Si
and Italy, both fresh cases and patients who had alre
been treated with antimonial drugs without suc
They too were given stilbamidine, and our first imp

were very good. By the end of 1944, however, arming number of patients returning for follow-up iination were being found to have facial symptoms, two relapses occurred (Hargreaves 1947).

ndes (1944) was finding urea-*para*-amido stibinic (urea stibamine) satisfactory in kala-azar in patients ning to England from the Mediterranean, and ral Sir Alexander Biggam obtained this and an drug, urea-*para*-aminophenyl stibinic acid (carbomide), from India. We then stopped using stilbine and substituted these drugs, which have proved ely satisfactory in the treatment of both Mediterin and Indian kala-azar. The average patient iven two courses totalling 3 g. each of daily intraus injections, and as a rule the fever subsided in r three days after the start of treatment.

ea stibamine and carbostibamide were equally ive, but the patients preferred carbostibamide, se the transient symptoms—flushing, cough, nausea, during injection were much less and often absent. mparison with these drugs stilbamidine had been lesome to administer. Because of its tendency to local venous thrombosis at the site of injection as necessary to dissolve it in at least 200 ml. of lled water. Again, the transient symptoms caused h injection of stilbamidine were often severe unless it iven very slowly—generalised flushing with a burning tion, headache, giddiness, palpitation, epigastric pain, ea, and vomiting. One patient developed auricular lation lasting several hours after an injection.

INCIDENCE OF NEUROPATHY

ogether 24 cases of kala-azar had been treated with midine at the Queen Alexandra Military Hospital e the high toxicity of the drug was recognised. further patients had received stilbamidine abroad. of these was an invalid from Italy with prolonged r and leucopenia. We diagnosed brucellosis and to surprise he complained during convalescence of bness and burning in his face and lips. We found a course of stilbamidine had been given to him rically eight months previously. The total dosage n to our patients was 0·6–3·2 g., and we found no tionship between the dose of stilbamidine and the rity of nervous complications.

e have followed up 24 patients for periods up to e years, and 22 have developed evidence of neurohy at intervals ranging from two to eight months after tment. The 2 apparently unaffected patients were ong those who lived too far away to attend for mination but who answered a written questionnaire. other of this group wrote to tell us that he was quite ll and back at his old civilian job but had to attend sychiatric clinic because of a queer feeling in his face. This incidence of the neuropathy in over 90% of our ients is very much higher than the Calcutta figure 16%. Sen Gupta (1943) was careful to point out, ever, that the incidence might be higher than the res indicated, since not all his patients were followed and the 17 who complained of facial symptoms were stly of the more intelligent type.

CLINICAL PICTURE

Symptoms.—The main symptoms were numbness of e face and sometimes the scalp, neck, and chest; resthesiæ in the same areas, varying from pins-and-eedles to a sensation of hot water trickling over the in; hyperæsthesia, shaving, or a light breeze on the ce often causing agonising pain; itching of the eyelids, ith watering of the eyes and sometimes a sticky secreon; and fine twitching of the muscles round the eyes ith frequent blinking.

Signs.—Sensory changes were found over various areas upplied by the fifth cranial nerves and the cervical and upper dorsal sensory roots. The skin over the affected areas sometimes appeared dry and atrophic. The type of sensory loss was fairly constant, consisting of impaired perception of light touch, blunting of pin-prick, and impaired temperature sensation. When these changes were extensive, vibration sense was also lost in some cases over the bridge of the nose and the chin. Occasionally the corneal reflex was depressed, but it was never absent. Deep pressure and pain sensibility, two-point discrimination, and the jaw-jerk were normal in all cases. Fine twitching of the face and eyelids, with lacrimation, were commonly seen, presumably of reflex origin from irritation of the sensory mechanism of the fifth cranial nerve.

These findings differ from those of Napier and Sen Gupta (1942) and Sen Gupta (1943), who reported that perception of light touch and occasionally pain sensation were affected. In a few of their cases the neck was involved as well as the face; in some of our series, as already noted, the sensory changes spread to the chest.

Onset.—The symptoms came on two to eight months after stilbamidine treatment. The first complaint was usually numbness or pins-and-needles over the upper lip and tip of the nose, the patient often noting that he could not feel a cigarette in his mouth. During the next few days, or occasionally weeks, the symptoms would spread to the whole trigeminal area on both sides and sometimes the cervical and dorsal dermatomes.

Course.—The condition usually remains stationary at its maximal extent and severity from eighteen months to two years, after which it gradually improves. Sensation usually returns in the reverse order to that in which loss occurred, but a few patients, whose symptoms started over the third division of the trigeminal nerve, now show residual signs in the first division only. In one case the numbness spread to the neck in the first two weeks but receded after a further week, leaving only facial signs. We have not found any treatment to influence the progress of the condition, but soluble phenobarbitone has given some symptomatic relief to patients with very severe paræsthesiæ. In most of the patients this neuropathy was a very real disability, and there was no difficulty in detecting old stilbamidine cases in the wards by their miserable expression with blinking and tearful eyes.

ILLUSTRATIVE CASES

Case 1.—December, 1943, to February, 1944: stilbamidine, three courses, total 3·08 g.

May, 1944: numbness and paræsthesiæ over forehead, spreading in a few days over whole face, then receding to left forehead and cheek.

October, 1946: persistent symptoms on left side of face, sometimes spreading over whole face for a day. Sensory changes found over right and left trigeminal areas; pain, light touch, and thermal sensation lost in divisions I and II; loss of light-touch sensation only in division III.

Case 2.—March, 1944: stilbamidine 2·25 g.

July, 1944: numbness of lips, spreading in three months over whole face, scalp, neck, and upper chest, with severe paræsthesiæ.

June, 1946: symptoms improving over chest. Loss of pain, light touch, and thermal sensation over right and left trigeminal areas and cervical dermatomes 1–5.

Case 3.—March, 1944: stilbamidine 1·5 g.

November, 1944: pins-and-needles and perverted sensation over face.

June, 1946: symptoms persist; no sensory loss detected.

Case 4.—May to August, 1944: stilbamidine, two courses, total 2·95 g.

November, 1944: perverted sensation over cheeks; light touch very painful. In a month this spread over whole face and forehead.

February, 1945: perverted sensation subsided, but numbness developed.

June, 1946: numbness of forehead and itching of eyelids; findings as in case 1; typical dissociated sensory loss in divisions I and II of trigeminal nerves; loss of light-touch sensation only in division III.

Case 5.—January, 1945: stilbamidine, amount not known, in Italy.

September, 1945: burning sensation in lips, then pins-and-needles with numbness spreading in a few months over face, scalp, neck, and upper chest. Symptoms gradually receded from chest.

June, 1946: loss of pain, light touch, and temperature sensation over right and left trigeminal areas and cervical dermatomes 1–3; vibration sense lost over bridge of nose.

Case 6.—July, 1946: stilbamidine 0·6 g. in another hospital.

October, 1946: numbness of nose and upper lip, with paræsthesiæ, spreading in four days over whole face; loss of pain, light touch, and thermal sensation over right and left trigeminal areas. Ten days later these changes extended down to 3rd cervical dermatome, then receded rapidly.

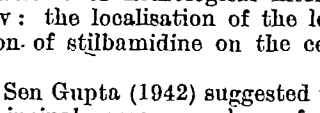
November, 1946: impaired pain and light-touch sensation only over both trigeminal areas.

DISCUSSION

This condition is of neurological interest from two points of view: the localisation of the lesion, and the mode of action of stilbamidine on the central nervous system.

Napier and Sen Gupta (1942) suggested that the lesion was in the principal sensory nucleus of the trigeminal nerve, and Sen Gupta (1943) later postulated that the process might extend caudally into the spinal tract of this nerve and its nucleus. It seems from the more extensive physical signs which we have noted, that stilbamidine may affect not only the principal sensory nucleus and the nucleus of the descending tract of the trigeminal nerve but also the central grey matter of the spinal cord near the substantia gelatinosa Rolandi. The fact that these collections of grey matter form a continuous column of cells which are morphologically similar makes this localisation probable. In the dog stilbamidine has a diffuse effect on the grey matter (Oastler and Fidler 1946), but in man it appears to have a special affinity for this one column of cells. Other examples of specific affinity are known, such as that of trivalent arsenic for the optic nerves and trichlorethylene for cranial-nerve nuclei, particularly the fifth.

The structure of stilbamidine (see figure) is such that it is related to trichlorethylene through its ethylene



linkage, and by reason of its diamidine groups it is akin to diamidino-di-phenoxy-pentane (pentamidine), another synthetic antiprotozoal drug, which is known to cause polyneuritis. Snapper (1947) is using stilbamidine in the treatment of multiple myelomatosis, and during the treatment he has noted specific morphological changes developing in the cytoplasm of the myeloma cells, in which granules of ribonucleic acid appear. His results indicate that in this particular disease the beneficial effects of stilbamidine outweigh its disadvantages.

SUMMARY

Stilbamidine was used in the treatment of Mediterranean kala-azar in 1944, and the results seemed good until an alarming number of patients developed numbness and paræsthesiæ over the face, often spreading to the neck and chest.

These symptoms appeared two to eight months after treatment in over 90% of cases—a much higher figure than the 16% reported from Calcutta, where not all the patients were followed up.

Urea stibamine and carbostibamide were effective in all our subsequent cases of kala-azar, both from the Mediterranean theatre and from India.

The clinical features of the neuropathy are described, with illustrative cases. The symptoms tend to remain at a peak for about 2 years, and then improve grad The nature of the lesions is discussed.

Our grateful acknowledgments are due to Major-Sir Alexander Biggam and Brigadier J. Bennet for thei help and advice, and to the many medical officers who in this work at the Queen Alexandra Military Hospital.

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QUARTAN MALARIA TRANSMITTE BLOOD-TRANSFUSION

REPORT OF A CASE

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M.B. Lond.
LATELY PATHOLOGIST I/C AREA PATHOLOGICAL LABORA
SHOTLEY BRIDGE

It has been demonstrated repeatedly that h malaria may be transmitted by blood-transfi Thomas et al. (1936), in describing the first case i British literature, emphasised the risk of employi a donor anyone who had resided in a malarious di After the case of Nabarro and Edward (1939), H and Shute (1939) suggested that civilian donors had lived in the tropics or subtropics should not be if other blood-donors were available. Now that so ex-Service men and women are potential donors, may be a tendency for this advice to be disreg The following case emphasises the risk of using d who have visited malarious areas but have not clinical malaria.

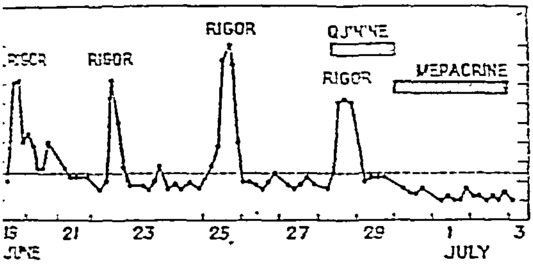
CASE-HISTORY

Mrs. A, a primipara, aged 18, with group-A blood given an antepartum transfusion on March 8, 1946. Sh never travelled outside the Tyne Valley area of Northu land and co. Durham. Her Hb level rose from 40% to after the administration, without reaction, of two pi 3-day-old stored group-A blood. She was discharged, a March 14 returned in labour and was delivered of a full healthy son.

Her puerperium was normal, except that on Mar she had a slightly elevated temperature, interpreted a to constipation, which was treated with suitable aper This was the only pyrexia recorded, and she was disch well on the 24th.

About five or six weeks after her return home, sev eight weeks after the transfusion, she started to fee down. At the same time her sister, with whom she sha bed, refused to sleep with her, because Mrs. A became so with sweat during the night.

The patient was not unwell enough to consult a d before she entered the county postnatal convalescent hor June 15, when she was thought to have a cold. On the she had what must have been a slight rigor; she was the next two days, but had a definite rigor on the 19th, w was repeated, as shown in the temperature chart. She investigated on the 25th, when typical quartan ma parasites were seen in the blood smears; at that tim was pale, with an easily palpable spleen and liver. B count: red cells 3,600,000 per c.mm., Hb 10·5 g. per 100 c white cells 3000 per c.mm. (polymorphs 73%, lympho 23%, mononuclears 1%, eosinophils 3%). Blood-sedim tion rate in 1 hour at 20°C (Wintrobe): patient 53 donor I 9 mm., donor II 5 mm.; corpuscular volume, pa 33 c.cm., donor I 42 c.cm., donor II 40 c.cm.; corrected patient 27 mm., donor I 6 mm., donor II 6 mm. (H and Whitby 1938). Mean corpuscular volume 91 c.μ. corpuscular hæmoglobin concentration 32%. Stained showed normal red cells except for the contained mal



es. Serum did not agglutinate *Br. abortus* emulsion dilutions from 1/25 to 1/2500. Blood-culture proved . Plasma: paler than normal, no icterus present.

nt was treated with quinine gr. 10 t.d.s. for two days en mepacrine gr. 3 t.d.s. for five days; her temperature d remained down after the 28th (see figure) Up to the five months the child has shown no evidence of a al infection.

THE DONORS

r I had been on a cruise which allowed her to land for hours at Algers; no parasites were seen in her blood s.

r II was a ship's engineer who, in 1939, had travelled en, Abadan, and Basra, the trip taking about five. s. He had never had malaria, though several of the ad "3-day malaria" on the voyage back. On his return and in the summer of 1939 he was liable to feel cold uld go to bed for an hour during the day, but he did sult a doctor. Since then he has never been out of d and never had any illness except "flu" during a demic; in a thin smear of his concentrated centrifuged (Rogers 1946) a definite quartan male gametocyte was

d taken from both donors on July 4 was injected into tients with general paralysis of the insane who belonged rd group A. No evidence of malaria has yet appeared patient given the blood of donor I; but the patient the blood of donor II developed malaria on Aug. 5. shown above the sedimentation-rate was not raised in ne who was the active malarial carrier.

DISCUSSION

es of malaria transmitted by blood-transfusion r to be more common in America and France than gland; Wright (1938) added 6 of his cases to make a ted total of 29, of which the only English example was of Thomas et al. (1936). Since then McCulloch (1937), n (1941), Marks (1941), Zussman and Silver (1938), Gardner (1938) have described cases, all of which quartan infections in America; in England rro and Edward's (1939) case has been reported, and s (1946) had another case in a pregnant woman.

e malaria transmitted by donors who have not been nt in malarious areas for many years are nearly quartan infections; but in the cases reported by ier et al. (1934) and Wright (1938) the malaria was n tertian and the donors had carried malaria parasites hree and ten years respectively. Shute (1944) states quartan malaria is *not*, as was once supposed, so h rarer than benign tertian or malignant tertian, ast in some malarious regions; therefore ex-Service onnel who have not had clinical malaria may well as carriers of quartan or benign tertian malaria if l for blood-transfusion. Whitby (1942) stated, and er and Newhouser (1943) demonstrated, that the risk ransmission of malaria by plasma is practically existent.

uggest that all donors who have been resident in arious areas, whether they have had clinical malaria ot, should be bled only for the production of serum. s will prevent the transmission of malaria parasites, and e who have had malaria will be available as safe donors.

SUMMARY

case of quartan malaria, with a long incubation iod, has

It was caused by a blood-transfusion from a donor who had never had clinical malaria and who had lived five months in a malarious area seven years before.

The blood-sedimentation rate was not raised in the malaria carrier.

It is suggested that the blood of donors who have been exposed to possible infection with malaria should be used only for producing serum.

I wish to thank Drs. I. McCracken and E. Ewen for permission to publish this case; Drs. C. B. Bamford, A. L. Banks, T. H. Boon, A. Hart, W. D'A. Maycock, and P. G. Shute, Prof. H. E. Shortt, Miss E. Lowe, Mr. C. H. Holland, and W. Ralph for their help and criticisms.

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Medical Societies

MANCHESTER MEDICAL SOCIETY

Lung Abscess

In an address to this society on Oct. 1, Mr. W. F. NICHOLSON said that the common cause of lung abscess is bronchial obstruction with secondary infection. In normal health the cilia lining the bronchial tree keep the air-passages free from organisms and debris. When ciliary action is impaired by trauma, infection, or growth, coughing prevents bronchial obstruction; but when coughing is embarrassed by pain or anæsthesia or tenacious secretion, bronchial obstruction may occur. Abscess due to bronchial embolism arises at the periphery of the lung, though it may not present on the costal surface. Because the subapical segment of the upper lobe and the apical segment of the lower lobe are the most dependent bronchi in the lateral and supine positions respectively, these segments are most frequently affected; consequently, the majority of inhalation abscesses present on the costal surface of the lung corresponding to these segments. Upper-lobe abscess is common after operations on the upper respiratory tract, in which a lateral position is commonly employed during the immediate postoperative period. Lower-lobe abscess is often due to abdominal operations, associated with a supine or Fowler's position. Putrid lung abscess often goes undiagnosed because it is still not widely known that such an abscess can exist without foul sputum. When the abscess ruptures into the bronchial tree, sputum will be present; but even before this happens the breath may be fœtid.

Treatment is by drainage, either bronchial (postural) or external (by operation). In either case localisation of the lesion must be exact if treatment is to be rational. The responsibility of the physician in these cases is heavy: if he delays external drainage the disease may spread to a diffuse suppurative pneumonia of a lobe, which will eventually require lobectomy; moreover, the immediate mortality of conservative treatment is considerable. Only when the physician shares responsibility with the surgeon from the beginning can drainage be instituted promptly if medical measures fail. Chemotherapy and antibiotics, though of value, do not replace drainage. Bronchoscopy is of help in localising the bronchopulmonary segment of the abscess, in improving bronchial drainage, and in excluding the possibility of foreign body or growth: as a curative measure it is little better than postural drainage. Surgical drainage decreases mortality and morbidity.

Reviews of Books

Practical Handbook of Leprosy

R. G. Cochrane, M.D. Glasg., F.R.C.P., medical secretary, Mission to Lepers; principal, Missionary Medical College, Vellore, South India. London: Oxford University Press. 1947. Pp. 283. 42*s*.

For those who have not seen leprosy, or have seen only a few cases, it is often difficult to make a definite diagnosis; and, having made a diagnosis, to classify the type or make a reliable prognosis. To all such, Dr. Cochrane's book will be valuable, especially because of its plates, which vividly illustrate the innumerable forms which leprosy presents. The book relates chiefly to leprosy in India, and particularly in Madras, where the author has gained most of his experience. Atypical forms of leprosy, especially of those found in early childhood, are described in great detail. These forms are the most difficult to understand, and opinion is still much divided about their significance and the best way of classifying them. Dr. Cochrane still places his faith in hydnocarpus oil as the sheet-anchor of treatment in lepromatous leprosy, which is the severe form of the disease; he mentions sulphone treatment only incidentally in a short paragraph. The chapters on the control of treatment, lepra reaction, and the various subsidiary forms of treatment are full and practical. The most important part of the book is perhaps the last section of three chapters dealing with prevention. The methods he has used in the Madras Presidency are given in detail. Not only are the therapeutic measures prescribed, but the social improvement of the people; and this section should be studied carefully by all who seek to launch a campaign against the disease. At the end there are four appendices, giving practical methods of carrying out surveys, and recording the lesions of patients. Unfortunately there are some textual mistakes in the book, and some of the statements will not be very clear to those who are not familiar with leprosy; but on the whole it is beautifully produced.

The Chest

A Handbook of Roentgen Diagnosis. Leo G. Rigler, M.D., professor of radiology, University of Minnesota. Chicago: Year Book Publishers. London: H. K. Lewis. 1946. Pp. 352. 36*s*.

Some of the previous volumes in this series have been an unhappy combination of textbook and atlas. Prof. Leo G. Rigler has made no such mistake, but has produced a really good radiographic atlas of the common lung diseases. There are 338 plates, most of high quality, and the text with each is short and to the point. He assumes that his readers will have some knowledge of radiographic interpretation and a wide knowledge of lung pathology. This book will prove most useful to chest physicians and radiologists.

Jameson and Parkinson's Synopsis of Hygiene (9th ed. London: J. & A. Churchill. 1947. Pp. 791. 28*s*.).—The ninth edition of this outstanding textbook has been prepared by Brigadier G. S. Parkinson assisted by Miss Kathleen M. Shaw, of the London School of Hygiene and Tropical Medicine. Besides giving some picture of the replanned health services, they have considered the regulations made under the Education Act, 1944, rewritten the hospital section, and revised the other chapters in the light of the General Medical Council's new rules for the diploma in public health.

Diabetes and Food Rationing (3rd ed. London: H. K. Lewis. 1947. Pp. 32. 1*s*. 3*d*.).—This is a good clear pamphlet written to help the diabetics attending University College Hospital in their diet difficulties and especially those of food-rationing. It sets out different fixed calorie and carbohydrate levels, giving abundant alternatives. The carbohydrate varies from 150 to 285 grammes; in these days of bread and cereal rationing and potato shortage the latter quantities must be difficult to obtain.

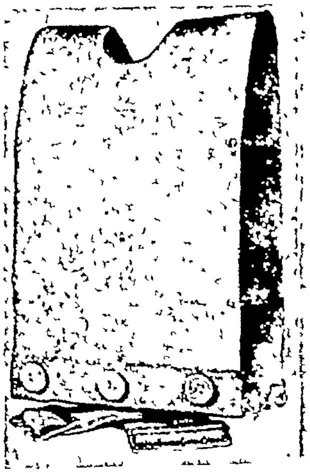
Messrs. Macmillan inform us that in our review of *Human Genetics* by Prof. R. Ruggles Gates (*Lancet*, 1947, i, 911) the price given was that originally announced. Shortly afterwards however this figure was reduced to £3 15*s*.

New Inventions

SPLINT FOR FRACTURED CLAVICLE A ACROMIOCLAVICULAR DISLOCATION

Fractures of the clavicle usually unite readil the cosmetic results are often disappointing, methods of splintage commonly adopted, most of are designed to brace the shoulders back, will correct the chief deformities.

The loss of the strut-like action of the allows the shoulder girdle to fall under the gravity and to be drawn inwards by the pull muscles arising from the trunk. Böhler's original splint was designed to correct these two d it has the disadvantage of being rather cl uncomfortable to wear. For some time I using a splint which, while embodying the principles advocated by Böhler, gives the comfort. It consists of a light aluminium fı shaped to fit the chest wall and held against th by a washable corset (fig. 2). The upward lift



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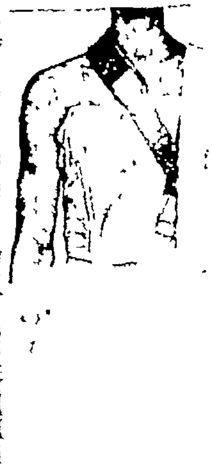

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Fig. 1—Aluminium splint.

Fig. 2—Splint applied, with corset and strapping, for clavicular dislocation.

splint is regulated by a strap passing over the shoulder, which should be adjusted so that the a shoulder is above the level of its fellow. To avoid pressure on the axillary neurovascular bundle the border of the splint must be generously padded thick layer of splint wool, which is placed ben flap of the corset covering the top of the splint.

This splint is not only effective in correcti depression of the shoulder but also acts as a in the axilla and restores the width. With the s position pain at the fracture site is abolished a patient can dress and move the arm at the s freely. In most cases the fragments fall into satis alignment; but, when the fracture is transver the clavicle displaced, it may be difficult to accurate apposition.

The treatment of dislocations of the acromiocla joint, which are notoriously difficult to reduc strapping placed over the shoulder and round the is simplified by the use of this splint. The shou first lifted up to the dislocated clavicle; then by turns of 'Elastoplast' over the point of the s (previously padded with adhesive felt) and bel splint (fig. 2) the distal end of the clavicle held firmly against the acromion. The splint worn for 6–8 weeks according to the severity dislocation, but the shoulder-joint can be exercised throughout.

The splint and corset have been made for me by Masters & Son, 240, New Kent Road, London, S.E.1

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Orthopædic Surgeon to Guy's

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References: Shortage of space precludes list of references, but full documentation may be obtained on application to Clinical Research Dept. 6.B.

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THE LANCET

LONDON: SATURDAY, NOV. 8, 1947

ormation Offices in the New Service

of the faults of the present system of medical ias been that although almost every form of ient is obtainable, somewhere or somehow, it een nobody's business to know where or how. pecial hospital, clinic, or unit has dealt faith- vith the patients who come to it but has been no obligation to advertise its functions, let to see that everyone who might benefit from its ions does so. Exceptions, of course, are the of the health authorities—infant welfare, ulosis, venereal diseases, and so on—which do make their functions known to the public. new service a doctor will be free to prescribe reatment he thinks necessary for his patients; ver, he will be able to demand it of the service whole. The regional boards must therefore what treatment is available for the patients in regions, and there must be some simple and way of handing this information on to doctors sk for it.

advent of the National Health Service will ably lead to much reorganisation of the present haphazard pattern, and each step is bound to the existing arrangements with which doctors become familiar. Some small hospitals will sorbed by big ones; some will be upgraded and the reverse. No doubt doctors will be kept ied of relevant changes by circulars and the like, hey cannot hope to keep every alteration or ation in their heads or even in their files. Then are the everyday problems of practice which so much of the busy doctor's time. Perhaps ient is having outpatient treatment at a hospital arwickshire and is going to London for a few on business; his doctor will want to tell him iost convenient London hospital which will ue the treatment and when its outpatient ns are. Then there are the questions about lescent homes, about scarce drugs or equip- about the help that voluntary organisations ffer in a specific case—questions perhaps that stumped even the hospital almoner. If Thomas can tell an inquirer what hotels are suitable for eeds at the other end of England, and at what surely the same can be done with hospitals, s, and the many auxiliary services of which dical system is built?

ere is a need, then, for information offices— ps one in each region, since many of the questions red will refer to local matters. It would be ble to run such an office with a purely lay staff, n indexing system, built up as knowledge is red and kept accurate and up to date by constant ion, should provide the answers to most of the or's likely questions and should tell the intelligent ator where to apply for more out-of-the-way mation. A lay staff, moreover, will not succumb e of the temptations which beset such bureaux— of giving professional advice on insufficient data. It might be advisable to combine the regional information office with some kind of emergency bed service, so that in urgent cases the doctor, having been told where his patients can be sent, could make arrangements for their transport and admission. In London it would be simple to graft an information office on the existing E.B.S. of the King's Fund, and the experience so gained would be invaluable to other regions considering a similar symbiosis.

Homologous Serum Hepatitis

TEN years ago it was noted [1] that a high proportion of the recipients of two batches of pooled human serum used as measles prophylactic had developed jaundice about two months afterwards; 9 of the cases were fatal. In the same year there were some cases of jaundice developing a similar time after the patients had received yellow-fever vaccine containing human serum, and the jaundice in this group was shown not to be due to infection with yellow-fever virus.[2] It seemed likely that there was some hepatotoxic substance in human serum causing the jaundice. Attention was drawn to the fact that the "staggers," described in 1919 by THEILER [3] in horses immunised against horse-sickness, resembled the serum jaundice in man. A somewhat similar condition appeared in the U.S.A. in 1937 in horses injected with immune horse-serum, either alone or together with equine encephalomyelitis virus vaccine,[4] and in Scotland in 1938 when horses had been injected with an immune horse-serum in an attempt to prevent grass-sickness.

Summing up the position in 1938, FINDLAY and MACCALLUM [5] noted that in every case the inoculum contained homologous substances, either in the form of homologous serum or homologous tissue suspensions. It was possible that the jaundice was the result of hypersensitivity to some constituent of the homologous serum, but anaphylactic effects rarely involve the liver and it was difficult to make out what constituent of the homologous serum could be responsible for a hypersensitivity phenomenon. Other suggestions were that some apparently normal sera might contain an hepatic antibody which damages liver cells, or that a hypothetical virus was present in the serum of some apparently normal human and horse-sera. A year later FINDLAY and his colleagues [6] decided that the most satisfactory explanation of the jaundice following yellow-fever vaccination was that the agent of infective hepatitis had been present in the apparently normal human serum used in the preparation of the icterogenic vaccine. From 1940 onwards there were innumerable reports of this kind of delayed jaundice following the injection of pooled adult serum or plasma, samples of whole blood, or certain batches of yellow-fever vaccine containing apparently normal human serum. In 1943 medical officers of the Ministry of Health prepared a memorandum [7] in which they collected all known incidents of jaundice following the use of homologous blood products; serum was the only definitely proved source, so they adopted the term "homologous serum jaundice" to cover the whole group.

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[1] Propert, S. A. *Brit. med. J.* 1938, ii, 677.
[2] Findlay, G. M., MacCallum, F. O. *Trans. R. Soc. trop. Med. Hyg.* 1937, 31, 297.
[3] Theiler, A. *Rep. vet. Res. S. Afr.* 1919, 5, 7.
[4] Marsh, H. *J. Amer. vet. med. Ass.* 1937, 91 (n.s. 44), 88.
[5] Findlay, G. M., MacCallum, F. O. *Proc. R. Soc. Med.* 1938, 31, 799.
[6] Findlay, G. M., MacCallum, F. O., Murgatroyd, F. *Trans. R. Soc. trop. Med. Hyg.* 1939, 32, 575.
[7] *Lancet*, 1943, i, 83.

Thus homologous serum jaundice gradually came to be recognised as a definite entity associated with the injection of an agent, probably a virus, present in the serum of apparently normal people, and the term has served its purpose. However, since it has become recognised that the agent may be present in plasma or whole blood and *not only* in the serum fraction, the name is somewhat misleading, as Dr. ASHER points out in his letter in this issue. There have been cases, even recently, where pathologists and clinicians have not considered the possibility of homologous serum jaundice because the patient had received only plasma. With the further recognition of subicteric cases, as in infective hepatitis, it is clear that "hepatitis" should replace "jaundice." Is it time that "homologous serum" also gave place to something more correctly descriptive? FINDLAY[8] has recently suggested "*hæmatic* jaundice (hepatitis) of (*a*) human or (*b*) bovine origin." To many, this term may suggest an association with only the red blood-cells. "Hæmatogenous hepatitis" has been proposed as a better all-embracing title, but if one accepts the results of the transmission experiments in human volunteers done in various countries during the war years, there must be at least two distinct hepatitis viruses, one causing most of the epidemic infective hepatitis and the other most of the "homologous serum hepatitis." It is difficult to conceive how "homologous serum hepatitis" could be kept going among populations by inoculation alone, and we have also the suggestive evidence of FINDLAY and MARTIN[9] and of MACCALLUM,[10] that the virus may be present in the nasopharynx at some stages of the incubation period or early in the disease. In epidemic infective hepatitis we know the virus is also circulating in the blood-stream in the preicteric period when a donor may provide blood and cause "hæmatogenous hepatitis." MACCALLUM suggests that the viruses responsible for the two forms of hepatitis should be called hepatitis viruses A and B, and this seems a satisfactory way out of the difficulties. Whether these are distinct organisms or two strains of the same organism remains uncertain. There is some evidence that infection with virus B actually increases susceptibility to virus A, and it seems that a large proportion of adults in Great Britain are susceptible to virus B whereas there is a widespread immunity, in the adult population, to virus A.

A New Way with Poverty

THE poor-law stood us in good stead; according to G. M. TREVELYAN,[11] it probably spared us the equivalent of the French Revolution. No such regiment of beggars as swarmed in the streets of French towns under Louis XIV was seen in England after Tudor times: "the poor-law was meant to prevent them, and did prevent them by the only practical method, the relief of distress and the provision of work." Even the 1834 Act, which brought its own abuses, contained, as TREVELYAN says, the seeds of its own reform, and must be counted among the forbears of the new National Assistance Bill, the of which was issued last week. Its parents, however, were the Local Government 1929 and the Beveridge report; and we may some pride in the fact that the final stage of t that report into laws is being taken before it is years-old. Public opinion has turned in a new tion during the past century; and the chief between the legislators who planned the 1834 Act those who drafted the new Bill is to be found modern respect for the personal liberty of the Its fundamental aim, explained in a white-pa "to achieve the final break-up of the poor-l create entirely new services founded on conceptions of social welfare." These into two main parts. The relief of destitutio pass out of the hands of the local auth those of a National Assistance Board, financ the Exchequer, which will administer a State for all needy people who are outside the insurance scheme, or whose necessities are not relieved in other ways. To the local author however, remains the task of providing reside accommodation for the old and infirm, and people who need care and attention.

The only qualification for national assistance be "need"—to be defined according to ge standards in regulations approved by Parlia Anyone over the age of 16 who is in need wi able to apply for assistance, and if the nee established he and his dependants will be he There will be no household means test: the reso of applicants will be considered jointly with the their wives and husbands, but no account wi taken of the income of earning sons and daugh though they will be assumed to be making an a priate contribution to the rent and household expe This shows a new respect for the kin of the who—whether grandfather, father, grandmo mother, husband, or child—have been required Elizabeth's Act of 1601 to maintain (if their m allowed) any old, blind, lame, or impotent perso duty which must have kept many an old person resting and young from marrying. The only liabi now recognised are that of a husband to keep wife and children and of a wife to keep her hus and children. The local officers who will deal applications will be the relieving officers under a name, for the same duties of giving emergency by night or day will fall to them. From their decis there will be right of appeal.

It is assumed that few of those seeking assist will be able-bodied persons of working age; but such who decline or neglect to maintain themse or their families may be refused help unless attend a course of training or instruction, or to a re-establishment centre. Tramps and vagran according to the *Times*, there were only about at the last count—may also attend such centres, local authorities will be required to house them porarily in reception centres. The National Assist Board will be responsible for providing means by wh people without a settled way of living "may influenced" to lead a more settled life; but thi a very different approach from that of the old p

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8. See *Lancet*, Sept. 20, p. 436.
9. Findlay, G. M., Martin, N. H. *Lancet*, 1943, i, 678.
10. MacCallum, F. O. Paper to the International Congress of Physicians, 1947.
11. English Social History, London, 1944.
12. Summary of the Provisions of the National Assistance *Cmd. 7428.* H.M. Stationery Office. Pp. 12. *3d.*

under which, TREVELYAN tells us, "the personal rty of the poor was not a thing of which much unt was taken"; and the only influences brought ear on the idler, the unemployable, or the drunkard the house of correction or the stocks.

ome of the most interesting provisions relate to care of old people. The county and county- ugh councils in England and Wales, and the nty councils and large burghs in Scotland, are to ide board, lodging, and attendance, and such nities as hot and cold water and laundry services, all who cannot wholly look after themselves. se who can afford it will pay a fixed standard ge for such residential care, and others will pay ast 21s. a week. Those with retirement pensions s a week will thus be able to meet the minimum ge with 5s. pocket-money in hand, and those less will have their income made up to 26s. he National Assistance Board. The principle of ng for residential care is important, for experience he Hill Homes and elsewhere[13] has shown that ment makes all the difference to the self-respect the residents. Local authorities will also be owered to extend to the deaf and the crippled same welfare services as they now provide for blind, arranging, if they wish, for voluntary ies to act as their agents for these purposes.

he numbers needing assistance are at present ller than might be supposed. Since 1946, when ions became payable at rates provided in the ional Insurance Act, the number of applicants assistance has fallen from 1,500,000 to 500,000. ional assistance in its new form will take the ce of unemployment assistance and the granting supplementary pensions to widows and old people w paid by the Assistance Board), domiciliary istance to the blind, and outdoor relief under poor-law (now paid by local authorities), and berculosis treatment allowances (now paid by local thorities at the cost of the Exchequer). It is imated that the numbers transferred to the National sistance Board would be 430,000 people on outdoor ief, 72,000 blind people receiving domiciliary assistance, some 500,000 widows and old people receiving pplementary pensions, and 30,000 people receiving employment or other allowances The National alth Service will take over the 50,000 sick people w in poor-law institutions, and the 18,000 patients mental hospitals; while the 30,000 children prived of a normal home life will come under the ild-care services of the Home Office. The healthy people in the residential homes provided by local thorities will number some 40,000. Under this st heading it is thought that about 20,000 additional ds in residential homes will have to be provided, the course of the next five years, for old people England and Wales, and a further 3000 in Scotland. me 60% of these beds will have to be in new buildings it up with the help of an Exchequer subsidy. As pointed out in the financial memorandum attached the Bill, "the rate at which it will be possible provide these beds in new buildings cannot be reseen," and it is unfortunate that the presentation this Bill should coincide with an embargo on the ilding of houses and institutions of the kind it ll require. If much of the fulfilment therefore lies in the rather distant future we may nevertheless rejoice in a reform which will do much to remove the indignities of poverty. Its realisation will make it easier, without hypocrisy, to see our nation as "a huge team of all sorts and kinds of people."[14]

Annotations

THE PANEL CONFERENCE

THE atmosphere of last week's Panel Conference was very different from that of a year ago. Then, negotiations for the increase in the capitation fee in consonance with the findings of the Spens Committee, had broken down, and war with the Minister of Health seemed imminent. The fiery cross had gone round, and resignations from N.H.I. service had been gathered in every county from almost all panel practitioners. The conference met in a mood of frustration and defiance. Fortunately a last-minute message from the Minister provided grounds for reopening discussions, and a compromise was eventually reached. Satisfaction with this achievement was naturally the keynote of this year's conference; and little criticism arose on the matters reported by the Insurance Acts Committee.

As was to be expected, the delegates demanded up-to-date information about the progress of the negotiations on the National Health Service; and Dr. Guy Dain responded with a statement. Between February and July, he said, detailed discussions had taken place between the Ministry's officers and five subcommittees appointed by the Negotiating Committee; the whole field of controversy had been covered, and no subject excluded from debate. The Negotiating Committee was to meet on Nov. 5 finally to agree on a summarised statement of all the arguments put forward during the discussions. This document was next to be presented to the Minister, who had already agreed to meet the committee on Nov. 11 and 12. The committee's document and the Minister's reply would later be printed and circulated to each member of the profession, and would be the subject of discussion in the British Medical Association's divisions preparatory to the calling of a special representative meeting of the B.M.A. Immediately after this meeting, doctors would be asked by plebiscite whether or not they were willing to take part in the new service.

Having accepted this statement, the conference passed on to discuss points of difficulty already arising in the establishment of the administrative machinery for the new service, in particular the failure of many health authorities to agree to coopt medical men to the health committees to be set up under the 4th schedule of the Act. It agreed to the suggestion of Sheffield that the profession's representatives should press for an amendment of the Act which would make such coöption obligatory rather than permissive. Finally, it asked the chairman of the Insurance Acts Committee, Dr. E. A. Gregg, to speak on the probable future of the I.A.C., the National Insurance Defence Trust, and the Panel Conference itself. Dr. Gregg announced with confidence that though there is no statutory provision for a committee or a conference analogous to the ones that have so long represented doctors under National Health Insurance, the need for them will remain. It will be impossible, he holds, for the new service to be built or maintained without the help of such bodies, and he has no doubt that under one name or another new bodies will arise surprisingly like the old in function and perhaps even in personnel. The conference accepted this prophecy, and proceeded unanimously to elect its present chairman, Dr. J. A. Brown, to be chairman of the first conference to be called after the appointed day.

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[13] See *Lancet*, 1947, i, 800.

[14] Sir Stafford Cripps. Broadcast of Nov. 2.

THE THREE R's

Julian Huxley, in his foreword to a UNESCO report on fundamental education,[1] quotes Lincoln's words about the nation half slave and half free being unable to stand, and emphasises that the same applies to a world in which half the people lack the elementary freedom of the ability to read and write. Statistics show that illiteracy reaches vanishing-point in the countries of northern Europe (less than 1%), but in the British Army 20% of recruits during the war were found to be *semi-literate*; Italy, Spain, Portugal, and Bulgaria have illiteracy-rates ranging from 27% to 55%; Asia is fairly constant at 80–90% (except for Japan); and Africa has the highest illiteracy-rate of all, from 90% to 98% among the coloured people. As one might expect, the main features associated with a high rate of illiteracy are mountains and other obstacles, poverty, and over-population.

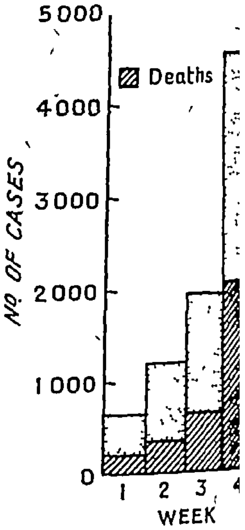
Various attempts have been made by countries all over the world to increase the numbers of those who can read and write. France, for example, uses the French language as a political tool in helping to grant freedom to the native people she rules. In the Union of South Africa, however, the technically trained coloured youth is up against the difficulty that only 1 in 100 stands much chance of getting a skilled job. The fine plans of the Chinese government since 1927 to reduce illiteracy have been upset by the eight years' war against Japan; but even so, the expenditure of some of the district governments on education has been as much as a third of the total budget. In India the chief physical difficulty is that only 15% of people live in towns or cities, compared with 79% in England and 51% in the U.S.A. Lenin's words apply aptly to India: "An illiterate man is outside politics and before he can be brought in he must be taught the alphabet. Without this there can be no politics—only rumours, gossip, tales, superstitions." Often the Indian asks: "Is it worth while for my children to be educated?" and decides in the negative. "Few Indians think education good in itself." Perhaps the most interesting section of the report is that dealing with the attempts of the U.S.S.R. to educate its people; some tribes had not yet emerged from primitive devil-worship and the vast mass were illiterate, though at the other extreme there were small groups of highly educated people. Russian is compulsory in all schools, but education is carried out in ninety different languages throughout the Soviet Union—a remarkable attempt to keep alive the different cultures of a vast land.

The report points out that even in illiterate areas ancient religions such as Islam, Confucianism, and Buddhism have preserved certain forms of education; but these will not serve for today, despite the dangers of uprooting the old ways of life: history provides many examples of civilisations which have snapped from sudden change in their culture. Writing from the standpoint of the anthropologist, Dr. Margaret Mead agrees that such nativistic movements as the American-Indian ghost dance and the revival of Celtic languages may be regarded as expensive drags on the progress of human culture; but she herself seems to disapprove of this view. On the major problem of language the report favours simplification to ease translation from one to another. Sense aids such as films, records, radio, and maps should be used where possible; and emphasis is laid on offering not only the bare bones of literacy in a knowledge of how to read; people should be taught also why they read, and should be helped in deciding what to read.

How far can the West, with its greater power, afford to influence the Orient in fundamental education? Did Britain keep India from sinking through apathy and internecine strife, or will India, with the of Britain's inhibiting influence, raise its living? The report quotes an old African saying: "You Europeans think you have to teach us. If, as you say, we have been eating the food all this time, cultivating our fields and babies the wrong way—why, we'd all be dead. Bu see we are not."

EPIDEMIOLOGY OF CHOLERA

In India upwards of 200,000 die of cholera each and in China the figure is probably larger. This was made by Sir John Taylor at last Monday's of the epidemiology section of the Royal Medicine. Basically, he said, the problem of is the problem of two endemic areas—Lower and the Yangtse valley. There may, however, minor areas of endemicity. From India disseminated by three principal routes. It may via Afghanistan to Persia and south-east Russia; this route has not been followed for many years and it does not appear to be now a major danger. Secondly, it may spread via Iraq and Syria; and Iraq has been infected eight times in the present century. Thirdly, it may spread by the Red Sea to Egypt. The common source of infection in Egypt used to be the annual pilgrimage; this was the cause of the 1902 epidemic when 34,000 died. The pilgrimage was again infected in 1907, 1908, 1911, and 1912. Since then, however, it has not been infected owing to the effectiveness of quarantine measures. Infection is maintained by cases, convalescents, and close contacts; and steps to prevent spread must be re to the infectivity of each of these groups. The incub period may be taken as about five days, so by th route a case infected in India will manifest itself b reaching Suez. Patients excrete the cholera for about five days, though occasionally excretion continue up to thirteen days; close household con excrete the organism usually for about five days, occasionally up to nine days. Convalescents and con will thus be clear by the time that Suez is reac it is unlikely, moreover, that recent convalescents w pass the routine examination at the embarkation p There remains, however, the risk of the missed cas shipboard. With normal air traffic there is no risk of infection being introduced; there have been pected but no proved cases. Positive contacts m however, arrive by air, and the present refugee tr may increase the risk. Even so there is little da that infection introduced into this country w spread.



Cases and deaths in Egypt Sept. 22. A falling inciden reported last week (*Times*, N

Sir Leonard Rogers, F.R.S., prophesied that Egyptian outbreak would now die down though it m come to life again next year. The real danger, he cluded, lies in the Punjab epidemic; for there is g risk that next year it may spread to Russia.

Public-health measures were discussed by Dr. Mel Mackenzie, who said that surveillance was to be imp on air passengers who had spent nights in Egypt.

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[1] Fundamental Education: Common Ground for All Peoples. UNESCO. H.M. Stationery Office. 1947. 7s. 6d.

ssage took about two weeks, so imported food was oblem. Some countries, he noted, were placing erved confidence in vaccination. For Egypt mass ation, with material made in different countries iffering standards, was a difficult undertaking; ersal standard was required.

P. Bruce White described the work leading up to entification of the three types of cholera vibrio— al, intermediate, and variant. These types were, d, variants of a single species; but though they transmutable, mixed infections were not found. s not absolutely certain that the vibrio was the of cholera: in some epidemics only non-agglutin- ibrios were isolated in about 30% of cases. He een impressed by the consistent absence of labora- nfection. Did the vibrio lose some virulent factor ture?

"CORRECTIVE EXPERIENCE"

r few doctors now deny that more or less expert logical treatment is necessary for some patients: versy has shifted to the choice of method and the solution to the problem created by the cost and ness of psychotherapy. Psycho-analysis, to take lient instance, could never be afforded to the ity of neurotic children and adults (even if it were, ved efficacy in making them healthy) unless me to regard it much as we regard education or ater-supply. Recognition of this dilemma has the one hand to energetic experiments in group ent—taking a leaf out of education's book—and other hand to efforts to shorten psychotherapy it emasculating it. Among psycho-analysts, abbre- or simplified treatment has had short shrift since fection of Adler and Stekel, the ill-starred attempt enczi, and similar misadventures caused anything full" analysis to be classified with hypnosis, sion, and other—more or less despised—alterna- o the rigorous analytic procedure. An enterprising of analysts at Chicago led by Dr. Alexander have years had the courage to challenge this, and their oint and achievements are clearly stated in a ive report.[1] Its keyword is "flexibility": so so, that at the end of his introduction Dr. Alexander oundly that few if any cases require strict adherence ndard psycho-analytic technique throughout their of treatment. He attacks as doctrinaire and ul the standard assumptions about the importance antile happenings in determining later neurosis, e orthodox refusal of analysts to advise the patient his daily life. Psycho-analytic treatment has imes been unjustifiably prolonged, he holds, and ews have been too frequent; too much emphasis een laid on recovery of forgotten memories, which essential to recovery—"merely remembering an dating or demoralising event does not change the of such an experience, only a corrective experience ndo the effect of the old. This new corrective ence may be supplied by the transference relation- by new experiences of life, or by both."

h challenges to widespread psycho-analytic practice theory would have little weight with orthodox sts unless supported, as they are here, by case- ls and respectable analytic experience. Dr. nder and Dr. French hold, with some justification, their methods are a logical continuation of those ted by Freud's discovery that the "transference" dynamic agent of the curative process. The test od treatment, however, does not lie in historical uity or doctrinal soundness, but in the number of ats who are made well; and on the information given the Chicago psychotherapeutic methods seem to stand this test. The work described is important not only to psycho-analysts but to psychiatrists generally, and especially to those concerned with deciding how the people who need psychotherapy may get it in a National Health Service.

CHEMOTHERAPY OF CANCER

To anyone with experience of malignant disease, it is astonishing to see the melting away and total disappearance of a tumour as the result of X-ray treatment. The figures for cure by radiotherapy of cancer of the breast, cervix, and anterior portion of the tongue, which equal those achieved by surgery, have inspired radiologists and surgeons to investigate the laws governing this destructive capacity and to adapt the physical means to these laws.

That the treatment of cancer by chemical methods is equally worthy of further study was shown by last week's meeting of the Royal Society of Medicine's section of medicine. Prof. Alexander Haddow reminded his listeners that to sceptics attempts at chemotherapy might seem absurd, since the cancer cell was only a modified form of the normal; the malignant cell was stable and there was no real evidence of reversibility. The real difficulty was to overcome the energy barrier between the two states; the difference was not structural. By œstrogens, urethane, and β-chlorethylamine cancer might be controlled or modified, though not cured. It was noteworthy, Professor Haddow said, that the value of these drugs had been appreciated thanks to observation for its own sake in man; their effectiveness would not have been guessed from animal experiment alone.

Mr. E. W. Riches reported that 90% of his cases of prostatic cancer treated with œstrogens showed signs of response: 87% were alive at the end of one year, 29% at the end of two, 19% at the end of three, and 5% at the end of four years. If metastases appeared during treatment, the dose should be increased; side-effects were not an indication for stopping treatment. Dr. Edith Paterson referred to the use of urethane in leukæmia. Its effect, she said, is similar to that of X rays. In myeloid leukæmia the cell-count is reduced and the hæmoglobin increased; and in both myeloid and lymphatic leukæmia cell differentiation appears to be increased. Mr. Eric Boyland, D.SC., urged the need for further trial to establish the dosage of chemotherapeutic agents; it would be wrong to follow blindly the dosage adopted in the original trials. Using β-chlorethylamine for the treatment of the reticuloses, Dr. Jean Watkinson had observed symptomatic improvement only in Hodgkin's disease. Dr. O. H. Warwick spoke of the symptomatic relief obtained by the treatment of bronchogenic carcinoma with nitrogen mustards.

That the interests of the patient must be the first consideration in the choice of treatment—whether by surgery, X rays, medical care alone, or one of the newer drugs—was apparent from each speaker's testimony. One expressed the view that the price, in suffering, for mere palliation may well be too great. Professor Haddow deprecated any attempt at assessment of the value of chemical treatment at this stage, claiming that the observations ought to be pursued for their own sake. It is clear, however, that the œstrogen treatment of prostatic cancer has already justified itself, if only by reducing (as Mr. Riches demonstrated) the alarmingly high mortality in the first year of disease.

B.M.A. NUTRITION INQUIRY

THE council of the British Medical Association has decided to appoint a committee to consider "problems of nutrition in this country, including current nutritional standards." The membership will be announced shortly.

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[1] choanalytic Therapy: Principles and Application. By ANZ ALEXANDER, M.D., and THOMAS MORTON FRENCH, D., with staff members of the Institute for Psychoanalysis, hicago New York: Ronald Press 1946 Pp 353. $5.

Special Articles

THE CHOLERA EPIDEMIC IN EGYPT

Mode of Spread

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El Korein, where the present epidemic of cholera started, is a town in the Sharkieh province (fig. 1) with an area of about 40 sq. kilometres. Its main source of wealth comes from its date-palms, and it draws its water-supply from shallow wells. Its inhabitants number 15,000, to which must be added about 6000 immigrants from all parts of the country, settled there to work in the British camps, and a floating population of about 9000 persons during the date season who stay there two or three months to buy and trade in dates.

Of this floating population very few have remained in the town; the rest ran away in the early days of the cordon and played an important part in disseminating the cholera, especially in Dakahlieh province. Of the settled immigrants working in the British camps, only about a quarter escaped and spread over the country.

There is also a third group of immigrants, formed of Bedouin Arabs coming from the east to collect dates and press them into cakes which they carry back to their home country. These are very few and are not an important element in disseminating cholera in Egypt; nor did they introduce the disease, for they had been dwelling in that area for more than two months before the outbreak.

SPREAD BY DATES

El Korein grows about 250,000 date trees, producing about 12,000 tons of dates. It is the main source of supply of dates to the provinces of Sharkieh, Dakahlieh, and Galoubieh. Much of the harvest had already been sold before the epidemic began, but the rest was not properly taken care of and could thus continue to be sold outside, particularly at the beginning of the epidemic. Date cakes find a market all over the country because they can be kept a long time.

It has been proved in Iraq that the cholera vibrio cannot live in compressed dates, owing to the high concentration of sugar; but it can live on the skin of ripe dates for some time.[1] In fact dates have long been implicated in the transmission of cholera. A
a medical commission sent to investigate the fir
of cholera at El-Salhieh in the 1895 epidemic
"Clinical and bacteriological examination ha
that the disease prevailing at El-Salhieh is a
enteritis due to the overeating of dates and
fish. . . ."[2]

Thus two factors of great importance in the sp
cholera appear to be, first, the settlers, most of
come from Dakahlieh and are connected with the
business, a few coming from the rest of Egypt;
secondly, the dates, which are sold all over Lower
especially in Sharkieh and Dakahlieh. In view
slackness in the first days of the cordon esta
first round El Korein and later round Sharkieh p
the many evasions and smuggling through the fiel
numerous land communications between Sharki
its neighbours, and river communications
Sharkieh and Dakahlieh through the Manzaleh
&c., it is not surprising that the cholera spread as
as it did to the latter province (fig. 2).

A review of the earliest cases showed that n
were said to have come from Sharkieh. An inq
the region of the Bahr El Seghir canal, from which
date traders come and which is the most imp
market for El Korein dates, fully confirmed this
For instance, an old woman who lived at El Korei
her grand-daughter contracted cholera and was is
there. She succeeded, however, in sending her g
daughter back to her mother in Domouh with a p
of dates on Oct. 1. After 24 hours the mothe
affected with vomiting, and she died the same ov
The girl was not affected.

This case was not mentioned in the official re
(the first case recorded occurred on Oct. 5); but,
diagnosis of cholera was correct, did the girl o
present of dates carry the disease? This is diffic
answer, especially since the contacts of the first ca
El Korein were not carefully isolated and did not
their stools examined. These precautions were
only in the big cities, the authorities being cont
the smaller towns and villages with considering a
inhabitants as contacts and isolating each comm
with a cordon, which unfortunately did not have
desired effect.

In Dekernes on the Bahr El Seghir, an important
for El Korein dates, a tradesman with a son-in-law at El K
bought a car-load of dates from there on Oct. 2 and
them in the black market because of the ban on the sa

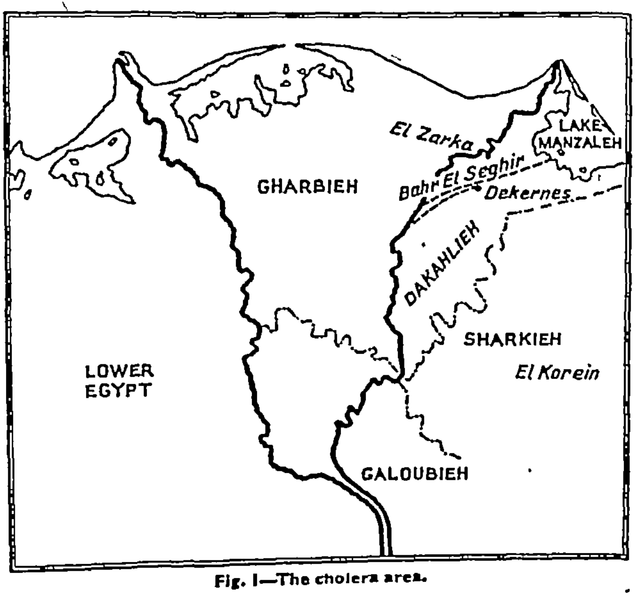

Fig. 1—The cholera area.

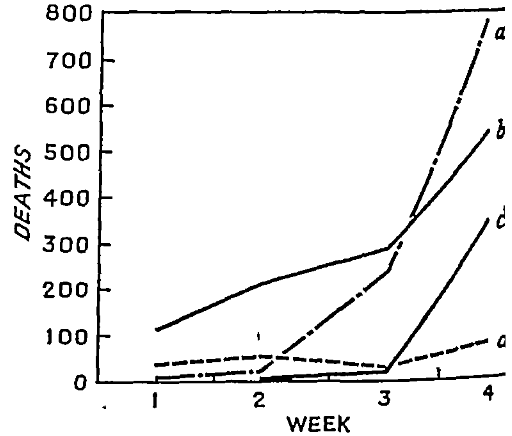

Fig. 2—Deaths in four neighbouring provinces: (a) Dakahlieh (
tion 1,400,000); (b) Sharkieh (population 1,350,000); (c) G
(population 2,400,000); (d) Galoubieh (population 687,000).
lieh and Galoubieh are both adjacent to Sharkieh (se
If cholera had spread directly, they would have been aff
same extent.

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[1] Information communicated at the special meeting of the Royal Egyptian Medical Association on Oct. 15, 1947.

[2] Wakil, A. W. *J. Egypt. med. Ass.* May, 1933.

. Fearing they might get spoilt, he sold them at a er of the usual price, thus tempting many fellaheen. laughter fell ill on Oct. 6 with cholera, the first victim disease in the town.

the neighbouring village of Abu Naser the first case red on Oct. 7 (recorded on Oct. 8), and it was proved the patient's father had bought 10 lb. of dates on the ous day from Dekernes. Since the omdeh (mayor) had lden the admittance of strangers some days beforehand, ikely that the dates were the source of infection in this oo.

second case in the same village appeared on Oct. 9. atient had had no contact with the first case, but her nd was also said to have bought dates from Dekernes.

omdeh of Miniet El Nasr, which is in the middle of l Kholi Momen, Mit Timma, El Nazl, and Bagalat, all ich rely on the Miniet El Nasr market for their dates, &c., told us that the cars loaded with dates, finding the to Miniet El Nasr closed, escaped to the other villages.

official records show that the cholera started in Mit na on Oct. 6, in El Nazl on the 7th, and in Mit El Momen, Bagalat, and Miniet El Nasr on the 10th.

he neighbouring villages, which lie near the Nile and buy dates from the region of Damietta, there were very few before Oct. 13. The towns near the Nile, from El Zarka of which exposure occurred through Lake Manzaleh) ansurah, were also either spared or very slightly and recently contaminated.

another group of six closely set villages which rely on lifferent sources for their supplies of dates, the three ied from Dekernes were first affected on Oct. 7 and 8, the remaining three, relying on Sherbin, which gets its from Damietta, had only one case, on Oct. 13.

ese facts throw strong suspicion on the dates of orein, which seem second in importance only to the rs who escaped from that region, and it is the more tunate, therefore, that the dates were not destroyed e outset and were allowed to percolate to other places.

PELLAGRA AND CHOLERA

e importance of these agents should not lead us, ver, to overlook two other factors that may have d to disseminate the epidemic in Dakahlieh, not to ion the general poverty, dirt, and ignorance which not more extensive in Dakahlieh than elsewhere.

e first of these factors is the high absolute humidity akahlieh, which was studied by Dr. Halawany and rted on before the special meeting of the Royal ptian Medical Association.[1]

e second needs some explanation. It is well known gastric acidity plays an important rôle in the ection against cholera, and that many parasitic ses, especially those followed by pellagra, diminish ric acidity. Now these diseases are rife in Dakahlieh, pellagra is very common.

hen I visited some tents in the isolation hospital at orein I was struck by the number of cholera patients ving a pellagrous rash. Time did not allow me, ever, to look for other cases or for latent pellagra. he Dekernes Isolation Hospital many cholera cases pellagra were also seen. In Kafr Abu Naser, where rried out a parasitological survey last year, out of holera patients 4 were pellagrins and 8 had some sitic infestation, bilharzia, &c. In Azazna, where a lar survey had been carried out, the only persons to attacked with cholera up to Oct. 13 were likewise agrous. It may be added that almost every cholera ent was uneducated, and most of them were the ims of malnutrition, poverty, and dirt.

WELLS

he main water-supplies have not up to now played apparent part in the spread of cholera; but the wells ch are in general use in El Korein and in most ages of Sharkieh are mostly shallow and badly conicted, and these have been partly responsible for eading the infection.

hus, in El Malakin, a farm community near El Korein 500 inhabitants, there is a well which supplies the whole population because it is the only one containing soft water. This well is formed of a big mud funnel with an earthenware vessel at its bottom to collect subsoil water. It is said that a woman who escaped from El Korein fainted while washing her clothes there and vomited in the well. Next day 70 people had vomiting and diarrhœa. On the same day (Sept. 29) the medical officer of health filled the well and isolated 11 patients. He isolated a further 17 on the 30th, 6 on Oct. 1, 4 on the 2nd, 2 on the 3rd, and 4 on the 4th. No new cases appeared later—i.e., after about 10% of the population had been affected—so the total was 44 cases, with 22 deaths.

In Almiseed, another village in Sharkieh, a deep well had been bored by the Ministry for Social Affairs but had not yet been used. Six cases appeared between Sept. 24 and 30. On the 30th orders were given to open the new well to the exclusion of the others. Only one case was reported next day, and the village has since remained free.

The health authorities are now showing great activity in boring sanitary wells in Egyptian villages wherever the sweetness of the deep underground water allows it.

ANTI-CHOLERA MEASURES IN EGYPT

FROM A CORRESPONDENT IN EGYPT

THE last occasion on which cholera was epidemic in Egypt was in 1902, when it appeared in a group of pilgrims on their way back from Hedjaz; since then there have been only 5 cases, in 1918. The epidemic which started in July, 1902, declined in October, and by January, 1903, all sporadic cases had ceased. The total number of declared cases in that epidemic was 40,316, with a fatality-rate of 85% (34,595 deaths).

The present epidemic started in Egypt on Sept. 22, at El Korein, a village in the Sharkieh province near the British camps on the western bank of the Suez Canal. On the previous day, 3 cases of suspected "food-poisoning" coming from that locality had been admitted for treatment in the hospital of a neighbouring town.

Though cholera had almost disappeared from Egypt for 45 years, and though this was not the season of the return of pilgrims from Hedjaz, which had been the essential source of most Egyptian cholera epidemics in the past, cholera was suspected by the health officer, and without waiting for bacteriological confirmation all practicable measures were immediately taken to wipe out the epidemic.

All land and river communications were stopped in the affected region, and isolation camps for the patients, disinfection stations, and guard posts to keep watch on the principal water sources were erected in great haste.

Contacts were vaccinated from the stores of cholera vaccine kept in the Egyptian Institute of Serum and Vaccine for the pilgrims who were on their way to the Holy Lands this year. The annual production of vaccine is adjusted to satisfy the needs of three times the number of expected pilgrims, which is usually about 20,000 each year. The British Army also offered help by volunteering to spray the dwellings of the contaminated villages with D.D.T., and by providing the isolation hospitals erected there with sterilised water.

On the second day bacteriological confirmation came, and the Egyptian government immediately allocated for the campaign half a million Egyptian pounds, a sum doubled three weeks later. At the same time it informed all international authorities and banned pilgrimage to prevent spread of the disease to neighbouring countries.

These energetic measures, however, did not prevent the epidemic from spreading sporadically to the neighbouring regions, helped by the poverty, ignorance, and bad hygiene prevailing in the countryside, and by the high rate of absolute humidity this year.

Cairo, Alexandria, and the other big cities, largely escaped infection owing to their better water-supplies and hygienic conditions. Strict measures were taken there for food control, general cleanliness, and to combat flies by D.D.T. sprays from special aeroplanes. These measures were helped by the fact that the urban population is better educated and more coöperative. Only sporadic cases appeared in these cities, and most of them actually came from contaminated areas. In Upper Egypt, also, only scattered cases appeared.

A huge campaign is being carried out to vaccinate the whole population of Egypt, now that the local production of vaccine, in addition to the quantities from England, Switzerland, the U.S.A., Russia, and neighbouring Arabian countries, allows it. Nearly 5 million people have already been vaccinated, most of them with a single dose of 1 ml. (8000 million organisms).

FACTORS IN DISSEMINATION

The scattered distribution of the early cases gave the epidemic the appearance of being mostly a contact epidemic, where carriers and patients play the principal rôle in dissemination, either directly or via flies and food contamination. Fortunately, the repeated examinations of water done so far, and the distribution of cases, have not revealed any grave contamination of the large water-supplies.

The work of Sir Leonard Rogers in India on the relation between cholera epidemics and the degree of absolute humidity, which finds confirmation in the previous Egyptian epidemics, led authorities on the subject at a special meeting of the Royal Egyptian Medical Association, held on Oct. 15, to forecast at least a temporary reduction in new cases by the end of November, when the humidity-rates fall below the minimum necessary for the spread of the disease. A return, however, is feared next May, unless it can be forestalled by the search for carriers in the infected areas and repeated vaccination in good time.

The source of the epidemic is still obscure, and no official statement concerning its discovery has been made in Egypt. But many first-hand observers think they can trace the origin of the infection to Egyptian labourers infected by aeroplanes coming from India to British Army aerodromes, where these labourers work. It seems that some of the first cases were actually engaged in these airfields, which, until Oct. 6, were not under the control of the Egyptian Quarantine Department. There is also a coincidence between the Egyptian epidemic and that which started on Aug. 15, 1947, in the Punjab after its partition between Pakistan and Hindustan and the migration of about 5 million persons that followed it. In support of this view they point to the return from India of British troops who used the Suez Canal region as a quarantine station and remained there with their Indian retinue for two weeks before departing for England. British authorities, however, deny that there is any relation between the present epidemic and their Forces. It has certainly been established that the epidemic is in no way related to pilgrimage.

The number of reported cases, including suspects, from Sept. 23 to Oct. 21 reached 8308 with 3230 deaths (39%).

It is too early to express an opinion on the effect of the newer methods of treatment—most fatal cases were too ill and toxic on admission to hospital for recovery to be possible—but experience with sulphonamides has been on the whole disappointing and rehydration seems to remain the mainstay of treatment. Plasma has been used when the blood-proteins were under 4·5 g. per 100 ml. The value of vaccination seems, however, to be fully confirmed. In the Abu Zaabal prisons, with a population of 3751, 78 cases appeared before vaccination was started (i.e., 5·5 per day); during the vaccination period this fell to 2·4 (12 cases), and then no further cases appeared. In Turah prison, with 8720 inmates, 20 cases appeared before vaccination was commenced and none afterwards. Among the whole population of the prisons in areas (about 12,000), the morbidity fell during vaccination period to half the prevaccination rate, the case-mortality of 30% fell to 0; no new appeared after the sixth day following vaccination.

SCOTTISH REGIONAL HOSPITAL BC

The Secretary of State for Scotland has now hospital boards for the five regions of Scotland were defined last June.[1] He has selected the after consultation with the interests he is requi consult under the Act, including the universities, or tions representing the medical and nursing pro local health authorities, and voluntary hospitals total number in each board varies from 18 A third of the members will retire each year, following list shows the names printed in three (a) those retiring in March, 1950; (b) those re March, 1951; and (c) those retiring in March, 1952 chairmen will hold office till March, 1951. The members of the medical profession are shown in bol

NORTHERN REGION

Chairman: Donald Macpherson.

(a) Colonel the Hon. I. M. Campbell, D.S.O.; Miss Clyne; Robert Gilbert; **I. H. Maciver,** M.B.; Rev. Fath MacKellaig; D. A. Plowman.

(b) **A. J. C. Hamilton,** F.R.C.S.; Rev. I. M. Ma Mrs. Macleod of Macleod; Norman Robertson; Thomas

(c) **J. R. Anderson,** M.B.; J. S. Banks; Norman A. Mackintosh; **William McWilliam,** F.R.F.P.S.; **B. Simpson,** F.R.C.S.E.

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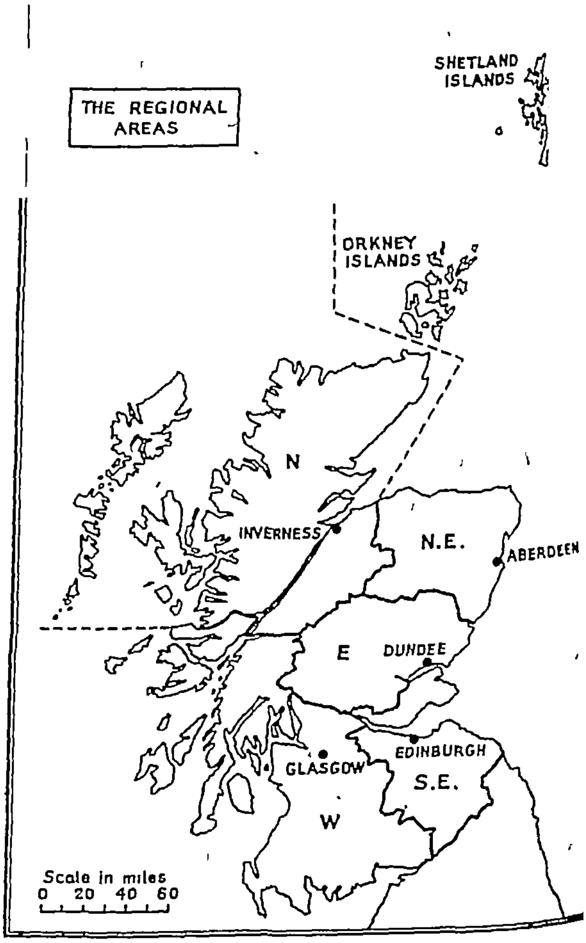
[1] *Lancet*, July 5, p. 28.



NORTH-EASTERN REGION

hairman : Mrs. **May Baird,** M.B.
) **A. Greig Anderson,** F.R.C.P.; Bailie **W. J. L. Dean,**
; **D. G. Gordon,** M.B.; James Hay; Miss Bell Jobson;
Martin, C.B.E.; Robert Ollason.

Prof. **David Campbell,** M.C., F.R.F.P.S.; Prof. **John**
kshank, C.B.E., M.D.; Rev. G. A. M. Dickson: A. Fraser;
F. E. Kaye, S.R.N.; Prof. **D. R. MacCalman,** M.D.

Prof. **R. S. Aitken,** F.R.C.P.; Captain J. S. Allan, D.L.;
s M. Burnett; J. Roy Campbell; Alexander Lyon,
, D.L.; **I. H. McClure,** O.B.E., F.R.C.S E.; Mrs. **Helen**
n, M.D.

EASTERN REGION

airman : Treasurer William Hughes, O.B.E.
A. Allan Bell, F.R.F.P.S.; J. R. Christie; R. A. L.
an; Miss Ann Graham; James Lawson, Mrs. A. L.
hew; **J. D. Saggar,** M.B.

Provost William Coull; D. F. Craig, J.P.; Miss **Margaret**
ie, F.R.C.O.G.; Prof. **Adam Patrick,** F.R.C.P.; Lewis F.
rtson, M.B.E.; Rev. A. Wylie Smith.

Mrs. Agnes Allan, J.P.; T. M. Ferguson, O.B.E., J.P.;
A. D. Hitchin, M.D.S.; William O'Neill, J.P.; James E.
; **George Rankine,** M.C., M.B.; W. J. Ross.

SOUTH-EASTERN REGION

airman : **J. R. C. Greenlees,** D.S.O., M.B.
James Black, J.P.; Prof. **J. C. Brash,** M.C., F.R.C.S.E.;
J. J. Ferguson; Sir **David Henderson,** F.R.C.P.; Ben
ay; Miss I. McNeill; **Andrew Simpson,** M.B.; Miss E.
ing; Sir **Henry Wade,** C.M.G., D.S.O., F.R.C.S.

J. Allan; Bailie J. G. Banks, J.P.; **R. W. Craig,** O.B.E.,
; Lady Fraser; R. K. Henderson; Prof. **T. J. Mackie,**
, M.D.; Miss M. C. Marshall, O.B.E., A.R.R.C.; David
in.

O. A. Cunningham; W. P. Earsman, J.P.; **I. Simson**
, F.R.C.S.E.; **W. F. T. Haultain,** O.B.E., M.C., F.R.C.O.G.;
Humphrey Lindsay, D.S.O.; James McKelvie, J.P.;
Sydney Smith, O.B.E., F.R.C.P.E.; John Sneddon; Major
. Thomson, M.C.

WESTERN REGION

hairman : Sir **Alexander Macgregor,** O.B.E., F.R.F.P.S.
) **J. Bruce Dewar,** F.R.C.S.E., J.P.; James Finlay; R.
racken; Andrew McGroarty; Miss L. D. F. McIntyre;
ie S. P. McLaren; The Hon. Mrs. Maclean of Ardgour;
us **MacNiven,** F.R.C.P.E.; **G. H. Stevenson,** O.B.E., M.C.,
F.P.S.; J. Stewart, J.P.; **J. H. Wright,** F.R.F.P.S.

) L. S. Blanche; Prof. **T. Ferguson,** M.D.; Rev. J. A.
er; Prof. **C. F. W. Illingworth,** C.B.E., F.R.C.S.E.; James
k; Miss J. D. Jolly, S.R.N.; **George MacFeat,** O.B.E., M.B.;
ie A. C. Mannel, J.P.; G. L. Peacock, J.P.; J. E. Russell.

) William Baxter; John Dunlop; Provost E. Fyfe,
E.; Bailie Edward Lawson; A. S. MacLellan; **Alexander**
er, F.R.C.S.E.; Provost C. Minihan; A. Moncrieff Mitchell;
liam Reid, J.P.; **Alex. Watt,** L.R.C.P.E.; Prof. **G. M.**
hart, F.R.F.P.S.

TOXICOLOGY RESEARCH

HE following have been appointed by the Medical
search Council to serve on a new committee to advise
l assist them in the promotion of research in toxico-
y, with particular reference to industrial hazards:

Prof. G. R. Cameron, F.R.C.P., F.R S. (chairman), Prof J. H.
ldum, M.R.C.S., F.R.S.; Dr. Donald Hunter, Mr. F. C.
cIntosh, PH.D.; Dr. E. R. A. Merewether: Prof. R. A.
ers, M.D., F.R S.; Mr. J. Davidson Pratt, B.SC., Dr. J. R.
uire; Mr. J. Walker, D.PHIL.; and Dr. J. M. Barnes
cretary).

For carrying out experimental work within the field
ered by the committee, the council have recently
ablished at the Chemical Defence Experimental
ation at Porton, Wilts, by arrangement with the
nistry of Supply, a new Toxicology Research Unit
der the direction of Dr. J. M. Barnes. For clinical
estigations in this field the council already have their
partment for Research in Industrial Medicine, at the
ndon Hospital, under the direction of Dr. Donald
unter, and their Industrial Medicine Research Unit, at
e Birmingham Accident Hospital, under the direction
Dr. J. R. Squire. In appropriate circumstances,
search in the subject may be promoted by the council
ewhere, either within their own staff organisation or
means of grants to independent workers.

In England Now

A Running Commentary by Peripatetic Correspondents

JOY at the preservation of Parliament is more intense in our part of Sussex than anywhere else. The villages give themselves up to thanksgiving on successive evenings from Nov. 1; and the bonfires, like the fuel shortage, get bigger every year. Through the zeal and devotion of Ronnie and Brian Parks, and the use of their father's tractor for collecting wood, the formerly domestic celebrations in the field next door have now become the chief annual event of the Town Row Social Club, attended by no less than four policemen, with the fire-brigade in the offing.

Town Row means the Valley of the Farms; and from this valley, at dusk last Saturday, the fancy-dressed procession, encouraged by the Wadhurst Town Band, made short musical ascents for refreshment on neighbouring hills, returning occasionally to the lower altitude of the Railway Arms. Eventually, $1^1/_2$ hours late, it arrived at the final scene of operations, headed by Ronnie and (I'm proud to say) our second boy Duncan, home for half-term and bearing a flaming torch. Among the vehicles behind were a decorated timber-tug carrying about 40 children; a curious van, open on both sides to display a household interior with a warming-pan on the wall and a kettle on the hob; and the Guy himself, on a tricycle chassis complete with rear light. Mr. Shinwell? Not at all. Guy Fawkes himself, in period costume, twice life-size, and a very model of sallow black-bearded villainy.

With the aid of Mr. Parks as Master of Ceremonies—a title we pardonably misheard at first as Marquis of Abergavenny—the beacon, a fourteen-foot cube of logs and bracken, burst into flame; while the announcer in Mr. Redman's motor-car burst into appropriate song, which despite his efforts remained a solo. (He was good on packing up our troubles; but somehow the atmosphere of *The Road to the Isles* suffers a bit in Sussex when the original unfamiliar words are replaced by "Oh . . . I titety-itey-titey-itey-I.") As time went on, the vast fire sent sparks hundreds of feet into the air to descend on the new thatch of our Wimpole-street psychologist; but we were asked not to throw fireworks at the band. Little bogus old men danced wildly in the wild flamelight; a rather highly coloured WREN, with H.M.S. *Spiv* on her hat, took a collection for something presumably naval; and a stranger accused our Mrs. Parks of cruelty when she tried to catch and rescue Brian's pet ex-lamb (Mary), which didn't seem to be enjoying itself. She was quite successful, however, in rescuing the Police, who went quietly after her for a Slow One in *the house*. The fireworks (£25, only don't tell the Americans) were terrific; but soon after 10.30 and God Save the King we thought it time to recall our party of seven boys (not all ours really) to break their $6^1/_2$ hours' fast. The youngest, whose proper bed-time is 6.15, said to me: "Can we please go out after tea and pick up the firework cases?" Which proves (to anyone who doesn't know) that in the young and ardent the Internal Clock does not always keep good time.

I am glad to report that the Guy was deemed too good to sacrifice. But it had been an anxious evening for him, and he tottered a bit as he disappeared down the lane, with his rear light still burning.

* * *

Plain medical men attending a chemicopharmacological conference are likely to be a bit bewildered. One we attended a few weeks ago brought home to us sharply the complexity of the basic sciences on which modern therapy rests. Much of this spade-work is unintelligible to those whose instruction in chemistry was merely an incidental of medical training, and badly done at that. Our minds flew back to the tedious lectures by uninspired scientists who regarded the teaching of medical students as an unfortunate necessity. But the time lapse was too great, and the most we could do was to show a somewhat dazed interest in what was going on.

The chemists "hogged" the blackboard, covering it with their hieroglyphs. In the maze-like structures depicted some old and simple friends such as benzene rings and amino groups appeared from time to time, but only as the cornerstones of something incredibly complex. Occasionally the fascination of their subject gripped the drawers and they would pass into a dream world of their own, rubbing out a side-chain here and adding one there, substituting one key element for another in an attempt to perfect their scientific architecture, while their commentary degenerated into a low muttering delirium intelligible only to the initiated in their immediate vicinity—and, I fancy, not always to them.

The pharmacologists were a bit nearer reality, and mercifully left the blackboard largely alone. They told of their guineapigs, rats, dogs, and cats; they described the ingenious devices invented to prove their theories, and they aired other theories which still lacked confirmation, thus prompting little discussions tinged with polite disbelief—for what is more controversial than a pharmacological theory?

The overall impression I gained was that modern chemotherapy is on a very sound footing. Much of the painstaking research may at first sight appear to have little practical application but few things can be better justified. If the inquiring mind is allowed a reasonable freedom, if it is not restricted by soul-destroying routine investigations, and if results are interpreted with proper caution then the opportunities for good are immense.

* * *

Yesterday morning I stepped out of my bath and was standing quite still on the mat, looking at something through the open window, when I was struck suddenly by an agonising pain in the small of my back. As on three out of the four other occasions when this calamity had befallen me, I fell to the floor and lay there helpless; it was half an hour before I could even reach the bell-pull to summon help.

I was rescued by my devoted Swiss maid, Lyddy, who fetched Henri the porter and her two sisters. With Lyddy circling round giving advice, they helped me across the corridor to my room where I was put to bed. Lyddy hovered about the foot of it for a while, then all at once she stopped and pointed an accusing finger at me. "It was the Hexenschuss!" she announced. "The what, Lyddy?" I asked weakly. "The Hexenschuss, sir, *the witch shot*"; and I think a suspicion crossed poor Lyddy's mind, good friends though we are, that if I had really been as nice as she thought this would never have happened.

Could any other name more aptly describe the fiendish suddenness with which these attacks begin? And in these primitive Swiss valleys, where superstition is rife and no peasant dare venture out of his chalet after the Angelus has sounded, witchery seems as reasonable an explanation as the prosaic and controversial prolapsed intervertebral disc.

* * *

In the bad old days before 1939, N.H.I. certificate books were just too sensible and compact for words. "First," "intermediate," and "final" certificates were all in the same book, which could be slipped easily into the pocket. When the need to conserve paper first arose an unexpected and quite inexplicable mitosis occurred; the certificate book became two books, one of which contained only "first" certificates and the other both "intermediate" and "final" certificates. Since the need for economy in paper persists it can only be a matter of time before a second irrational mitosis takes place and the second book divides into two, one containing only "intermediate" and the other only "final" certificates.

We shall then be in the happy position of using three things where one would do. This is what is known as "the increasing complexity of modern civilisation."

* * *

Before I took to medicine my work gave me the chance of making friends with a lot of Eels and Butterflies. There weren't any Spivs then; they were just called Wide Boys (and that wasn't tailor talk). We still meet quite often for a quick one. So the other night, about three hours after I qualified, a rather nice Wide Eel I know rang up to congratulate me: "And now we shall have a doctor of our own," he said. "Would you like to make fifty quid? A girl I know . . ."

Letters to the Editor

SEXUAL ABNORMALITY AND THE LAW

SIR,—The recent proposals of Glover, menti
your annotation last week, together with other
tions for the treatment of sexual delinquents
those of Norwood East and Hubert, are parti
opportune in view of the forthcoming Criminal J
Bill. However strongly one may feel that no sharp
can be drawn to divide sexual from non-sexual
quency, the offender against sexual law is ce
singled out by existing institutions for partic
irrational treatment. Inpatient psychiatric t
based on the type of provision which was first
the Inebriates Act is a manifest advance in dealing
compulsive or persistent antisocial acts; but it is
important that in defining the terms of any such
the number and variety of offences should be r
and sexual practices which are not manifestly ant
excluded.

The residue of ecclesiastical law, and the various
sions of the Vagrancy Act, act irregularly and on
whole unfairly: indecent exposure is a sexual off
and has the benefit of the projected treatment sc
while ink-throwing, hair-cutting, and other less obvi
erotic compulsions presumably have not. In the ab
of new legislation homosexuality by consent bet
adults and in private is punishable on very nearly
same basis as homosexual rape. In fact the consen
party becomes a principal.

It is essential to the proper working of any rem
scheme that the law should be made rational, so that
psychiatrist will be morally justified in upholding i
solution would lie in the reduction of the numb
punishable categories to three: conduct offensiv
public decency, or likely to deprave or alarm oth
sexual assault; and sexual assault or seduction of m
of either sex, involving an extension of the age of co
to males. Those sections of the Offences against
Person Act would be retained which relate indirectl
sexual assault, such as that prohibiting the administr
of drugs with intent to ravish. There is no point of
flict between the sexual psychopath and society w
could not be covered by some such scheme, with
prejudice to the well-being of either. It would have
further merit of recognising the privacy of sexual cond
and terminating, so far as the threat of legal proceed
is concerned, the blackmail of respectable homosex
The constitutional invert who conducts himself dece
is no more a suitable subject for prolonged treatm
than he is for permanent segregation.

It may be argued that public opinion is unready
such a revision of the law, and that to press it now wo
endanger the prospect of improved psychiatric facilit
I doubt that, and I doubt whether coöperation is poss
between independent psychiatry and the courts upon
other basis than a radical change in the law. Whil
may be possible to induce a patient to adapt himsel
customs he feels unreasonable, it is rarely possible
reconcile him to acceptance of a position which is unj

London, S.E.23. ALEX COMFORT

BIOLOGICAL COMPETITION

SIR,—From the facts given in your very interest
and stimulating leading article of Oct. 11 there i
submit, a further tentative conclusion to be drawn.

It is stated that all living things appear to req
certain dietary factors besides actual foods in order
live, and that there is close correspondence between
essential metabolites of bacteria and the vitamins
higher organisms. The work of Kögl[1] and others
plant growth factors (auxins) appears to indicate t
plants too require substances closely corresponding
the essential metabolites of bacteria and fungi,
the vitamins of higher organisms. Kögl isolated ind
3-acetic acid (hetero-auxin) from urine, whilst ot
auxins have been isolated from human urine and
known to be widely distributed in animal and pl
tissues.[2] Compost is prepared from animal excreta

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1. *J. physiol. Chem.* 1934, 228, 90.
2. *Brit. med. J.* Annotation, 1943, ii, 170.

nt tissues, and fungal and bacterial activity is known be increased during its preparation.

Rowlands and Wilkinson[3] reported rat-feeding experints with grass and clover seeds grown in soils treated the artificial and organic manurial methods. which ıld appear to suggest that vitamin-B factors may l be absorbed directly or indirectly from the soil ıtion by plants grown under organic conditions; in this connexion Rayner's work on the mycorrhizal ciation of plants should not be forgotten.[4]

t is known that natural organic manures contain min-B factors, amino-acids, auxins, and intestinal teria capable of synthesising vitamin-B and other ors. It is believed by many that these manures luce healthier plants of greater nutritional value for nals and man. Is it not time that we of the medical ession paid a little more attention to the work of Soil Association and to their clamouring for more arch on this matter, which may well be of vital ortance to the survival of our civilisation?

itchin. ROBERT WIGGLESWORTH.

REPTOMYCIN IN INFLUENZAL MENINGITIS

IR,—In your issue of Oct. 25 Dr. Gottlieb writes: fluenzal meningitis responds to penicillin in adequate s, as we have recently shown (*Lancet*, Aug. 2, p. 164)." article to which he refers contains reports of 4 cases nfluenzal meningitis treated with penicillin—surely an lequate number on which to base his conclusion.

Vhile there are a number of reports of successful tment of this condition by varying doses of penicillin do not seem to be justified yet in expecting success very case, even with large doses. It may be argued streptomycin should not be exhibited until massive icillin therapy has failed to arrest the infection, thus ing more streptomycin for hæmatogenous forms of erculosis. Even then. however, the condition of the ient might have deteriorated to such an extent that ptomycin might fail.

therefore do not agree with Dr. Gottlieb that ningitis due to *H. influenzæ* should not for the present treated by streptomycin. Those suffering from this ase should have the benefit of a drug which has loubtedly proved highly successful in the United tes, while at the same time the Medical Research ıncil can have the opportunity of comparing results his country with those reported in America.

ockport. C. DOVE CORMAC.

STIMATION OF PREGNANEDIOL IN URINE

IR,—The methods hitherto described for the estima- ı of pregnanediol in human urine are, because of ir lack of sensitivity or specificity, not entirely isfactory for the determination of small amounts reted during the menstrual cycle or the early stages pregnancy. We have recently developed a procedure ed on the methods of Astwood and Jones[5] and of bot, Berman, MacLachlan, and Wolfe[6]; this seems to e certain advantages over previously described thods. Using one-fifth of a 24-hour sample of urine s possible to determine pregnanediol with fair accuracy en this is present in amounts greater than about ng. per 24 hours. Four to six estimations can be npleted in two 8-hour working days, and the cedure is one that can be carried out by a competent oratory technician under supervision.

n the procedure devised by Astwood and Jones and eloped by Talbot and his associates free pregnanediol is racted by toluene from the urine after boiling with acid; l it is purified by treatment of the extract with sodium lroxide to remove acidic substances, and by subsequent cipitation from hot ethanolic solution with four volumes N/10 sodium hydroxide and/or water. This procedure s been modified by us in order to achieve the rigid standisation of technique which is essential if small amounts pregnanediol in the urine are to be estimated with reasonle accuracy. The most important of these modifications concerned with cooling after the hot-precipitation purification procedure; it has been shown that rapid cooling of the precipitation mixtures results in low and irregular recoveries of pregnanediol, while slow controlled cooling regularly gives more exact quantitative recoveries. The accuracy of the method has been tested out by recovery experiments in which pure sodium pregnanediol glucuronidate[7] was added in varying amounts to 24-hour samples of human male urine. Recoveries of about 70–80% and of 90–100% were obtained when 2 mg. and more than 5 mg. of pregnanediol (as the glucuronidate) respectively were added to 24-hour samples of urine. With less than 2 mg. per 24 hours the recoveries were poor.

This method is likely to be of value in quantitative investigations of pregnanediol excretion during the menstrual cycle and in pregnancy. It may also be of some value for the diagnosis of pregnancy, and there is reason to hope that for this purpose it may be less subject to both positive and negative errors than the more rapid procedure of Guterman.[8]

Full experimental details of this work will be published elsewhere. Since, owing to present conditions, publication is likely to be greatly delayed, the authors will be pleased to supply privately full details of the procedure to any workers who may be interested. They regret, however, that they will be unable to supply samples of pregnane-3(α),20α-diol and of sodium pregnanediol glucuronidate for use as standards.

I. F. SOMERVILLE
NANCY GOUGH
G. F. MARRIAN.

Department of Biochemistry,
University of Edinburgh.

A BOOK REVIEW

SIR,—With reference to the review of my *Diseases of Children's Eyes* in your issue of Sept. 27, I shall not try to deal with the matters in which that writer's opinion on clinical work differs from mine. When the reviewer states, however, that "the influence of maternal rubella in the ætiology of congenital cataract is not mentioned," he is saying what is untrue. The subject is mentioned on p. 54 of the book in question. I submit, Sir, that a reviewer's duty to his professional public should prevent him from making such a statement *unless* he has read the whole of the book which he purports to discuss. Otherwise the obvious retort must be: "What you mean is that the subject was not mentioned in those pages of the book at which you happened to glance."

London, W.1. J. H. DOGGART.

⁂ Mr. Doggart is right in saying that this subject is in fact mentioned on p. 54 of his book, where it receives the following sentence: "It has also been proved that infantile cataract is in many cases due to German measles affecting the mother during pregnancy." This important contemporary discovery is not, however, accorded a place in the sections on Cataract, Diseases of the Lens, or the Development of the Eye; nor do Rubella, Measles, or German Measles figure in the index. Readers turning to the book for information on the association of cataract with rubella might well share our disappointment.—ED. L.

STUDENT HEALTH

SIR,—Your readers may be aware that the British Medical Students' Association has been discussing the problem of student health for the past two years. At the last annual general meeting in London the following resolutions were made:

> "That the B.M.S.A., taking into account the hazards to which clinical students are exposed and bearing in mind the facilities which already exist in all teaching hospitals, views with concern the absence of any compulsory medical examination for clinical students on admission to hospitals. The B.M.S.A., therefore, recommends very strongly that all schools which have not already done so should with the least possible delay arrange for regular compulsory medical examinations for all their clinical students."
>
> "That the B.M.S.A. recommends that every university should appoint a full-time medical officer who, together with such assistance as may be necessary, should be responsible for the routine compulsory medical examination of all

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Biochem. J. 1930, 24, 199.
Mycorrhiza, London, 1927.
Astwood, E. B., Jones, G. E. S. *J. biol. Chem.* 1941, 137, 397.
Talbot, N. B., Berman, R. A., MacLachlan, E. A., Wolfe, J. K. *J. clin. Endocrin.* 1941, 1, 668.

[7] Sutherland, E., Marrian, G. F. *Biochem. J.* 1947, 41, 193.
[8] Guterman, H. S. *J. clin. Endocrin.* 1944, 4, 262; *Ibid*, 1945, 5, 407.

matriculated students with the dual object of raising the standard of student health by giving advice and of obtaining information about the student morbidity-rate and its relationship to the varying factors in university life."

Compulsion was agreed on after considerable discussion because the delegates from all over the country realised that voluntary student-health schemes, where they existed, have left a good deal to be desired. It must be further pointed out that entrance to university will in no way be influenced by medical examination as this will take place after students have already matriculated. It is hoped that the first resolution will be acceptable to many schools in the very near future. The second resolution will be sent on to the National Union of Students and the Scottish Union of Students with the hope of formulating a united student policy on this important problem.

S. M. DRANCZ
Edinburgh. President, B.M.S.A.

SOCIAL MEDICINE

SIR,—In reply to Mr. Bedwell's letter in your issue of Oct. 18, I would like to say how invaluable I have found the help of the district nurses ever since I have been in practice. But I would not dream of wasting a nurse's time on the type of case I outlined in my original letter. Such a case needs no nursing. Welfare of the simplest variety (such as that offered in many instances by the Family Welfare Association) is all that is necessary. It could be supplied by any woman with sound common sense, who has knowledge of local facilities for healthy recreation, and knowledge of how best to help the new arrival from the country to adapt him or herself to the hostel-cum-office life of our big cities.

Once more I would reiterate that I am acutely aware of the necessity of economising our use of our trained welfare and health workers. Any amount of work of the sort I have in mind could be done by voluntary workers, provided trained supervision is organised.

London, S.W.10. A. E. B. HARDING.

GRANULAR PROCTITIS

SIR,—Following Dr. Oluer's article of Aug. 2, we had a request for 3 g. suppositories of succinyl sulphathiazole for treatment of a further case of granular proctitis.

We decided to use a 120-grain pessary mould, which yields a suppository of about $1^3/_8$ in. length and $^3/_4$ in. diameter. In making the suppositories we found that the medicament had a density of about 1·2 compared with oil of theobroma. A good suppository, which set rapidly on cooling, was obtained as follows:

Succinyl sulphathiazole gr. 45.
Cocoa butter gr. 83.

We believe that this method is less laborious than that employed by Mr. Barclay for Dr. Oluer's cases.

Westminster Hospital, KENNETH MACDONALD
London, S.W.1. Deputy Chief Pharmacist.

GAUCHER'S DISEASE WITHOUT SPLENOMEGALY

SIR,—I should like to offer some criticism of Dr. Morgans's article of Oct. 18. In the summary she writes:

> "A family affected by Gaucher's disease, but in whom none of those affected show splenomegaly, is described. The diagnosis was made by the detection of Gaucher cells in the bone-marrow and by the presence of typical radiological lesions in the bones. The family history suggests that in this series the disease was not only congenital and familial but also hereditary."

If we accept case 1 as a case of Gaucher's disease, diagnosed in the absence of splenomegaly on the basis of (1) a myelogram containing 0·4% of Gaucher cells, and (2) radiological translucencies in the bones, then, I suggest, the evidence submitted in regard to the other cases permits of no more than a diagnosis of "familial radiological translucencies"—to misuse the word diagnosis.

Why were not cases 2, 3, and 4, submitted to sternal punctures? We are not told that they refused. Cases 2 and 3 are included as "proved Gaucher's disease," on the basis of radiological translucencies, while case 4 is excluded on a lesser degree of translucency. Case 3 is described as a proved case of Gaucher's disease without splenomegaly, but, we are told, this case was not examined.

The illusory family tree depicts 3 "proved sternal puncture was performed on only 1 of the other 5 cases of "suspected Gaucher's disease" not known whether splenomegaly was present or The diagnosis of Gaucher's disease without sp would be difficult enough to satisfy anyone with standards, and I would suggest that the rem material submitted by Dr. Morgans, though pro with interesting speculations, was grossly in a diagnosis of Gaucher's disease, of the disease in absence of splenomegaly, and as being of an h nature.

West Herts Hospital, G. A. MATTHEWS
Hemel Hempstead. Pathologist, E.P.S.

BRITAIN'S CALORIE REQUIREMENTS

SIR,—In the paper by myself and others Nutrition Society on Oct. 25, it was suggested th pared with pre-war, the consumptions of sugar, fruit, and grain could advantageously be decr 14%, 5%, 1%, and 6% respectively—not stated in your report last week. Only the fi dairy products, potatoes, and vegetables r percentage increases.

Ministry of Health, London, S.W.1. E. R. BRANSB

HOMOLOGOUS SERUM JAUNDICE

SIR,—In your report of the discussion on infec hepatitis at the International Conference of Physic (Sept. 20, p. 435) you say:

> "Dr. F. O. MACCALLUM proposed that the virus gi rise to epidemic hepatitis should be known as 'hepa virus A,' and that giving rise to homologous serum jaun as 'hepatitis virus B.' . . . While with virus A the orga is absent from the nasopharynx and present in the fa urine, and serum, with virus-B infections it is present in nasopharynx and absent from fæces and serum. . ."

Surely the whole point of homologous serum jaun is that it can be transmitted by serum, so that the v must be present in the serum of infected persons.

Incidentally, why cannot the illness be called "serum jaundice"? As soon as a successful ani recipient has been found the term "homologo will lose what little point it had. As it is, we do not "homologous ringworm," even when we catch it fr our own species.

London, W.1. RICHARD ASHER

***We are obliged to Dr. Asher for pointing out this er Terminology is discussed in our leader columns.—ED.

E.B.S. PHONE NO.

SIR,—As from Friday, Nov. 7, the telephone num of the Emergency Bed Service has been changed MONarch 3000.

R. E. PEERS
London, E.C.2. Secretary.

DUE ACKNOWLEDGMENT

SIR,—As deputy chairman of the medical group the Royal Photographic Society, I have been asked the committee to point out to you that although excell reproductions of photographs are published in y journal to illustrate articles, in many instances recognition is given to the photographers concerned the authors. If acknowledgments of this kind could made regularly, my committee feel sure that it would g great encouragement to all medical photographers.

London, S.W.7. H. MANDIWALL

REVOLT FROM THE BEDPAN

SIR,—I was most interested to read in your issue Oct. 4 the article by Professor Bohmansson and Malmros. Messrs. Down Bros. and Mayer & Phe Ltd., made for us a wheel-chair with w.c. seat cop from the Bohmansson chair. This has now been in in one of the male surgical wards in the Royal North Infirmary, Inverness, for over three months; it is great success and is much liked by both patients a nurses. It has all the advantages claimed for it Professor Bohmansson. We have ordered another ch for the corresponding female ward.

Inverness. A. J. C. HAMILTON.

PRESENT STATUS OF DISC SURGERY

R.—Your leading article last week would have been valuable if it had included also "the other side e picture." I have received from America a reprint article by Aitken and Bradford on End Results of ured Intervertebral Discs in Industry (*Amer. J.* March, 1947).

ell written, unassuming, and I believe entirely free bias, this article is a terrible indictment of the sale mutilation of spines that is proceeding at the nt time under the obsession of the prolapsed disc. limsy evidence upon which the diagnosis is made, igh proportion (40%) of cases in which admittedly rolapsed disc has been found at operation, the ss extirpation of perfectly normal discs on the y unwarranted assumption that they were "con-l discs" or discs which pop in and out, the extensive ectomies and the multiple operations that have done in some cases, and the very high proportion) of unsatisfactory end-results are some of the s clearly brought out in this paper. It is noted that cases (170) under review were dealt with by some of most distinguished neurosurgeons and orthopædic eons in America. Lastly, attention is drawn to the that the disc is only a part of the complex articulation een two vertebræ and its destruction leads to a s mechanical disturbance of the articulation as a le. It is therefore becoming increasingly evident t in many cases, if not in all, spinal fusion should be rt of the operation for a prolapsed disc. Why it ld be considered necessary for one surgeon to ove a disc, and for another to do a fusion, I have er been able to understand. Hitherto affections of spinal column have always been within the province thopædic surgery.

o-one today doubts that the prolapsed intervertebral is a genuine pathological lesion. There is reason to eve that a disc normally exists under considerable tive pressure, and when it is ruptured part of it is ruded under pressure into the spinal canal. Here it ns a lump which is likely to press upon a nerve-root d cause sciatic pain. When such a lump is present, it be found and removed by operation; when no such np is present, the diagnosis is wrong and it is quite xcusable to "explore" a disc by thrusting a blunt trument into it and scooping it out.

For centuries sciatica has been known to be mainly affection of middle-aged and elderly people, most of om have osteo-arthritis of the lumbar spine and are ble to attacks of "lumbago." Rupture of a disc is accident which happens in comparatively young ople under stress or strain. It may cause sciatica ther directly by pressing on a nerve-root or indirectly leading to (traumatic) arthritis of the lateral joints. ordinary peace-time conditions the prolapsed disc is obably the direct cause of sciatica in about 4–5% of es. (This was the figure given by Grafton Love when presented his first series of 300 cases from the Mayo nic.)

To say that practically every painful back is due to a olapsed disc is fantastic. Carried to its logical conclusion means that practically every adult human being has prolapsed disc, for there are few of us who have not at me time or other had a pain in the back.

To say that the majority of cases respond to conservave treatment and that only a small proportion of them quire operation is begging the question. Without peration there is no proof whatever that these cases ave prolapsed discs.

The reduction or replacement of a prolapsed disc by anipulation is I believe pure imagination, contrary to ll probability, and unproven. Like the "small bone out f place" of the bonesetter it may serve as a pretext r manipulation, and there are many painful conditions f the back which can be relieved by manipulation and hysiotherapy. But no-one who has seen a disc forcibly xtruded into the spinal canal is likely to believe in anipulative reduction.

Unquestionably the correct treatment for a prolapsed sc is to remove it. But it would be a thousand pities this most valuable contribution to surgery were to become discredited by "an enthusiasm which in some instances has largely replaced common sense."

In lighter vein, but still seriously, I would protest against the suggestion of removing snails from the spine! As an example of illiterate jargon surely it would be hard to beat "excochleation of disc herniation" (*J. int. Coll. Surg.* 1946, 9, 531).

London, W.1. A. S. BLUNDELL BANKART.

Parliament

FROM THE PRESS GALLERY

Medical Practitioners and Pharmacists Bill

IN the House of Lords on Oct. 28, Lord HENDERSON introduced this Bill, whose primary purpose is to dispose finally of the various war-time problems associated with admission to the Temporary Register of doctors holding colonial or foreign qualifications. As already explained (*Lancet*, Aug. 9, p. 225; Aug. 16, p. 250) it empowers the General Medical Council to grant permanent registration (1) to doctors whose temporary registration is due to terminate at the end of this year; (2) to doctors now resident in this country who served overseas with H.M. Forces and therefore had no occasion to seek registration; and (3) to other doctors whose presence here is due to the war and who could not equitably be expected to take a British diploma. Doctors in the first two categories will have to satisfy the council that they have rendered satisfactory service in a medical capacity while temporarily registered or while serving in the Forces; and those in the third category (whose registration will be provisional for 6–18 months) must show that they are of good character and that they have been selected for medical employment in a hospital or institution approved by the Health Departments for this purpose. The Bill also seeks to regularise the position of doctors from abroad who are making temporary visits to hospitals in this country—either eminent practitioners, invited to give demonstrations, or doctors coming for postgraduate study. These will be eligible for registration while working in a hospital approved by the council.

Arrangements are proposed for registration of pharmacists holding qualifications granted outside the United Kingdom.

Local Government Bill

This Bill, presented to Parliament on Oct. 27, provides for a new system of financial assistance from the Exchequer to local authorities in England and Wales. The Ministry of Health's assumption of responsibility for hospital services, and the termination of the poor-law (see p. 692), will relieve local authorities of expenditure estimated at £63 million annually. Instead of the "block" and "supplementary" grants they now receive from the Exchequer, county and county-borough councils will get "equalisation" grants if their financial resources do not reach a certain minimum based on the average rateable value per head of weighted population. If these equalisation grants had been given in 1946–47 they would have amounted to about £33 million, which is £24 million less than the local authorities received in block and supplementary grants; but with a saving of £63 million there would be a gain of about £39 million. It is estimated that in 1946–47, 54 of the 61 administrative counties and 55 of the 83 county boroughs would have qualified for an equalisation grant.

Valuation for rates, at present a function of the local authorities, is to be undertaken by valuation officers of the Board of Inland Revenue, and a new procedure for the valuation of dwelling-houses is laid down. The first revision of current lists is to be completed by 1952 or 1953.

QUESTION TIME

Scientific and Technical Periodicals

Mr. F. J. ERROLL asked the President of the Board of Trade, in view of the urgent need to disseminate scientific and technical information in Britain, when he will increase the domestic paper ration for scientific and technical periodicals.—Mr. HAROLD WILSON replied: Steps are being taken to ensure to journals devoted primarily to original research their full requirements, and I hope to exempt technical periodicals from the reduction which it is necessary to make in the paper available for periodicals generally. Mr. ERROLL: Will the Minister take immediate steps with regard to the British publication *Nature*, as more copies of that publication are now available to Russian scientists than to British scientists? Mr. WILSON: I will take a look at that.—Mr. WILSON HARRIS: Could the Minister say how a technical periodical can be defined and how a non-technical periodical can make itself sufficiently technical to qualify to the increased ration?

Import of Scientific Books

Mr. N. H. LEVER asked the President of the Board of Trade if he would state the average annual expenditure in respect of the period 1940–45 upon non-fiction books imported from the U.S.A.; the amount spent in 1947 during the free period; and the estimated dollar saving expected from the recent restrictions placed upon the importation of such books.—Mr. WILSON: The value of imports in 1940–45 averaged some £170,000, and the value from Jan. 1 to Sept. 11, 1947, when the Open General Licence was revoked, was £720,000. The monthly rate of imports was increasing and it is estimated that an annual saving of nearly $5 million will result from the restrictions now imposed.

Mr. LEVER: Is the Minister satisfied that this cut will not adversely affect scientific and medical research, particularly having regard to the shortage of paper and the resulting shortage of technical books and the like in this country at present?—Mr. WILSON: We are arranging for imports of non-fiction to come in up to the rate of 100% by value of pre-war imports. I recognise that is not 100% in volume, but this new change has only recently been made. We are watching the position and if we see evidence that essential books are being kept out, we will certainly look into the matter again.

Deaf-aids

Mr. ERROLL asked the Minister of Health why, in view of the fact that 80% of deaf-aids now manufactured were one-piece aids, he had decided on a two-piece aid for free supply to the deaf under the National Health Service.—Mr. A. BEVAN replied: The decision has been taken owing to the disproportionate cost involved in using the miniature batteries required for one-piece aids.—Mr. ERROLL: In view of the fact that the Government aid is being manufactured on a mass-production basis surely it is possible to make a one-piece aid on a cheaper basis?—Mr. BEVAN: My technical advice is to the contrary. Replying to a further question Mr. Bevan said the aids would be available when the National Health Service started on July 5 next year.

Mr. ERROLL: What scale of spares and replacements had been allowed to service the aid?—Mr. BEVAN: The general basis adopted has been an annual replacement rate of 25% with a higher rate for valves owing to their shorter life.—Mr. ERROLL: Can the Minister say why a very much higher rate of replacement was decided upon in the case of this unit than is customary in normal commercial practice? Mr. BEVAN: I understood that British valves are being used in order to save dollars and we could not be sure what the experience with them will turn out to be.—Mr. ERROLL: Has not the instrument been properly tested?—Mr. BEVAN: Certainly.

Closing of Wards

Mr. C. OSBORNE asked the Minister of Health how many hospital wards had had to be closed for the lack of staff; how many hospitals were affected and what part of the country was most seriously affected; what was the cause of this situation; and how he proposed to overcome it.—Mr. BEVAN: My information is that at the end of June, there were over 50,000 beds closed for lack of staff. The hospitals were situated in most parts of England and Wales, though more in the populous counties. Causes and possible remedies have recently been examined in the report of the Working Party on the Recruitment and Training of Nurses.

Mr. ERNEST THURTLE asked the Minister if he had considered the memorandum signed by 33 medical practitioners in Shoreditch and neighbourhood regarding the threatened closing of the inpatient wards of St. Leonard's Hospital, Shoreditch, and asking that he should intervene and cause a public inquiry to take place before action to close the hospital is taken; and what action he was taking.—Mr. BEVAN replied: The London County Council have appealed to me under the Nurses Registration Act, 1919, against the decision of the General Nursing Council to withdraw tion from this hospital as a training school for am arranging for the appeal to be heard Mr. THURTLE: Will the Minister bear in mind that people in this area to whom this hospital is a great are looking for him to maintain a firm front General Nursing Council on this matter?—Mr. I will certainly take all relevant considerations into including the General Nursing Council.

Closure of Nurses' Training Schools

Mr. S. HASTINGS asked the Minister of Health how the 24 hospitals from which recognition as training for nurses has been withdrawn by the General Council and how many of the 37 hospitals from withdrawal is proposed, are municipal and how voluntary.—Mr. BEVAN replied: Of the 24, 23 are vo and 1 municipal, and of the 37, 25 are voluntary municipal.

Mass-radiography Sets

Replying to a question Mr. BEVAN stated that 23 mass-radiography sets operating in England and Arrangements were in progress for starting 14 mo further expansion was planned as apparatus comes Up to the end of June 1,669,000 persons had been

Calorific Value of Prison Diet

In answer to a question, Mr. CHUTER EDE stated 1938 the diet for men in prisons contained 2094–4200 per diem, and for women 2542–2901 calories, depen the form of labour at which the prisoners were e and the length of their sentence. At Borstal inst for boys the diet contained 3775 calories per diem, girls 2669 calories. In 1947 the diet for male p contained 2923–2955 calories per diem and for wome 2605. The diet for male young prisoners containe 3051 calories and for female young prisoners 25 calories per diem. At Borstal institutions for boys contained 3261–3389 calories per diem, and for girl 3223 calories.

Anti-cholera Measures in Suez Canal Zon

Mr. HASTINGS asked the Secretary of State f what precautions were being taken to prevent the s cholera to H.M. Forces stationed in Egypt.—Mr. E. S replied: Stringent preventive measures are being t ensure that food and drink are free from contam Native villages and restaurants have been placed bounds, and anti-fly measures have been intensified. A has been drawn to the necessity for a high standard of hygiene. Wholesale anti-cholera inoculation has not found necessary, but all men at special risk and tho to come in contact with infected material or to pass infected areas are inoculated. The question of ino all troops in Egypt is kept constantly under review an the situation deteriorate this additional measure adopted at once. In the meantime inoculation is not to any who desire it, whether or not they are at specia

Calorific Value of Rationed Foods

Mr. E. P. SMITH asked the Minister of Food the value of the daily food of an adult in Great Britain r in terms of rationed and point foodstuffs.—Dr. E. S SKILL replied: The caloric value of the rations, in points rationed foods of the ordinary adult, is abo calories per day.

Milk Ration for Babies

Mr. Q. HOGG asked the Minister of Food why he ha it necessary to cut the babies' milk ration.—Mr. J. St replied: The milk allowance for babies up to 12 old has not been reduced. The reduction in the al to children between 1 and 5 years of age was n preference to reducing other priority or non-priority all on the recommendations of our medical and nut advisers.

Meat for Canteens

Sir WILLIAM DARLING asked the Minister if he reconsider the 2½*d.* per meal meat allowance to in canteens as compared with the civilian ration allow 1*s.* per week; and what action he proposed to tak STRACHEY replied: The meat allowances to all canteo recently cut in common with the domestic ration. I propose to make any alteration in the ratio between all to industrial canteens and those to other establishm

Public Health

Manchester's Water Shortage

Nov. 3 the Manchester waterworks committee d that the water-supply to domestic premises in ester and in 25 neighbouring towns must be cut n Nov. 11 till the service reservoirs at Longdendale harged. The *Manchester Guardian* of Nov. 4 points it a reprieve is unlikely, for it could be based only exceptionally heavy rainfall together with a self- d economy of about 50%. Special arrangements een made for hospitals and bakeries, and the needs sick and old people will be met by 200 water- but householders will have to draw their water rry it from the nearest stand-pipe. Some 1200 to tands will be set up and there will be a 24-hour . The central city area is excluded because of of fire, and supplies to industry will be maintained, a 10% reduction in consumption is asked for.

appeals for economy have been disappointing. eal was made to the public on Oct. 21 for a 40% on, but at the end of a week the actual saving was and at the end of a fortnight 7½%. The restric- vill affect some 1,200,000 people in Manchester e surrounding towns.

Dysentery in Mental Hospital

utbreak of Flexner dysentery which started at kshire Mental Hospital, Wallingford, on Sept. 22, d 363 cases up to Oct. 31. There have been hs, all in old people who had recovered from te attack; and in them the infection is thought been only an associated cause of death.

een Sept. 22 and Oct. 20 there were 15 cases, Oct. 21 an explosive outbreak began; this ed up to Oct. 29, the daily total of new cases from 20 to 72. Since then there have been only cases a day. Until Oct. 17 all cases were from a ward; on that date prophylactic sulphaguanidine ent was instituted in this ward, from which there een no further cases.

first infection manifested itself by rigors, high and diarrhœa with typical dysentery stools, t gross constitutional disturbance. Later, how- here was vomiting in all cases; patients were ed, often with extreme dehydration, but the stools ot so typically dysenteric. The attack has never longer than forty-eight hours. The outbreak oved the advantage of taking rectal swabs for iological examination. Investigations are not mplete, but the source is believed to have been a t employed in the kitchen, who was a carrier.

Poliomyelitis and Polioencephalitis

ifications of poliomyelitis in the week ended Oct. 25 red 251 and were fewer than in the previous week but notifications of polioencephalitis rose from 12 The trend of polioencephalitis returns has not ery consistent, and probably there are considerable nces in the meaning attached to this term.

visional figures of registrations of deaths from yelitis and polioencephalitis supplied by the rar-General are as follows: July, 74; August, 206; nber, 160. It is, of course, impossible to relate very directly to notifications, because of the g duration of illness and possible delay in the ation of death, but the total of notifications relat- roughly the same periods suggests a fatality-rate order of 7%. Preliminary analysis of deaths by ggests that the increase in the fatality of the e in older age-groups which has been reported in countries has also been a feature of this epidemic. hoped that more information on this and other rs will be derived from the survey of hospital cases eing undertaken by the Ministry of Health.

nfectious Disease in England and Wales

WEEK ENDED OCT. 25

ifications.—Smallpox, 0; scarlet fever, 1452; ping-cough, 1003; diphtheria, 238; paratyphoid, yphoid, 4; measles (excluding rubella), 1981; pneumonia (primary or influenzal), 482; cerebrospinal fever, 34; poliomyelitis, 251; polioencephalitis, 29; encephalitis lethargica, 0; dysentery, 340; puerperal pyrexia, 125; ophthalmia neonatorum, 53. No case of cholera, plague, or typhus was notified during the week.

Of the 340 cases of dysentery, 260 were notified at Wallingford, Berks.

Deaths.—In 126 great towns there were no deaths from measles or scarlet fever, 1 (0) from enteric fever, 3 (1) from diphtheria, 1 (1) from whooping-cough, 69 (7) from diarrhœa and enteritis under two years, and 12 (2) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 254 (corresponding to a rate of 32 per thousand total births), including 32 in London.

Obituary

HAROLD BEN FAWCUS

K.C.B., C.M.G., D.S.O., M.B. DURH., D.C.L.

Sir Harold Fawcus's term of office as director-general of Army Medical Services covered the period 1929–34, and the reforms and adjustments of organisation made in 1926 and in 1935 were largely a reflection of his vision and influence. Indeed his retirement was postponed so that he might carry out the recommendations of the Warren-Fisher Committee, many of which he had sponsored.

Press Portrait Bureau

He was born in 1875, the son of John Fawcus of South Charlton, Northumberland, and was educated at Durham School and University, where he graduated M.B. in 1899. During the South African war he served at first as an attached civil surgeon till he received his commission in 1900. In 1905 he took his D.P.H., and the special certificate in State medicine which he obtained at his examination for major in 1911 led to his appointment as assistant professor in hygiene at the Royal Army Medical College at Millbank. Of the informal group which grew up there, with Leishman at its head, Prof. Lyle Cummins writes:

> We discussed things from the same point of view, and "discussed" the little dinners that we often had together with the same zest. Fawcus, Cumming, and I maintained a theoretical rivalry between what the old porter at the college used to call "Them 'Igenes" and the path. department as represented by Cumming and myself. Fawcus of course was quite capable of keeping his end up as the exponent of the department of hygiene.

In 1914 Fawcus was appointed an instructor at the Army School of Sanitation at Aldershot, but soon after the outbreak of war he became D.A.D.M.S., Lines of Communication. Later he served with the 3rd Army, under General Rawlinson, and as A.D.M.S., Guards Division. The war thus turned him into an administrator, but it was a principle of his that "in this war one can do anything if one only has a fortnight to pick up the details." As regards Fawcus, this was probably true. For his services he was mentioned six times in despatches, awarded the Croix de Guerre and the D.S.O., and appointed C.M.G.

After the war Fawcus became in turn assistant director-general and deputy director-general at the War Office, and in 1929 he succeeded Sir Matthew Fell as director-general of Army Medical Services, with the rank of lieut.-general. Of his work, a colleague writes: "Although Fawcus was shy, one of his outstanding characteristics was his imperturbability, and this added greatly to his strength as a good and wise administrator. His corps had a serene confidence in their director-general. He did not come to hurried conclusions, and where possible liked to consider all sides of a question. But when a recommendation was presented to him, which in his opinion was obviously right, he would pursue it with enthusiasm. He was invariably a long-view man, and measures for the prevention of disease met with his support as readily as the more spectacular side of his profession, for they appealed to him not only in the interests of the short-term serving soldier but also of the long-term reservist and of the general public health. Quick to realise the advantages of the use of efficient auxiliary personnel, Fawcus warmly supported the aims and object of the Army Dental Service established in 1921, holding it to be perhaps the most important step taken by the medical department in his generation."

General Fawcus left the department at his own request, a few months before his extended term of office had expired, to allow him to take up the director-generalship of the British Red Cross Society, on the death of Brig.-General Bateman-Champain. He retired from this post in 1938 and in the same year he was appointed colonel commandant of the R.A.M.C. He was also a commissioner of the Royal Hospital, Chelsea. In 1928 he was appointed C.B. and he was promoted K.C.B. in 1931. His own university conferred on him the honorary degree of D.C.L.

Sir Harold Fawcus leaves his widow, formerly Miss Mary Ross, with a son and three daughters. He died at Hillingdon, Middlesex, on Oct. 24.

JOHN WILLIAM GEARY GRANT

F.R.C.S.

Mr. J. W. Geary Grant died at the age of 81, on Oct. 23, at Weymouth, where he retired last year. He had been in active surgical practice for over 50 years and was consulting surgeon to the Royal Infirmary at Cardiff, where he lived for 34 years. The son of Admiral J. W. Grant, he qualified from St. Thomas's Hospital in 1890, and he took his F.R.C.S. in 1909. After holding house-appointments at Halifax Royal Infirmary and at the Evelina Hospital, he settled in Cardiff. For a time he was first assistant in the surgical unit of the Welsh National School of Medicine. In the 1914–18 war he was attached to the Western General Military Hospital, at Whitchurch, near Cardiff. His published work dealt mainly with abdominal surgery, and included articles on acute necrosis of the pancreas, carcinoma of the rectum, reversed rotation of the intestine, and traumatic and arteriovenous aneurysm. In 1944 in two articles in the *Medical Press* he recalled his experiences during Half a Century of Surgery.

Mr. Geary Grant is survived by his widow and by two daughters of his first marriage.

COURTENAY CHARLES WEEKS

M.R.C.S.

The Rev. Courtenay Weeks, honorary medical director and editor of the National Temperance League, died on Oct. 26 at Pershore. He was born at Portsmouth in 1872, the son of Rear-Admiral G. H. Weeks, and he took his *Conjoint qualification from University College* Hospital, London, in 1895. Even before he qualified he had become interested in the temperance movement, and he was president of the World Students' Federation against Alcoholism. After holding house-appointments *at the Coventry and Warwickshire Hospital* he practised for some years in South London before taking Holy Orders.

At the beginning of the war in 1914 he was vicar of St. Hilda, Crofton Park; but as there were no vacancies in the chaplain's department of the Services and a great need for surgeons he accepted a commission in the R.A.M.C., and he was in charge of the surgical work at the military hospital in Malta during the Gallipoli campaign. On his return to this country he served as surgeon at the Royal Herbert Hospital, Woolwich. In 1920 Dr. Weeks became a medical lecturer of the National Temperance League, and for this work both his professions provided valuable background. An effective and sincere speaker, he lectured at many public and secondary schools, and to the students of theological and training colleges as well as of the universities.

On behalf of the temperance movement Dr. presented evidence before the Royal C Licensing (1929) and the Select Committee of the of Lords on the prevention of road accidents in In 1932 he played an important part in organisi 20th International Congress on Alcoholism, and he wards made himself responsible for editing the of the proceedings. In 1925 he published his on *Alcohol in Medical Practice*, and in 1938 the edition of his *Alcohol in Human Life* appeared. a member of the council of the Society for the of Inebriety, though of late the war and ad years *had made it increasingly difficult for* attend their meetings, especially since 1940 became the rector of the Combertons in Worcest. But he continued his connexion with the Temperance League, holding honorary office death.

DR. RIDDOCH

R. A. H. writes: The death of Dr. George came as a most grievous blow to those who worke him. To his assistants he had always been th kindly of chiefs. He demanded a high standard o from registrars, housemen, and clerks, and he obtained it, even from the most unlikely materi took a real interest in his juniors and was always to help them in their later careers. His teaching legendary quality, and his demonstrations parti were marked by a beautifully logical exposit neurological problems delivered with an inimitable and enthusiasm. His memory for patients was *ordinary, and how they adored him.* He was tired end, but even so he would outlast the energy of his as he pursued a long ward round.

The photograph of Dr. Riddoch reproduced last w by Richard Day.

Births, Marriages, and Deaths

BIRTHS

ALBERTS.—*On Oct. 27, at Lichfield*, the wife of Flight-Li Frank Alberts, R.A.F.—a daughter.

BRADY.—On Oct. 10, in London, the wife of Dr. T. J. a daughter.

CROFT.—On Oct. 28, at Kenilworth, the wife of Dr. W. H. C a daughter.

CURL.—On Oct. 31, the wife of Dr. O. J. Curl—a son.

ESMONDE.—On Oct. 29, at Hong-Kong, the wife of Dr. P. E M.C.—a daughter.

HUGO.—On Oct. 24, at Guildford, the wife of Mr. Richar F.R.C.S.—a son.

RICE.—On Oct. 25, in London, the wife of Dr. David Rice—

SKEMPTON.—On Oct. 31, the wife of Dr. I. P. D. W. Ske a son.

THORNTON.—On Oct. 29, at Edinburgh, the wife of Dr. Thornton—a daughter.

WYNN-WILLIAMS.—On Oct. 29, in London, the wife of Mr Wynn-Williams, F.R.C.S.—a son.

MARRIAGES

DENT—TEMPLETON.—On Nov. 1, at *Aberdeen*, Ronald M.R.C.P., to Mary A. Templeton, M.B.

DOWNMAN—BARAKAN.—On Oct. 24, in London, *Charle* Downman, M.R.C.S., to Thaïs Hélène Barakan, B.SC.

MACKAY-SCOLLAY—WELLER.—On Oct. 25, at Watford, Mackay-Scollay, M.B., to Mary Weller.

RHODES—BRAMLEY.—On Oct. 25, at Ashford, Middlesex, Stuart Rhodes, A.R.I.B.A., to Katerina Bramley, M.B.

DEATHS

BRAMWELL.—On Oct. 30, at Richmond, Yorks, Dan Cum Byrom Bramwell, M.B. Edin., aged 30.

BURGHARD.—On Oct. 31, at Cambridge, Frédéric *Burghard, C.B., M.D.,* M.S. Lond., F.R.C.S., colonel, aged 83.

GOBLE.—On Nov. 1, at Hayling Island, Frederick Georg M.R.C.S., surgeon captain, R.N. retd.

KAUNTZE.—On Nov. 4, William Henry Kauntze, C.M.G., M.I M.B. Lond., F.R.C.P., late chief medical adviser to the Office.

LYTLE.—On Oct. 26, Robert James Lytle, M.D. Belf.

NEWTON.—On Oct. 29, at South Broomhill, Morpeth, Gray Newton, M.B. Edin., F.R.C.S.E.

PIERCE.—On Oct. 26, in London, Ward Irving Pierce, M.D. L.M.S.S.A.

SCHWIZER.—On Oct. 22, George Clemens Schwizer, M.D. M.R.C.S.

TRUMAN.—On Oct. 26, at Nottingham, Bernard Renshaw Truman, B.A., M.B. Camb.

WEBBER.—On Oct. 26, at Sandown, I.o.W., Alexander Webber, M.S. Lond., F.R.C.S.

WEEKS.—On Oct. 26, at Pershore, Courtenay Charles M.R.C.S., rector of the Combertons, Worcs.

WELCH.—On Oct. 26, at Haslar, Sir George Welch, K.C.M. M.R.C.S., surgeon rear-admiral, R.N. retd., aged 89.

Notes and News

U.N. CHILDREN'S RELIEF FUND

ST December the United Nations International Children's rgency Fund was set up to aid needy children and ctant and nursing mothers in all parts of the world. approximate survey showed that at least 60 million ten in Europe and the Far East urgently required supple- ary feeding and other help. The fund is still handi- ed by lack of money; but aid is already being provided etween 4 and 5 million children in twelve European tries (Albania, Austria, Bulgaria, Czechoslovakia, Finland, ce, Greece, Hungary, Italy, Poland, Rumania, and slavia), and in the Far East. After visiting Europe , Mr. Maurice Pate, executive director of the fund, sed his conviction "that this winter will be the hardest the people of Europe have known in eight years of war eace."

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ersity of Oxford

a congregation held on Oct. 16 the following degrees conferred:

.—W. L. Gordon, G. E. Mann, N. C. Hughes Jones, O. M. , Mercy I. Heatley, *D. C. Bernstein.

* In absentia.

d College of Physicians of London

a comitia of the college held on Oct. 30, with Lord , the president, in the chair, Dr. F. J. Nattrass, Dr. Russell Brain, and Dr. R. D. Curran were elected illors.

following were elected to represent the college: Sir he Abrahams on the committee of management of the int Board; Dr. F. S. Langmead on the Central Midwives ; and the President, Sir Leonard Parsons, Dr. H. E. A. ro, Dr. W. G. Barnard, and Sir Allen Daley on the ng joint committee of the three Royal Colleges; . M. Hinds Howell, Dr. M. E. Shaw, Dr. J. B. Harman, Dr. J. C. Hawksley on the Committee of Reference; Hinds Howell and Dr. J. B. Harman on the Central al War Committee; Sir Arthur MacNalty on the aliens ttee of the C.M.W.C.

Marc Daniels was appointed Milroy lecturer for 1949, ubject being Tuberculosis in post-war Europe. The t Blane medal for 1947 was awarded to Surgeon nander G. H. G. Southwell-Sander, R.N., and the Jenks rship to M. B. Watts, late of Epsom College.

following having satisfied the censors' board were d to the membership:

B. Adams, M.B. Witw'rsrand, G. F. Adams, M.D. Belf., H. St. ddis, M.B. Camb., K. D. Allanby, M.B. Lond., Harry Angelman, pool, R. O. Angove, M.B. Adelaide, J. W. Beattie, M.D. Belf., Bedwell, M.B. Lond., L.R.C.P., R. B. Blacket, M.B. Sydney, A. Blaney, M.B. Belf., J. J. Bourke, M.B. N.Z., W. H. Bradley, xfd, J. F. Buchan, M.B. Camb., G. MacG. Bull, M.D. Cape W. E. Church, M.B. Camb., J. A. K. Cuningham, M.B. N.Z., Davies, M.B. Wales, E. G. Donovan, M.B. Lpool, Lennox-Eales, ape Town, Vincent Edmunds, M.B. Lond, C. H. Edwards, O. G. Fagg, M.B. Lond., L.R.C.P., Elizabeth de C. Falle, ond., H. G. Farquhar, B.M. Oxfd, Evan Fletcher, M.D. Belf., orfar, M.C., M.B. St. And., T. G. Fox, M.B. N.Z., Peter Frankel, ond., E. S. Frazer, M.B. Manc., L.R.C.P., Abraham Freedman, ond., L.R.C.P., Oliver Garrod, M.B.E., M.B. Lond., L.R.C.P., Gerrard, B.M. Oxfd, F. S. Gorrill, M.D. Lond., L.R.C.P., Hambling, M.B. Birm., H. C. Hamilton, M.B. Lond., Lt.-Col. Harrison, M.B. Lond., L.R.C.P., R.A.M.C., M. F. Hart, M.B. Lond., M. A. Hassanein, M.B. Cairo, Hung-chiu Ho, M.B. Hong Q. J. G. Hobson, B.M. Oxfd, Arthur Hollman, M.B. Lond., t Hunter, O.B.E., M.B. N.Z., Joseph Jacobs, M.D. Lond, Douglas Jamieson, M.B. Glasg., J. M. Jefferson, B.M. Oxfd, Kunkler, M.B. Camb., L.R.C.P., D. N. Lawson, M.B. Camb., D. N. Leeming, L.R.C.P., John Lister, M.B. Camb., L.R.C.P., Llewellin, M.B. Lond, L.R.C.P., P. M. Luhar, M.B. Bombay, McConkey, B.M. Oxfd, J. P. McGladdery, M.D. Lond., I. C. K. nzie, M.B. Glasg., J. G. Millichap, M.B. Lond, L.R.C.P., G. E. B.M. Oxfd, J. N. Milnes, M.B. Camb., L.R.C.P., C. H. Naik, ombay, Catherine A. Neill, M.B. Lond., L.R.C.P., S. G. Nelson, ydney, M. H. Oelbaum, M.B. Manc., J. F. Pantridge, M.D. Belf., S. Paterson, M.B. St. And., Florence R. Pillman, M.B. Lond., J. B. Randell, M.B. Wales, P. C. Reynell, B.M. Oxfd, Robertson, M.B. Lond., L.R.C.P., C. A. Rumball, L.R.C.P., Sampson, M.B. Melb., C. G. R. Sell, M.B. Camb., M. L. Sharma, unjab, J. R. Simpson, M.B. Lond., L.R.C.P., J. F. P. Skrimshire, amb., L.R.C.P., J. S. Staffurth, M.B. Lond., L.R.C.P., S. W. ary, M.B. Manc., I McD. G. Stewart, M.B. Lond., L.R.C.P., Sundt., L.R.C.P., John Sutcliffe, M.B. Camb, L.R.C.P., P. H. M.D. Lond., L.R.C.P., R. D. Sweet, M.B. Camb., B. F. ierton, B.M. Oxfd, P. E. D. S. Wilkinson, M.B. Lond., L.R.C.P., Williams, M.B. Camb., J. M. G. Wilson, M.B. Camb., L.R.C.P., Wilson, M.B. Glasg., Joan D. Wrigley, M.B. Lond., L.R.C.P., Wyon, M.B. Camb., Judith C. M. Yuill, M.B. Lond.

Licences to practise were conferred upon the following 129 candidates (99 men and 30 women) who have passed the final examination of the Conjoint Board and have complied with the by-laws of the college:

K. J. Adams, B. P. Appleby, D. E. Argent, E. M. P. Ball, T. W. Barnes, A. F. Barnett, D. W. G. Bartlett, R. W. A. C. Barton, Barbara Baxter, Kathleen M. Beech, Alfred Beck, Audrey Beder, Evelyn M. P. Bedwell, Joseph Bendas, Nancy L. C. Berry, J. B. Binks, T. D. Brentnall, D. J. Brewer, Margaret L. M. Bridges, G. B. Brown, G. B. Burchell, Evangeline Burgess, A. R. P. Calder, Emily M. Collingridge, Stanley Compton, E. P. Cooke, M. H. D. Cooper, D. J. Cowan, I. W. Crown, D. M. Curtis, Phyllis Dagnall, E. T. Dakin, D. W. Davies, A. M. Dickinson, A. E. Dossetor, Evelyn S. Elliott, James Elstub, H. R. Erskine, E. J. Fairlie, G. E. Faulkner, R. A. W. Feakes, Rosalind Fellowes, Margaret M. F. Fitzpatrick, Mary E. Forrester, Roy French, P. S. Gardner, F. P. A. Garton, Joseph Gay, Mohamed Ghousuddin, N. M. Gibbs, Elizabeth M. Gorst, D. B. Goss, George Hacking, Jean Hansell, J. L. Hardman, M. A. Heasman, A. G. Henderson, Mary M. Herley, Miriam Hirtzel, Eleanor M. Hoole, J. B. Howard, Jean A. Infield, L. J. Ison, W. B. James, A. L. Jeanes, J. G. Jeffs, M. S. Johnson, Clifford Jones-Morgan, Ruth V. Kemp, D. W. Kennard, J. V. Kilby, Alwin C. B. Latham, W. C. Lathbury, R. H. N. Long, Derrick Lonsdale, Mary A. J. Lourie, K. N. H. Low, W. E. MacBean, D. Y. Mackenzie, D. L. M. McNeill, R. I. Maitland, D. N. Mitchell, D. O. Morley, Sybil M. Murray, Hannah Mushin, Srigakula Narayana Setty, J. E. Noble, H. R. Odlum, E. G. Old, Barbara Oldham, J. H. H. Oliver, R. L. Osmont, R. D. Pearce, Eileen M. Pearson, Laurence Phillips, B. G. Pickles, Allen Pilling, J. S. Porterfield Fikret Rassim, W. H. Rees, M. C. T. Reilly, Doreen M. Reside, P. W. H. Robinson, D. J. H. Rogers, J. R. Scholey, B. K. Scott, Margot Shiner, Elisabeth Shoenberg, Ronald Sloman, R. I. L. Smallwood, C. W. Smith, P. H. A. Sneath, D. J. R. Snow, Walter Spector, H. B. Stafford-Kemp, D. P. P. Thomas, Bernard Towers, E. J. Trimmer, D. J. Tucker, Betty M. L. Underhill, J. H. B. Urmston, C. W. J. Ussher, J. K. Walker, A. L. Warlow, B. M. Watney, F. E. Weale, J. S. Weiner, A. W. Weller, H. D. Yauner.

The following diplomas were conferred jointly with the Royal College of Surgeons:

D.C.H.—Isabella M. Almond, Lionel Apter, M. W. Arthurton, N. C. Begg, Marjorie Bell, P. C. Bhattacharjee, Evelyn L. Billings, Ruth Blackwood, M. P. Bourke, Phyllis E. M. Bowen, Rosemary R. M. Bradmore, Lilian M. Burbidge, Angela E. D. Burns, Mary W. Coxon, D. G. Crawshaw, Agnes A. Crone, D. E. Cullington, Enid Curran, J. E. A. David, Gwendoline E. Davison, G. K. Dhariwal, E. M. Dimock, Douglas Eglin, H. H. A. Elder, Nora C. Elphinstone, Benjamin Epstein, H. C. Falcke, O. D. Fisher, Shanti Ghosh, Mary E. Goodson, R. R. Gordon, Muriel D. Graham, John Griffith, Don Hilson, Helen C. Humphreys, Stewart Hunter, A. F. Huston, Margaret Ingham, Harry Isenberg, I. P. Jaffe, R. T. Jenkins, S. T. H. Jenkins, G. G. Jones, Megan P. Jones, R. S. Jones, Amy K. Jungalwalla, S. E. Keidan, J. J. Kempton, Israel Kessel, Beryl E. Lewis, Joyce R. Lewis, I. M. Librach, Duncan Macaulay, Grace E. McClafferty, W. E. MacLean, R. F. Maggs, Margaret D. C. Martin, J. D. H. Matthews, W. R. May, Kate Menashe, J. A. W. Miller, W. J. Moffett, N. G. Mojumdar, Islaha Morris, Stella M. Murray, T. N. Nauth-Misir, Sheila M. M. Niall, Leslie Pannall, Diana G. Paradise, C. V. Patel, I. E. Phelps, Rosa M. Piggot, J. N. A. Pritchard, H. S. Provis, Margaret Readman, P. A. H. Rivett, Cecilia M. Robinson, Sheenah J. McK. Russell, Elias Sanders, M. J. A. Sandrasagra, S. S. Schmulian, Elizabeth M. Sefton, Joseph Shein, S. C. Sheth, Rosemary J. S. Sichel, J. C. Simson, Margaret Slater, Evelyn A. Souter, Maurice Stein, J. MacF. Stuart, J. H Tan, Sheila R Tangye, W. F. J. M. Thom, P. A. Thorn, R. B. Tulk-Hart, G. S. Udall, Elizabeth G. Vaughan, C. K. J. Vautier, Glenys J. Wade, B. D. R. Wilson, Lydia A. Wilson, E. R. Winton, Basil Wolman, L. G. Woods, Marjorie Wright, Trevor Wright.

D.O.M.S.—Solomon Adler, L. P. Agarwal, R. M. Archer, N. K. Barber, Januariusz Bienkowski, M. W. Bird, W. G. Bridges, K. B. Brown, R. A. Burn, Helena B. A. Casey, David Christison, C. A. G. Cook, E. H. L. Cook, B. C. Curwood, L. W. Davies, E. A. Donegan, G. F. Ensor, K. B. Forsyth, D. P. Greaves, T. S. S. Gregory, F. B. Halliday, H J. Hamelberg, Edward Heffernan, J. M. Heller, C. R. S. Jackson, N. S. Jain, Sarah J. Jenkins, T. S.-B. Kelly, P. J. M. Kent, D. A. Langley, Marion McArthur, John McClemont, P. H. N. Matthews, W. S. Milne, D. G. Mody, E. S. Perkins, J. S. Phillpotts, F. C. Rodger, Maeve Rusk, M. H. M. Ryan, Q. R. Schindler, D. T. Shortridge, F. N. Shuttleworth, D. G. Simpson, C. S. Smalley, J. L. S. Smith, C. H. H. B. Sparrow, Geoffrey Sutherland, W. M. Walker, Nina S. S. S. Warwick, S. E White, Eunice M. Wilson.

D.T.M. & H.—G. M. Abraham, G. T. Allen, J. F. Britto, J. H. Cater, K. H. Cheung, S. Childs, J. H. C. Clarke, Lesley M. B. Copland, M. A. C. Dowling, A. J. F. Eberle, E. N. Emmerson, Zarina A. Fazelbhoy, S. K. Ganguli, V. T. H. Gunaratne, M. T. Gyi, Vera W. D. Hall, K. P. Hare, W. D. Hughes, J. P. F. Hummel, M. P. Hutchinson, Frances C. Kerr, S. N. Kothare, Phaik-Lin Lim, N. W. Low, P. C. Mahanty, B. K. Naik, A. A. Odier, A.-H. A.-R. Omar, C. P. Patel, D. N. Patel, A. J. Patterson, R. A. O'G. Pearson, H. J. A. Richards, J. G. Salter, R. S. Saxton, J. C. Shee, R. P. Shields, W. P. Stamm, K. G. B. Stork, Robert Symons, W. F. J. M. Thom, Emanuel Tuckman, H. W. Wheate, Hanna H. Wozniak, G. B. Wright.

D.M.R.-D.—Ifan Ap Thomas, Eric Batley, J. L. Boldero, J. S. Campbell, P. S. G. Campbell, A. F. Crick, C. G. Edwards, J. B. Fawcitt, David Hector-Jones, A. K. Lamballe, M. W. H. Mackay, Elsie L. Mettam, W. R. Parker, J. N. Pattinson, E. N. Pearlman, S. P. Rawson, David Sutton, B. W. Thomas, J. M. W. Wells, C. G. Whiteside.

D.M.R.—K. W. Beetham, D. G. Bratherton, E. C. Easson, J. M. W. Gibson, Herbert Holden, K. S. Khambata, N. S. Lockyer, J. L. E. Millen, T. K. Morgan, B. A. Stoll.

D.P.H.—Alexander MacFarlane.

D.L.O.—Ben Cohen.

D.Phys.Med.—A. C. Boyle, M. C. Woodhouse, Andrew Zinovieff.

University of Glasgow

The following degrees were conferred on Nov. 1:

M.D.—Patrick Macarthur (with commendation); F. J. Hebbert, J. E. Tillotson.

Royal College of Surgeons of Edinburgh

At a meeting held on Oct. 29 the following office-bearers were elected for the ensuing year: president, Mr. Frank Jardine; vice-president, Mr. James Graham; secretary and treasurer, Mr. K. Paterson Brown; members of the president's council, Sir John Fraser, Dr. G. Ewart Martin, Mr. W. Quarry Wood, Mr. Walter Mercer, Prof. J. R. Learmonth, and Dr. W. F. Theodore Haultain; representative on the General Medical Council, Sir Henry Wade; conservator of museum, Mr. J. N. J. Hartley; convener of museum committee, Mr. Quarry Wood; librarian, Dr. Douglas Guthrie.

The following were admitted to the fellowship:

John Aitken, M.B. Glasg., H. M. Bennett, M.B. Belf., S. M. Bootor, M.B. Cairo., Y. G. Bodhe, M.B. Bombay, E. S. Brawn, M.R.C.S., J. E. S. Carmichael, M.B. Edin., Florence Cavanagh, M.B. Melb., D. H. Clark, M.B. Glasg., J. C. Comline, M.B. Edin., W. T. Cumming, M.B. Edin., J. B. Cuthbert, M.B. Lond., N. M. B. Dean, M.B. Edin., Derrick Dencer, M.R.C.S., M. D. Desai, M.B. Madras, G. de L. Fenwick, M.B. N.Z., W. J. Fraser, M.B. Edin., Debabrata Ghose, M.B. Calcutta, I. L. Gregory, M.B. Manc., A. P. Guttman, M.D. Manitoba, J. A. V. Hamilton, M.B. Glasg., H. El S. Higazi, M.B. Cairo, R. M. Hugo, B.M. Oxfd, John Huston, M.B. Belf., G. C. W. James, M.R.C.S., J. M. Jones, M.B. Lond., V. A. F. Martin, M.B. Belf., Esmond Millington, M.R.C.S., J. C. G. Moore, M.B. Dubl., George Murdoch, M.B. St. And., A. M. Murray, M.B. Glasg., M. P. McCormack, M.B. Edin., C. G. G. Mackay, M.B. Edin., F. D. Mackenzie, M.D. McGill, D. L. Poddar, M.B. Calcutta, E. W. Price, M.B. Camb., Agnes R. Russell, M.B. Glasg., W. H. Scrase, M.B. Birm., Emanuel Seidenman, L.R.C.P.E., N. C. Sen, M.B. Calcutta, N. C. Shah, M.B. Bombay, H. V. Shaibany, M.B. Lond., K. J. Sheth, M.B. Bombay, D. W. Short, M.B. Glasg., F. MacN. Smith, M.D. Alberta, C. E. E. Stevens, M.B. Belf., F. V. Stonham, M.B. Melb., J. W. M. Sutherland, M.B. Aberd., A. F. Torrie, M.B. Edin., S. L. Townsend, M.B. Melb., H. M. Urquhart, M.B. Edin., C. H. Vipond, M.D. Queen's Univ., Ontario. R. G. Maclagan Wedderburn, M.B. Edin., V. H. Wheble, B.M. Oxfd, J. S. Young, M.D. Queen's Univ., Ontario.

Franco-Anglo-American Medical Society

At a meeting of this society at 11, Chandos Street, London, W.1, at 2.30 P.M., on Tuesday, Nov. 11, with Lord Horder in the chair, the subject of discussion will be a joint research programme with the French in evolution of the society's international climatic health service, preparatory to reopening in 1951. All interested, lay or professional, are invited to take part in the deliberations. The acting hon. secretary of the British section is Dr. F. Aylmer Hort.

Contributions for Europe

In connexion with its appeal for the relief of distress on the Continent this winter, the Save Europe Now organisation (15, James Street, W.C.2) announces that during the week Nov. 30 to Dec. 7 temporary depots will be set up all over London for receiving gifts of rationed food, second-hand clothing and shoes, second-hand linen, and books. The organisers will be grateful for offers to provide such depots anywhere in the London area.

National Insurance Advisory Committee

The Minister of National Insurance has appointed a committee to assist and advise him in the operation of the National Insurance Act, 1946. The committee will shortly begin to consider the draft regulations for the Act which the Minister is required to submit to them, and all persons affected will have an opportunity of putting before them any objections to the regulations. Sir Will Spens has accepted the chairmanship of the committee and the eight members include Dr. John Ritchie, formerly M.O.H. for Dumfriesshire.

Conference on Mental Health

The National Association for Mental Health is to hold a conference at Seymour Hall, London, W.1, on Jan. 15 and 16. Subjects and speakers include: re-adaptation to life and work of persons who have suffered from nervous or mental disorder (Dr. G. R. Hargreaves, Dr. Donald Stewart); the handling of difficult children (Mr. E. M. Bartlett, PH.D., Miss Clare Britton); the responsibilities of local authorities in relation to mental health (Dr. Kenneth Soddy, Dr. Doris Odlum); and education for mental health as a national and international responsibility (Brigadier A. Torrie, M.B., Dr. J. R. Rees). Inquiries should be addressed to the conference secretary at 39, Queen Anne Street, London, W.1.

Pharmacy Working Party

A working party has been appointed by the Minis Health and the Secretary of State for Scotland to in the differences between the work of pharmacists in E and Wales and in Scotland in dispensing and medicines and appliances, with particular reference t position likely to arise under the National Health Serv

Middlesex County Council is to make [illegible] the Minister of Health with a view to obtaining an [illegible] allocation of meat, bacon, and fats for patients [illegible] institutional treatment for tuberculosis.

Appointments

Middlesex Hospital, London:

LAWRIE, R. S., M.D. Lond., M.R.C.P., F.R.C.S.: first professorial surgical unit.

LE QUESNE, L. P., M.A., B.M. Oxfd, F.R.C.S.: second professorial surgical unit.

PAULLEY, J. W., M.D. Lond., M.R.C.P.: first assistant, pr medical unit.

PILE, G. C. L., M.A., M.B. Camb., F.R.C.S.: senior department of thoracic surgery.

SEMPLE, ROBERT, M.B. Aberd., M.R.C.P.: second professorial medical unit.

Diary of the Week

NOV. 9 TO 15

Monday, 10th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
6.15 P.M. Mr. E. D. D. Davis: Malignant Disease of the P
SOCIETY OF APOTHECARIES OF LONDON, Black Friars Lane,
5 P.M. Prof. S. J. Cowell: Recent Trends in Diet Therapy
MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1
8.30 P.M. Dr. William Evans: Cardiac Pain.

Tuesday, 11th

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.1
5 P.M. Mr. Harold Nicolson: Health of Authors. Roberts lecture.)
ROYAL COLLEGE OF SURGEONS
6.15 P.M. Mr. John McGibbon: Otitis Media in
ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
5 P.M. *Psychiatry.* Dr. Fraser Steele: Assessment of in Psychiatry.
INSTITUTE OF DERMATOLOGY, 15, Lisle Street, W.C.2
5 P.M. Dr. I. Muende: Pathological demonstration.
EDINBURGH POST-GRADUATE BOARD FOR MEDICINE
5 P.M. (Royal Infirmary.) Prof. W. S. Tindal: Modern A to Miracles.

Wednesday, 12th

ROYAL SOCIETY OF MEDICINE
4.30 P.M. *Physical Medicine.* Dr. W. Russell Brain and D. W. C. Northfield: Brachial Neuralgia.
5 P.M. *Proctology.* Mr. A. Dickson Wright: Total Colect (Presidential address.)
SOCIETY OF APOTHECARIES
5 P.M. Dr. Frank Howitt: Rehabilitation.
ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Port Place, W.1
3.30 P.M. Prof. W. C. W. Nixon: Diet in Pregnancy.

Thursday, 13th

ROYAL COLLEGE OF SURGEONS
5 P.M. Sir Cecil Wakeley: Vogue and Fashion in Abdomi Surgery. (Bradshaw lecture.)
ROYAL COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGISTS, 58, Que Anne Street, W.1
5 P.M. Mr. D. J. MacRae: Heart Disease in Pregnancy. (Bl Bell lecture.)
ROYAL SOCIETY OF MEDICINE
5 P.M. *Ophthalmology.* Mr. D. D. Stenhouse-Stewart Dr. A. A. Newth: Policy in Dealing with Partially Sigh and Blind Persons.
SOCIETY OF APOTHECARIES
5 P.M. Sir Howard Florey, F.R.S.: Recent Advances in th Laboratory Investigation of Penicillin.
INSTITUTE OF DERMATOLOGY
5 P.M. Dr. J. L. Franklin: Cutaneous Neoplasms.
HONYMAN GILLESPIE LECTURE
4.30 P.M. (Edinburgh Royal Infirmary.) Dr. E. A. Carmichael Dynamics of the Cerebrospinal Fluid.

Friday 14th

ROYAL COLLEGE OF SURGEONS
6.15 P.M. Mr. W. A. Mill: Neurological Disorders of the Phar and Larynx.
TUBERCULOSIS ASSOCIATION
3 P.M. (Royal Empire Society, Craven Street, W.C.2.) D F. R. G. Heaf: Accommodation for the Tubercul (Presidential address.) Mr. Hamilton Bailey and D Suzette Gauvain: Tuberculous Glands of the Neck.
LONDON CHEST HOSPITAL, Victoria Park, E.2
5 P.M. Dr. J. R. B. Hern: Dyspnœa.
ROYAL MEDICAL SOCIETY, 7, Melbourne Place, Edinburgh
8 P.M. Mr. George Perkins: Broken Ankle.

THE HEALTH OF AUTHORS*

The Hon. HAROLD NICOLSON
C.M.G., F.R.S.L.

fully conscious that this evening I am addressing dience composed to no small extent of very able experts. However enthralling may appear to y views, either about health in general, or about m health, or about the health of others, I am that my interest in these subjects will be shared . My sense of audience, my sense of occasion, thus in any case deter me from advancing any l, or even psychological, theories. I shall not do Indeed I possess two qualifications only for the efore me. I have devoted much of my life to dy of the literary temperament: and I have e good fortune to know, and sometimes to know ely, many of the leading writers of my own y and of other countries. All I can hope to do is before you, as simply as I can, the results of this nce.

much for the problem of audience. What about oblem of subject? The title of this lecture contains, will have observed, two operative words—namely, h" and "authors." I shall not trouble you much the physical health of famous writers, except far as I shall seek to disprove the popular fallacy *ll mighty poets must be of an ailing constitution* oomed to an untimely death. I shall be concerned with the mental health of authors and more ally with that form of nervous activity, or lity, which enables its possessor to receive—if I beg the question for a moment—"intimation" inspiration." In other words I shall seek to examine he mind of the creative writer works.

what sense again, to complete these introductory tions, shall I be using the word "author"? We nd, when viewing from outside the members of any g or profession, to regard them as constituting a m category or type. *I am aware, for instance,* I myself am inclined to regard lawyers as a type, ldiers as a type, or sailors as a type. They also, quite sure, regard all writers, whether they be ive writers or hack writers, as more or less uniform, he almost indistinguishable components of a small tric clan. Yet *although the prolonged pursuit* y calling is undoubtedly apt to impose a certain rmity of mode, manner, speech, and even counten- , the members of such a calling—however strong be their herd instinct—do not regard each other niform; but as multiform. The *outsider* observes superficial similarities; the *insider* notices only the idual dissimilarities. In using the word "authors" it designated a category or class I am thus aware I am using a term which has but little meaning. include within that term all those who earn their g by the pen would be to extend the area of my ury to a quite unmanageable circumference. I shall efore restrict myself to those writers who can justly alled "creative," in the sense that by the force heir imagination, or the delicacy of their perception, have discovered new combinations of experience. since of all writers poets are, within this meaning he term, the most "creative," I shall in general entrate my observations upon the behaviour and perament of poets. Within these restricted limits all have certain information to give and certain very ative suggestions to advance.

THEIR BODILY HEALTH

referred just now to the popular fallacy that all tive writers, and especially all poets, are of weak bodily constitution and as such liable to premature death. This fallacy has arisen, not so much because a large proportion of poets have suffered untimely death, but because almost all poets have imagined, and have loudly proclaimed, that they were destined to die young. I should hesitate to deny—although I shall carefully refrain from examining—the oft-repeated theory that there exists some affinity between the literary and the consumptive disposition. There is little doubt that, in the 19th century at least, a high proportion of creative geniuses (and the names of Keats and the Brontës occur to one immediately) succumbed to tuberculosis. Yet if one examines objectively the mortality statistics of eminent writers one does not find that their bodily, as distinct from their mental, health (and I am aware that this is a dangerous distinction)—one does not find, I say, that their bodily health was any worse than that of their illiterate contemporaries. If, for instance, one takes a list of the thirty-two most famous British poets who flourished between the middle of the 14th century and the end of the 19th, one is struck by the fact that, given the contemporary expectation of life, they were remarkable for their longevity. Of these thirty-two famous poets as many as ten lived beyond the age of 70, nine died between the ages of 60 and 70, seven between the ages of 50 and 60, two between the ages of 40 and 50, and only four under the age of 40. Nor should we forget that many of these mighty poets did not, during their lifetime, take that care of their health which their medical advisers would have recommended. Ben Jonson and Michael Drayton, as we know, were of a convivial disposition, and in fact some authorities have attributed Shakespeare's final illness to the effects of their uproarious visit to Stratford a few weeks before his death. Yet Ben Jonson lived to the then ripe age of 65 and Michael Drayton to the age of 68. Herrick and Marvell were not particularly austere, yet each of them lived to over 70. Swift and Dr. Johnson during their lifetime were tortured with the dread of premature decay, yet Swift retained his bodily health at least until the age of 77, and Johnson was 75 at the time of his death. Tennyson again, who during his middle life was a confirmed hypochondriac, lived to the venerable age of 83; and Swinburne, whose early manhood was not distinguished by any pronounced asceticism, lingered on at Putney until his 74th year. I doubt whether if one examined the lives of thirty-two famous clergymen, lawyers, or merchants between the 13th and the 19th centuries one would find that they could show an equally high average of survival.

And what of the four mighty poets who did in fact suffer an untimely death? Keats, it is true, died of consumption in Rome at the age of 26; but the deaths of Marlowe and Shelley were due, not to health, but to accident. Marlowe was killed at the age of 29 in a tavern brawl at Deptford; and Shelley at the age of 30 was drowned in a squall off Viareggio.

There are those who contend that the fourth of these premature deaths, the death of Byron at the age of 36, was also due to an accident. Such people aver that, but for the incompetence of the local doctors at Missolonghi, Byron would have survived to a reputable and perhaps repentant old age. This assertion is to my mind an unfair reflection upon the professional skill of Doctors Bruno and Van Millingen. As I have devoted much study to the last illness of Byron, and as it still constitutes one of the unsolved medical mysteries of literary history, you will perhaps allow me, in fairness to his much abused doctors, to digress outrageously for a moment and to examine the facts of the Byron case.

According to the accepted story, Byron died of a rheumatic fever at Missolonghi, induced by rowing in an open boat across the lagoon after being heated by riding and drenched by a thunderstorm. His doctors are accused of having failed to

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he Lloyd Roberts lecture for 1947, delivered before the Royal College of Physicians on Nov. 11.

diagnose his illness and of having bled him to death. The facts do not confirm this theory. People forget to mention that on Feb. 15, 1824, two months before his death, Byron was struck down by a convulsive fit, which he himself, perhaps incorrectly, assumed to be epileptic. On the advice of Major Parry, he treated himself for this affliction by drinking enormous quantities of cider laced with strong insertions of brandy: I cannot believe that in the paludal climate of Missolonghi that was a wise thing to do. It is quite true that in April he was drenched in a thunderstorm and that two days later he went out riding on a saddle which was still wet. Yet if his ten days' illness, which lasted from April 9 to April 19, was in fact rheumatic fever it is strange that he did not suffer the intense pain associated with that illness and even more strange that he was able on April 14 to walk unassisted from one room to the other. Nor is there any mention in the many accounts of his illness either of the heavy perspiration or of the swelling joints which rheumatic fever, as I understand, invariably produces. I am advised indeed by those experts whom I have consulted, that Byron's final illness must have been either typhoid or pernicious malaria.

And what about the famous accusation that Drs. Bruno and Van Millingen bled their patient to death? They may have wished to bleed him copiously, but they did *not* succeed. Obstinately he refused to be bled until almost the last moment, remarking, perhaps not inappropriately, to Dr. Bruno that "the lancet, as he well knew, had killed more people than the lance." It was only on April 16, three days before his death, that he at last consented to be bled. According to Dr. Van Millingen's account he stretched out his arm with the angry words "Come; you are, I see, a damned set of butchers; take away as much blood as you will; but have done with it." This is confirmed exactly in Dr. Bruno's account, who records him as "prestando il braccio in una maniera disgustosa." They then drew a full pound of blood but the fever did not, to their surprise, subside for long. It may well be that, in his then condition, a pound of blood was an excessive quantity to have drawn; but I am assured that in so doing Byron's doctors were in no way violating the conventions of their age. And I doubt whether, even if, as was hoped at one time, an English doctor could have reached him from the garrison at Zante or Corfu, this consultant would have made any very different diagnosis or have prescribed any very different treatment.

The death of Byron was undoubtedly a misfortune, but we should be unfair to Drs. Bruno and Van Millingen were we to perpetuate the legend that it was also an accident.

In any case I have, I suggest, said enough to indicate that the bodily health of authors, if I may venture such an expression, is as sound as that of the members of any other calling. I must now pass to the more interesting consideration of their mental health, or, as I should prefer to phrase it in less controversial terms, to a consideration of the literary temperament.

THEIR MENTAL HEALTH

The theory that there exists some special connexion between literary genius and mental derangement is one which, to my mind, has been seriously exaggerated. It is true that a few creative writers have in their later years become demonstrably insane; it is also true that almost all creative writers have at some moments of their lives been panic-striken by the conviction that their imagination was getting the better of their reason; but it is not in the least true that *all* creative writers have been mad *all* the time.

I must admit that the authorities for this distressing theory are both honourable and ancient. Plato contended that there were two forms of what he called delirium—namely, insanity and inspiration. "I have observed this about poets," he writes in the Apology. "It is not by taking thought that they create what they create; it is owing to a natural disposition and when ecstatically possessed." Burton, in *The Anatomy of Melancholy*, gives us the short sharp phrase "All poets are mad." Shakespeare assures us that—

> "The lunatic, the lover and the poet
> Are of imagination all compact,"

he speaks of "the poet's eye in a fine frenzy and in the less familiar conclusion to this famous he gives us the following suggestive lines:

> "Such tricks hath strong imagination,
> That, if it would but apprehend some joy,
> It comprehends some bringer of that joy,
> Or in the night, imagining some fear,
> How easy is a bush supposed a bear!",

Dryden in *Absalom and Achitophel* gave popular to this idea in his perhaps too well-known con

> "Great wits are sure to madness near allied;
> And thin partitions do their bounds divide

Macaulay goes so far as to say "perhaps no can be a poet, or can even enjoy poetry, without a unsoundness of mind." And Lamartine speaks mental malady which men call genius."

I could, if I so desired, extend by any nu quotations the comments which writers have upon their own mental derangement. I have enough however to establish the point that wri themselves largely to blame if the general public them as unbalanced. In their lack of reticence, self-conscious habit of examining their nerves in it is they, rather than the outsiders, who have the legend of their instability.

Yet the legend persists. As an example of the to which it can be pushed I should refer to M Nisbet's well-known book entitled *The Ins Genius*, which was published in 1891, and whic year since then has caused a great amount of a large number of people. "Genius and in writes Mr. Nisbet, "are in reality different pl morbid susceptibility of, or want of balance *cerebro-spinal system.*" *In the* strictly medic this may, for all I know, be true; but it is distre a creative writer, and disturbing for his fam descendants, to be told that what he and they to be a glorious boon from Apollo is in fact r than a diseased condition of what I understand the *medulla oblongata*. Mr. Nisbet, moreover, a from time to time he will let fall a word or two of examined the case-histories and the family hist distinguished writers with sadistic glee. If the father or grandmother of an author can be st have possessed a weak chest or a tendency to rheu their unhappy grandchild is accused by Mr. N being congenitally neurotic. I am not exagg Let me quote the relevant passage from Mr. cruel work. "Genius," he writes, "insanity, scrofula, rickets, gout, consumption and other n of the neuropathetic family of disorders, are s different expressions of a common evil—an ins or want of equilibrium, in the nervous system.' not saying that, in a technical sense, this may be true; but surely if one applied similar all-en tests to the case-histories and the family hist civil servants, bankers, postmen, and even a one would arrive at a closely similar result. To that a man is liable to mental derangement because his uncle suffered from gout is to a contention which, you *will agree, is palpably* Of course all creative writers are nervous; even that complacent hedonist, referred to them *genus irritabile vatum*—"that tetchy breed of b but to be nervous, even to be extremely nervo not necessarily imply that one is suffering from a disease.

It is for these reasons that I reject the extreme i tion which is suggested by Dryden's couplet and has been expanded in Mr. Nisbet's long, and admit extremely interesting, book. But it is not merely to reject the imputation. I must exam evidence and make at least some suggestions as in the minds of creative writers themselves, the d has arisen.

THEIR LATER YEARS

few eminent writers have, it must be admitted, sed in their later years into a state of idiocy. Others honestly be described as "borderline cases." And st all creative writers have been convinced at one or another that they were about to lose the control eir own brain.

t of the thirty-two famous British poets whose vity I commended at the outset of this lecture, two became demonstrably insane. Swift throughout fe was haunted by the spectre of insanity. "I shall ke that tree," he once said to a friend, indicating caying elm, "I shall die from the top." Yet Swift ct lived to the age of 77 and it was only in st three years of his life that his intellect became led. William Cowper, the "stricken deer" of Lord d Cecil's beautiful biography, was subjected from 21st year to recurrent fits of melancholia and dal mania. Twice in his life he almost succeeded nging himself and was only saved by chance. Yet ugh Cowper had twice to be placed in confinement, least under supervision, he enjoyed long interludes erfect sanity, during which he composed much llent poetry and was happy in a quiet tea-party of way. It cannot be said that Cowper was ever mented maniac; the worst that could be said of him that he was sometimes sadly confused in the head.

r. Johnson might, I suppose, be regarded (and would inly be so regarded by Mr. Nisbet) as a borderline . He suffered at times from auditory hallucinations he cherished many strange delusions, such as his f that he would get drunk if he ate an apple. He , poor man, obsessed by the dread of losing his . "Insanity," records Boswell, "was the object is most dismal apprehension, and he fancied himself ed by it, or approaching to it, at the very time when was giving proofs of more than ordinary soundness vigour of judgement." There is no evidence that this d was anything more than one of Dr. Johnson's y harmless delusions. But he certainly pushed it He entrusted his secret to Mrs. Thrale, and whenr he felt that madness was approaching, he would suade her to lock him in his room and it seems to e gyves upon his legs, and even to whip him with d. Certain obscure references in Mrs. Thrale's journal letters, and in the Doctor's own diary, can only be rpreted in this sense. But although Johnson was appily convinced of his own impending mental apse, he in fact retained his sanity to the very end. died of asthma and dropsy at the age of 75.

o these borderline cases Mr. Nisbet would I suppose that of Southey. It is true that in his 70th year they's mind became clouded twelve months before death. It is true also that Carlyle, after a visit from they, exclaimed "how has this man contrived, h such a nervous system, to keep alive for near 60 rs?" But there is no real evidence to suggest that they, except during the last twelve months, was thing but certifiably sane.

ECCENTRICITY: THE CASE OF SHELLEY

f therefore, out of my thirty-two famous British ts, only two can be described as definitely mad, and y one can with justice be classified as a borderline e, how comes it that the legend of mental illness among ative writers has been so persistent? That, I repeat, to a very large extent the fault of the writers themves. All writers, and especially all poets, feel it dull be thought completely normal. They thus divulge d even display their eccentricities. Nor should I ny that these eccentricities exist. Let me give you the ample of Shelley.

I should describe Shelley as on the whole a sane and normal person. One has only to read his *Defence of Poetry*, or his *Julian and Maddalo*, to realise how stable, except in moments of excitement, was the poise of his mind. Yet from his childhood Shelley had possessed what his mother would have described as "a highly strung nature," and the passionate rages into which he was thrown by being bullied at Eton caused him to be known by his school-fellows as "mad Shelley." The facility with which English schoolboys attribute insanity to anyone who is not perfectly attuned to their own herd behaviour has always struck me as curious and distressing. Shelley was certainly not mad; but he was eccentric, and his eccentricity took two particular forms.

In the first place he was a hypochondriac. All creative writers are hypochondriacs, since those of them who do not worry about the state of their bodies are certain to worry about the state of their minds. Shelley, having little gift of self-criticism, seldom regarded himself as mentally afflicted, but he persistently regarded himself as very very ill. Hogg speaks of his "unfounded frights and dislikes, his vain apprehensions and terrors." It was no comfort to him that his doctors, and even his moneylenders, insisted that his was a thoroughly good life in the insurance sense of that term. He was convinced that he was consumptive and entering upon a decline. Even when consumption ceased to obsess him he would invent fresh diseases with which to lacerate his anxieties.

> On one occasion he found himself in a crowded stage-coach opposite a lady whose legs were unusually distended. He had recently been reading a book of travels in which there was a description of the disease known as elephantiasis or Barbados leg. He jumped to the conclusion that this disease must be contagious and that he had caught it from the lady with thick legs in the coach. Within a few hours he observed upon his hands the symptoms of cracked and roughened skin which, as he had read, were the presages of this dire disease. Two days later, while sitting in an armchair talking to Mr. and Mrs. Newton, he fell writhing upon the carpet. His hostess, in pardonable anxiety, asked him what was wrong. He informed her, still writhing, that he had been assailed with a sudden and acute attack of elephantiasis. And, according to the testimony of both Hogg and Peacock, he persisted in this unhappy delusion for several weeks.

The second form assumed by Shelley's eccentricity was that of spectral and auditory hallucinations. It is customary for very gifted writers to see spectres and to hear voices calling. After all, even Goethe (who assuredly was a man of the most Olympian calm and sanity) once met himself riding along a road on horseback. Shelley's hallucinations were vivid and detailed. On one occasion, while walking near Pisa, he saw a man coming slowly towards him dressed in a long cloak and with a hood or cowl hiding his face. When the man was only a few yards distant he raised his hood, and Shelley was much startled to see that the man was in fact himself. The spectre then addressed a question to him in the Italian language. "*Siete sodisfatto?*" it asked him, "Are you satisfied?" At which the spectre vanished or passed on. On another occasion, at Lerici, Shelley saw a baby rise from the sea and clap its hands at him. These are, in so far as I know, the only two recorded instances of Shelley's hallucinations; but it is evident from the writings of his friends that these sounds and visions were of not infrequent occurrence. And yet Shelley, I repeat, was certainly not mad.

If one is to account for these departures from reality, one can only do so by considering in what manner creative writers, and especially poets, are inspired. Inspiration is a sudden flash or fusion between sense and fantasy, between reason and imagination. It is generally both a confusing and an exhausting episode, and one which often leaves behind it a bruise in the mind. "Such tricks," wrote the greatest of all poets in the passages I quoted earlier—"Such tricks hath strong imagination."

I now propose, in my concluding sections, to make some reflections upon the nature of inspiration such as will, I trust, convince you that the illusions—or if you like, the hallucinations—of creative writers are not grave symptoms of mental alienation but merely the tricks which a strong imagination is all too apt to play.

DIVERSITY OF TEMPERAMENT

I stated at the outset of this lecture that it would be an error to regard all authors, or even all creative writers, as constituting a uniform category or type. They are in fact multiform. Even in their methods, their hours, and their habits of work they display an astonishing diversity.

There are those, for instance, who possess the intense powers of concentration so startlingly manifested by Archimedes and who would agree with Newton, and also with Thomas Edison, that all creative thought is due to "patient attention." Such writers, and Wordsworth was one of them, can only bring their work to completion by agonised plodding along a single road. Others prefer a constant variation of theme. Thus Jane Austen kept *Sense and Sensibility*, *Pride and Prejudice*, and *Mansfield Park* upon her desk in various stages of completion, and would flit from one to the other. Burns and Beethoven were often engaged upon two or three themes at the same moment. And de Musset expressed the view that it was good for the mind to have a "twofold exercise."

Some geniuses can only begin to write in the silent privacy of their own studies, and to them even a blackbird calling becomes a person from Porlock. Others are actually stimulated by interruptions. Thackeray found that his ideas flowed more freely in the congested, if somnolent, atmosphere of the Athenæum Club. Mozart actually preferred when composing to be surrounded by the hum of general conversation, in which, incredible as it may seem, he would often participate. A similar talent, so I am told, was possessed by Sidney Keyes, that gifted poet who was killed in Tunisia at the age of 21. Keyes, it seems, was able to write poetry when surrounded by his undergraduate friends, and he would alternate his attention between composition of a poem and awareness of the conversation which was proceeding around him. And Schubert wrote one of his loveliest songs on the back of the bill-of-fare while sitting listening to the band in a public beer-garden.

Some authors find it more stimulating to commune with their muse in the early morning; others—such as Balzac, Byron, Dostoievsky, and Conrad—could only work well at night. Some people—and I am told that Miss Edith Sitwell is one of them—write best in a recumbent position; Voltaire at Ferney did most of his dictating from his bed. For others, movement is necessary. Many writers—and Dr. Johnson among them—have recorded that their ideas flowed more freely to the movement of a carriage or a train; Victor Hugo composed some of his loveliest lyrics when sitting on the top of an omnibus between Passy and the Bourse. Helmoltz has recorded that his mind never worked so rapidly as "during the slow ascent of wooded hills on a sunny day." Milton asserted that he could only write really well between October and March; other writers, including Tennyson, are more often inspired during the spring and summer. Even the technical tricks and habits of authors vary enormously. Schiller found it necessary to stimulate his unconscious by keeping rotten apples in the drawer of his writing-table. Thackeray, Mme. de Stael, and Southey found that their brains would only begin to ferment if they held an actual quill or pen in their hands; and many authors of my acquaintance have confessed to me that their ideas only begin to flow easily if the objects on their writing-table are arranged in a certain pattern. There are moreover few writers who would not agree that when stuck in a passage they find it necessary to leave their table
rapidly around the room.

I have quoted these divergencies of method
in order to indicate that if there in fact
a thing as the literary temperament then
assumes the most diverse forms. These
between authors in the actual practice of writin
into sharp relief their general agreement in regard
principle of writing—namely, the nature of
Almost all writers who have ventured to expre
upon this intricate matter are agreed that insp
an event which has no apparent connexion with
thought. They are all agreed that it is
spontaneous, sudden, and transitory; they are all
that it is something phenomenal and extraneous
personality which receives it; and that it
it a sense of inevitability, naturalness, and con
Allow me to examine these assertions in greater

THE NATURE OF INSPIRATION

All creative writers are agreed that inspira
you prefer the word, "intimation"—is indepen
the conscious mind. "Poetry," writes Shelle
not like reasoning—a power to be exerted ac
to the determination of the will." "It won't
says Byron more simply, "when called." For
in fact inspiration was invariably a verbal
he was incapable of that plodding assiduity
Wordsworth and A. E. Housman displayed.
never recast anything," he wrote to Thomas
"I am like a tiger; if I miss the first spring, I g
grumbling to my jungle again." All poets, and I
them as the true exhibits of the creative writer, a
agreed that inspiration can by no means be
"It comes," said Thomas Gray, "as the maggot

Inspiration, moreover, is not only extraneous
person experiencing it, but it is also irresistible
victim feels himself to be possessed. "It seems,"
Thackeray, "as if some occult power were movi
pen." This feeling—which is common to all
and not confined only to poets—accounts do
for the personification of the nine muses and
frequent references which we find in the confessi
authors to their ministering spirit or "daimon."
a further proof of its assumed extraneous quality

Poets and writers also refer to the "inevitab
of inspiration and to its utter naturalness. "If p
wrote Keats, "come not as naturally as the leaves
tree, it had better not come at all." There is a s
Blake, when shown by Constable a drawing of fi
exclaiming "But this is not drawing: this is inspir
"I never knew that before," answered Constab
meant it for drawing."

Even more interesting is the almost universal ins
among poets and creative writers upon the tra
nature of all these sudden intimations and inspir
"The mind in creation" wrote Shelley—and th
has seldom been better expressed—"The mi
creation is as a fading coal, which some invisible infl
like an inconstant wind, awakens to transitory brig
Could this influence be durable in its original
and force it is impossible to predict the greatness
results; but when composition begins, inspirat
already on the decline." The same idea echoes
tragic stanza in which Carducci concluded his *Can
'Amore*: "Alas! I had heard one note of the e
poem. And what is this? Just a tiny little v
(*e picciol verso or è*). All writers are conscious
transitory nature of these sudden intimations;
of them take precautions to capture the butterfly
it flits away. Rossetti and Tennyson always
notebooks in their pockets; Thomas Hardy
scribble phrases or ideas that came to him sud
upon the bark of a tree when walking; and T

es used to keep writing materials attached to alking-stick in order to take notes “ immediately ight darted.”

nost universal also is the sense of loneliness, lonment, failure, and pathetic incompetence which creative writers when the fleeting intimation has l by. Some of them complain bitterly that their has left them for ever and that they will never be o write again. Some of them resort to stimulants, s, or narcotics. Others do not believe in waiting ntly for the mood to recur but assert that the only od of recapturing inspiration is to go on slogging odically and hard. “ Work patiently every day,” Flaubert, “ and an equal number of hours.” ame dogged method was applied by Balzac, Trollope, o a certain extent Wordsworth also. Others seek ive their flagging imagination by listening to music reading the works of others. Milton, for instance, inspiration flagged used to spend his evenings ng his favourite poets in order, as he expressed it, tore his fancy against the morning.”

ers again, and they are the fortunate ones, rely t entirely upon what Mr. Graham Wallas has “ unconscious cerebration.” There can be little that this unconscious cerebration often works. said, for instance, that Swinburne suddenly thought e line “ Only the song of a secret bird ” and sat up hat night trying to hammer out a poem around it. led to come. When he woke up next morning he the whole poem out at a single sitting. The *Ballad of nland* which resulted is not, I admit, a very good tisement for the process of unconscious cerebration. ne remind you of the opening lines :

“ I hid my heart in a nest of roses,
Out of the sun's way, hidden apart ;
In a softer bed than the soft white snow's is,
Under the roses I hid my heart . . .”

so on. You will agree that unconscious cerebration t have done better. It is curious moreover that ugh poets have often woken up believing that they during their dreams composed a masterpiece, the s thus suggested prove, if written down, to be plete nonsense. Cerebration therefore ought not e quite so unconscious as all that. Mrs. Gaskell r admirable biography tells us that Charlotte Brontë ld often moon about for weeks and even months out being able to put pen to paper. And then lenly one morning “ the progress of her tale lay clear bright before her.” Perhaps the most deliberate cheerful practitioner of the method of unconscious bration was Sir Walter Scott. He always claimed the half-hour between waking and rising was for the most propitious moment for composition. “ This much the case,” he wrote, “ that I am in the habit elying upon it, and saying to myself when at a loss, ver mind ! We shall have it at seven o'clock tomorrow ning.’ ” Mr. Graham Wallas agrees with Sir Walter ott in advocating unconscious cerebration as a liberate method of, or device for, literary composition. In the case,” he writes, “ of the more difficult forms of eative thought . . . it is desirable, not only that there ould be an interval free from conscious thought on problem, but also that the interval be so ning should interfere with the free working cious, or partially conscious, processes of le mind.” It was with this idea, doubtless, that the ite Lord Balfour used to recommend to those of his taff who were suffering from overwork a three days' ourse consisting of detective novels and champagne. le would contend that by this method the blood was rawn away from the congested centres of the brain. And having on one occasion in my life been obliged o submit to, or to enjoy, this system, I am prepared to elieve that both Mr. Graham Wallas and Lord Balfour were correct. Nor would any regular writer or thinker deny for a moment that the effects of subconscious cerebration are frequent, beneficial, and mysterious.

THEIR RELATIONS WITH REALITY

I must now come to some conclusion. I have suggested that, in so far as concerns what as a layman I may perhaps be allowed to call “ bodily health,” the author is neither more, nor less, healthy than any other sedentary individual. The creative writer, the poet, and the artist do however possess a certain special nervous sensibility, which manifests itself not merely in their receptivity to inspiration but also in certain, apparently morbid, eccentricities. When poets and writers contend, as they so invariably do contend, that “ inspiration ” reaches them from outside they are describing an experience which is in no way abnormal but perfectly natural. It is true that these sudden and transitory intimations reach them from outside the area of their consciousness ; they reach them from their subconscious ; there is no need at all to drag in the supernatural phenomena of muses and daimons. Genius, in spite of Buffon and Carlyle, is not either a “ great aptitude for patience ” or “ a transcendent capacity for taking trouble.” It is a *spontaneous* activity of the cells and fibres of the brain whereby new combinations of impressions are constantly being formed. In insanity, as Mr. Nisbet has remarked, the nerve-connexions which should enable an individual to remain in touch with his surroundings are weakened or destroyed ; in genius these connexions remain intact. Yet there does often occur, in moments of inspiration or intense creative activity, some flooding of the conscious by the subconscious, and therefore some dissociation from reality. This mingling or flooding may in some cases produce extreme absence of mind and even hallucinations. More usually it creates that “ trance-like state ” to which W. B. Yeats referred. And almost always it produces some confusion between the imagined and the real, between the earthly life of the individual and the ideal world which he has peopled and conceived. “ Now let us talk of realities,” said Balzac to Jules Sandeau, “ let us talk about Eugenie Grandet.” It was this that Dickens meant when he said to Forster, “ I don't invent it : I see it and write it down ” or when he assured Lewes that he actually heard every word that his characters addressed to him. It was in this sense also that Flaubert, having described the suicide of Madame Bovary, felt a strong taste of arsenic in his mouth and was physically sick. No writer has ever composed or imagined anything of value without passing through these strange processes of identification. Yet such manifestations, I repeat, are not necessarily symptoms of morbidity ; in almost every case they are as natural to an author as are the leaves to the tree.

Be sure of one thing always. All authors are not of the same value or endowed either with comparable talents or with an identic temperament. At the bottom of the scale you have those men and women who, being gifted with a certain capacity for observation and narration, can both notice and annotate the world which swims around them. Such writers are as happy and unperturbed as water-beetles jerking with long prehensile legs along the surface of the village pond. In a higher scale come the novelists who from their memories and associations construct an imaginary world of their own which to them becomes one-half, and perhaps more than one-half, of reality. For them imagination is a diffused and comparatively constant frame of mind, and when inspiration comes to them, it comes, not as some intense and terrible visitation, but as a sudden and most welcome dissolution of an accumulated perplexity.

Raised above all others, living in a rarefied ether of their own, confused by the eternal dissonance between the ideal and the real, the mighty poets are a race apart.

For them imagination is no happy mood but a superb and agonised bewilderment. Not for them are the tiny pleasures, the small disappointments, the trivial success and failure, of the lesser breeds. The God visits them, not amicably, but in a flash of flame and fire; and in the after vacancy they know that they have caught but a momentary glimpse of intimation: their triumph is clouded by the knowledge that their illumination has been so narrow and so short.

Yet remember this also. No writer, however feeble he may be, can be of any value unless he possesses a powerful imagination; and powerful imaginations, as Shakespeare assures us—and he ought to know—are apt to play one tricks. Be kind, therefore, I beg you, to all authors, and above all to poets. Do not snub them when they assure you that they have caught elephantiasis from a lady in a bus; do not assume too solemn an expression when they confide to you that in Jermyn Street yesterday afternoon they met a gentleman in a tussore suit who, upon inspection, proved to be themselves; be gentle with them when they complain, as all authors have at every stage of their careers complained, that their mind and memory have crumbled and that the Muse will never visit them again. And never urge them in any circumstances to take a rest; no creative writer ever *can* take a rest; urge them only to embark upon some different sort of work, even if it be only detective novels and champagne. And remember always, I beg you, that they are seldom quite so mad as they believe; or as they seem.

PREFRONTAL LEUCOTOMY AND THE DEPERSONALISATION SYNDROME

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THE distressing symptom of unreality both in self (depersonalisation) and surroundings (derealisation) can arise in the early stages of all neuroses and psychoses and in some organic conditions.

This paper is concerned with patients in whom depersonalisation is fundamental, the predominant and presenting symptom, existing almost alone as a clinical entity. Such cases of "primary" depersonalisation, or the "depersonalisation syndrome" (Shorvon et al. 1946) as it is often termed, tend to be of long duration and unvarying symptoms, and they are notoriously difficult to treat successfully. Psycho-analysis, convulsive and insulin shock therapy, abreaction techniques, and cerebral stimulants so far can claim few successes. Since these patients have insight into their condition they are often greatly distressed and may become seriously depressed or suicidal. They are intensely preoccupied with self, and there is a heightened self-awareness.

It is well known that a frequent after-result of leucotomy is a diminution in preoccupation with self and in self-awareness. Hence there are some a-priori grounds for using this operation in intractable cases of the depersonalisation syndrome where other methods of treatment have failed. In the Board of Control (1947) report on prefrontal leucotomy performed in 1000 cases there is only one mention of depersonalisation. The statement that "depersonalisation persists but less vivid" is included in a random group of follow-up returns, and there is no specific reference to the depersonalisation syndrome although it is frequently met with clinically. Freeman and Watts (1942) tabulate fifty symptoms showing various degrees of relief after leucotomy, and one of the listed symptoms is depersonalisation. Of 22 cases in which this symptom occurred, 19 showed a persistent relief of tion, 2 temporary relief, and 1 was unchanged. results are concerned with depersonalisation secondary symptom, and Reitman (1946) found results where the symptom occurred among symptoms in schizophrenics who responded orbital leucotomy.

Since practically nothing else has been sai depersonalisation in the extensive literature on experience of the operation in cases of intractable primary depersonalisation is record. The first 5 cases of depersonalisation in a series at the Sutton Emergency Hospital fo prefrontal leucotomy was performed are here. The later cases appear to be showing results.

FIVE CASE-RECORDS

Case 1.—A woman, aged 38, when first admitted t Emergency Hospital in November, 1944, under of Dr. Dalton Sands, complained of a sudden unreality three weeks after the birth of her third May, 1938.

Her father is morose, has bouts of silence, an punished her; her mother is highly strung, jealou stitious, and modest to the point of stupidity.

Patient was brought up very strictly, did well at and worked as a nursemaid and domestic until her in 1932. She had a child by a soldier before marri her husband was aware of this and did not consi problem.

Her personality before the illness was described as happy, energetic, and meticulous, with obsessional tions, phobias, and unshakable ideas.

She felt ill and weak after the onset of unreali recurrent attacks of panic, became depressed and at times, lost interest in her baby, and could not housework.

There was little change in four years; so she e mental hospital as a voluntary patient in 1942 and r eighteen months. Five 'Cardiazol' shock treatme duced no change. After five weeks at home she was rea and received ten electric convulsion shocks and a c continuous narcosis without benefit.

Early in 1944 she entered another mental hospita she was treated with thyroid without response, then attended for another six months a voluntary outpatient department, again without improvement.

On admission she said the illness began suddenly everything seemed to change and she felt a different "The outside world had gone wrong; the noise of th of the trees scraping the windows upset me; it was She blamed the anæsthetic used at the confinement an "I feel all the time I am talking about someone e myself; it seems as if all I do or say does not com the mind at all; all my thoughts appear to be func outside the room I am in; my head feels as if somet missing in it; I act the part and work quite automa I feel like a machine; it seems to be me; my head feel all my feelings have gone for my husband and ch time means nothing; the sun does not look brig nothing gives me pleasure; I don't enjoy food and on eating but never feel satisfied; my stomach feels like a shell."

She was dull and depressed and spoke in a mono tone but had insight into the abnormality of her th and this disturbed her emotionally. She had l sexual desire for six years, and was 3 st. under Depersonalisation syndrome in an obsessional pers was diagnosed.

Her husband considered that her condition was h since all treatments had failed, and readily agreed operation, adding: "You might as well otherwise shilling in the gas-meter."

Psychotherapy and a course of deep insulin had effect, and she showed recurrent episodes of tension, she became tearful and emotional and slept badly.

Mr. Wylie McKissock performed a prefrontal leuc in March, 1945, and there was considerable hæmo since she was restless and excited. In the evening sl restless, noisy, and mildly aggressive, and vomited persistently for some days. She was placid and ge

etic a week after the operation and the feelings of
lity were still present.

e weeks later she showed a complete absence of tension,
red fat and disinterested, and expressed little or no
on. Her condition then became fluid, and at times she
er old self and ceased to complain of depersonalisation
toms.

o months after leaving hospital she felt "pretty fit"
in her home but complained of little feeling towards
usband and family and tended to be sarcastic and
tempered.

ee months later she described herself as much better
ot quite right, since she was depressed at times, felt
rent, lacked affection, and did not derive the pleasure
hings that she would have got years ago.

ear after the operation she had no unreality feelings,
she said gradually disappeared after the operation, and
as definitely better except for some off days. Her
ons had improved, but she claimed to be more short-
red and irritable than before the illness: "I should
% cure; nothing worries me; I am interested in
hing and active."

r, 2½ years after the operation, she is cheerful, some-
disinterested, "lives for the day," and complains about
g on the level" all the time. . . . "I don't go up or
" She carries on normally at home, is even-tempered,
ets on well with her husband and children, but has
libido. There is some lack of affect, and she makes no
for the future. When asked if her husband thought
peration worth while she answers, "Oh, yes, definitely."
same question put to her brought the reply, "Of
e! I would rather live as I am now than then.
as terrible." She claims the operation has taken
all her dreadful fears and she has no symptoms of
onalisation.

husband reports: "She is now (Aug. 8, 1947) able to
with her normal duties, shopping, housework, &c., and
ition has taken on part-time work as a ward orderly at
pital. Her pace is much slower, but this may be due
having put on more weight. When it gets round to
. she has had enough and is ready for bed, and should
ave to stay up much after that she gets irritable. She
o interest whatever in the sexual act. Past events in
fe are hazy, and during conversation, whereas she would
ally think twice before giving an answer, she now says
comes into her head, whether it offends or pleases.
ugh she does get occasional spells of depression she is
to cope with them, and our life together is as happy
esent conditions will allow. The operation was far more
essful than I ever expected it would be."

is case demonstrates the gradual recovery after
otomy of a patient suffering from the depersonalisa-
syndrome for six years. The usual methods of
tment had failed. The operation was performed
years ago, and she is comparatively well, carrying
a fairly normal existence without any signs of a
pse.

ase 2.—A woman, aged 42, was readmitted to Sutton
March, 1946, complaining of persistent unreality and
ility to visualise for two years. This was her sixth and
t severe attack.

he had had a hard and difficult childhood owing to the
y death of her father, and had been brought up by
body who would look after her. The situation had
roved when her mother remarried, but her stepfather
harsh.

t the age of 2 years she lost an eye in an accident, and the
s eye induced a feeling of inferiority; but she did very
l at school, though unable to take up a scholarship for
ncial reasons.

he married at 19; her husband is quick-tempered, and
y often quarrelled. There were seven pregnancies, and
was ill with anxiety and vomiting in each. Her previous
sonality was described as anxious and obsessional, yet
ly, energetic, and a good mixer.

he first attack of depersonalisation occurred at the age of
after an upset, when her fiancé joined the Army and left
. She was distressed, and suddenly "everything went
nge, unreal, and I was a different person." She became
y frightened and had fears of insanity but made a
ntaneous recovery in a few weeks.

The second attack, at the age of 20, began three weeks after a severe first confinement and lasted three months.

A third attack ensued fourteen months later, three weeks after her second confinement, and lasted longer. It gradually passed off after a course of psychotherapy.

She was well after a third pregnancy two years later, but another spell of depersonalisation came on six weeks before the fourth confinement, and persisted well into the puerperium. During this pregnancy there was a good deal of domestic trouble, and her mother's death left her without help.

The next confinement two years later was uneventful, but a fifth attack of depersonalisation followed three weeks after the sixth confinement. She thought then she would never recover and would be better dead, but the symptom cleared after six months. She was free from symptoms at her final pregnancy and remained well for eleven years.

The present illness began in April, 1944, a month after an operation for hernia (apart from the anæsthetic with this operation, she had one during her first confinement). She described the onset and symptoms as follows: "I just sink into a kind of unconsciousness; I am just conscious enough to know that things are going on round me, but nothing seems to register; it is too far away to keep these things in my mind; I carry on automatically but I can't think; my body tries to work for the part of my brain that does not; I concentrate and get things a little back, but the strain is too strong, and as soon as I relax everything has gone again; my head is dead, and the part that makes life real has gone completely; I see things with my eyes but not with my mind; time is gone, is a blank; it is as if time has not been; every day goes into emptiness, it disappears, and I am not aware of its going; there is a gap between myself and realisation; everything is in a daze, far away."

This condition persisted with little variation in intensity. She was severely depressed and tearful and slept badly, and a course of ten electric convulsion shocks in outpatients produced no benefit. She was admitted to Sutton in April, 1945, when a further four electric convulsion shocks, psychotherapy, and insulin therapy were given without effect.

On readmission in 1946 she had lost 2 st. in weight and her condition was unchanged. Though she regained the weight-loss with the help of modified insulin, numerous therapies such as 'Benzedrine,' 'Epanutin,' cardiazol shocks, abreaction techniques, vasodilators, gland extracts, and psychotherapy were tried and proved futile. She remained a picture of hopelessness and despair.

Mr. McKissock carried out a prefrontal leucotomy in July, 1946. There were some mild behaviour disorders for a time after the operation, and for several days the patient answered only in a whisper, repeating that she was bodily tired and could not worry. Later she showed a curious mixture of apathy and mild elation, but a fortnight after the operation she said that she was quite well and had lost her feelings of unreality.

A week later she was euphoric, could visualise, had lost her disturbances in time, and was rather overactive and intolerant. She returned home cheerful and free from her symptoms of depersonalisation, though mildly euphoric and argumentative, and carried out very successfully her numerous and onerous domestic duties.

At a later interview she said: "I keep wondering how it is that I got well so suddenly; I can concentrate and visualise; I don't worry about tomorrow; I go to pictures and enjoy walks; I lose my temper a little and must argue, but I have to answer if I am right; I am not dead any more; sexual feelings normal." She has for some time now been doing her housekeeping, cooking for her husband and seven children, and managing a part-time job to supplement the family income.

Her husband reports (Aug. 10, 1947): "I think she is completely cured, because she does not worry any more and she does all the work in the house and goes for all the things that have to be got for a large family like ours."

In contrast to case 1, this patient made a dramatic recovery from her extremely severe depersonalisation symptoms very soon after leucotomy. She is now, a year after the operation, leading an active and useful life.

Case 3.—A man, aged 30, was first seen as an outpatient in May, 1942, when he said he had been invalided out of the

Army with an anxiety state and he wished to see a psychiatrist. He described the sudden onset of symptoms of unreality one morning in October, 1934.

Patient lived with his parents and two sisters. He was, and still is, frightened of his father, who is unsympathetic and bears him animosity. His mother, who often had to hide him from his father, is a nervous ailing woman of poor intelligence, and he is fond of her. A maternal grandfather suffered from epilepsy, and a maternal uncle died in a mental hospital.

He was a frightened timid child, pampered by his mother, and afraid of getting hurt. His school record was reasonably good, and he worked for a time as messenger and clerk. He is said to have had a happy disposition and a sense of humour before the illness, was a keen reader and fond of company, but indulged in obsessional ruminations and compulsions. From his early years he had almost weekly severe headaches. He had been engaged for several years, but much to his fiancée's exasperation they drifted along—he considered his symptoms a handicap to marriage.

The illness began in 1934 when working on a landing at his place of work. "The whole world seemed to change and people crossing the landing from one room to another seemed to do so with amazing rapidity. No sooner had they come out of one door than they were at the other. Also it seemed to me that the atmosphere had gone dull and darker." This was followed by giddiness, pains in the eyes with spots "floating" in front of them, and coldness of limbs. He complained of a far-away vague and dazed feeling and became preoccupied with "time."

For some years before the onset he had become increasingly tired and overworked in a new job driving a lorry and trailer for long hours, but he had changed to light work and was much more relaxed when the symptoms began. He carried on despite his symptoms but was puzzled, bewildered, and mildly depressed. The pain in his eyes increased in severity, and he developed bouts of giddiness in which he seemed to move round but did not fall or lose consciousness. His headaches became more severe, and he had attacks of trembling, shivering, and coldness. He was also constantly looking at the clock, since he was unable to account for the passage of time.

This condition continued more or less unchanged, but he was not severely depressed till 1937, when the symptoms became more intense. He was then having to take frequent periods of sick leave, and from 1937 to 1940, when he was conscripted into the Army, he had spells of unemployment or casual work, no job lasting longer than three months.

During the excitement of the first year in the Army he felt comparatively well and gained promotion, but with exacerbation of his symptoms he was soon reduced to the ranks and discharged. After a succession of jobs he was admitted to Sutton in April, 1944, in an anxious depressed state. He regarded himself as a failure, and was self-concerned, morbidly introverted, and obsessional.

There was little change after a course of psychotherapy, and on discharge from hospital he attempted numerous jobs in the country, since he was afraid of staying in London because of the flying-bombs. His obsessional thoughts became very insistent, with particular reference to the "passage of time," and he lost weight and remained depressed and drawn.

The feelings of unreality never disappeared entirely since their onset in 1934, though they were slight and did not trouble him at times; but on readmission to hospital in 1946 he had an acute feeling of unreality, a dazed feeling, and a feeling of vagueness which he found very difficult to describe.

Ether abreaction and benzedrine were unsuccessful, and there was no change in his mental state, though he put on weight with insulin. He was then treated with electric convulsion therapy, but after the third treatment he became severely confused and muddled, with an increase of his symptoms of depersonalisation. "Everything seems to have changed. The world is changed and unreal, and I am far away and outside everything. The time seems all wrong, and I can't grasp anything." He bitterly blamed the therapy for the deterioration in his condition.

Again numerous treatments, such as excitatory abreaction under cardiazol and 'Pentothal,' continuous narcosis, and vasodilators, produced little or no change, and he continued to feel dazed and in a fog. Finally he attempted suicide.

Mr. McKissock carried out a prefrontal l June, 1946. Patient refused food for several days operation and was noisy at times. A fortnight later smile benignly and say that his preoperative were worse, though he was obviously improved preoccupied with his previous complaints.

The following week he said he was no longer th the passage of time. "I don't know what made on that at all." Nevertheless, though he was unable any longer, had lost his headaches, stopped writing letters, and was active and cheerful, he said he was no

A well-marked change occurred when he left He lost his unreality feelings, obtained a better job t he had previously held, and married.

Interviewed a year after the operation his wife said happy, interested, and better than when she first since he was "not half so shy." Patient said he was operation was done, and everything seemed fine, th eyes felt slightly heavy and he had an occasional sli ache. The physical change was striking, since his smoothed out and he looked fatter and healthier. doing well in the same job.

This is a case of a chronically obsessional with twelve years' history of depersonalisatic lost his symptoms two months after leucotom personality appears to have improved as a r the operation.

Case 4.—A woman, aged 26, readmitted to hospita tember, 1946, complained that for three years she had persistently from a "blindness of the mind" and an " to visualise."

Her mother is of an anxious disposition and had a breakdown at the age of 28, probably depressive, father died a few weeks ago. Patient is one of the two triplet brothers are well. An older brot postencephalitic personality changes.

She had a happy childhood until the age of 8, w brother developed encephalitis. He became troubles spiteful to her, though she was very attached to hi school record was good despite frequent attacks of "t of the limbs," and she also had a good record at occupations, such as printing and electrical engineerin had been unofficially engaged to a soldier for sever but did not marry, since she considered it her duty after her brother.

Her previous personality is described as that of an o worrying over-conscientious obsessional type with a t to depression and hypochondriasis, but she had many and hobbies. She has a rheumatic valvular affectio hypertension, and a benign fullness of the thyroid.

Early in the war 1939–45 her invalid brother was sibling to remain at home. She was very active, many hours a day, but devoted all her spare time brother and could not dismiss him from her mind; made her life "a living hell with his unsocial nasty tri sneers." She developed a sinking feeling in the sto fear of tuberculosis after a friend in her factory h tracted it, and had recurrent attacks of sweati trembling.

In September, 1944, "something snapped" at "My brother's face came to my mind, and everythi went. My head became a complete blank, and all v my mind went instantly. I looked round and eve seemed unreal." She ran home in a panic and exp fears of insanity. The symptoms persisted, and ov she spent three months in a rehabilitation centre wh received eight electric convulsion shocks and a co modified insulin and narcosis without success.

She was first admitted to Sutton in June, 1945, w described herself as a robot, outside herself and eve and that her head was empty and hollow yet fill thoughts. "When I close my eyes I can *think*, but comes. Familiar things do not *seem familiar* and I meaning. I have to hang on to the feeling as *to* how I feel. Nothing means anything any more." He complaint was *inability to visualise*, and she also com of change in the sense of time. "Time is just a spa Everything is just a blank space. . . . Time is meani She was intensely anxious and agitated, but derived no from psychotherapy, vasodilators, vitamins, amphe epanutin, and narco-analysis.

made efforts to go out and mix after discharge from al; and, though she gained weight and slept better, ense of "blindness" continued. Her thyroid was igated, but no operation was advised, and a further d course of psychotherapy had no effect.

condition deteriorated, and she was readmitted in mber, 1946, feeling desperate, hopeless, and unable to on. She wrote a list of seventeen groups of symptoms, minantly those of depersonalisation, and looked a lonely e of dejection and depression. Among her numerous ptions of her strange and unreal state was the comparison self to "a broken camera with the lens out of focus." itory abreactions under ether were attempted, using umatic experiences of her brother as the trigger stimulus, spite a good deal of emotional release she felt no better. cotomy was done by Mr. McKissock in December, 1946. t was restless, confused, irresponsive, and negativistic veral days after the operation, and had a grand-mal the fourth day. During the second week her mental became clear and she was brighter, said her symptoms s before but did not distress her, showed no initiative, ound her teeth.

continued in the ensuing weeks to insist she was no nt, though she was obviously cheerful, wrote letters he had previously been unable to do, and admitted she ble to cope better with things. She was incontinent veral weeks. Her appetite improved, she was active ward, kept everybody in good spirits, and made many s, whereas previously she sat about all day on her own. ially she volunteered the information that she was ving slowly, but she repeatedly said her mind remained and there was an inability to visualise.

weeks after the operation her father died suddenly, and ok it in an off-hand manner and was "surprised." Her de to her brother has completely altered, and she gets ll with him. "I don't worry about him. I don't worry anything any more." She returned home two months he operation, developed an enormous appetite, gradually er apathy, and found herself a job.

mother said patient was gradually improving, taking interest in herself and surroundings, helping at home visiting friends, and showed no signs of depression. nt's periods became regular for the first time for some

w, eight months after the operation, her mother expresses ude and the patient agrees the operation was well worth , despite the fact that she still cannot visualise. She this in an unconcerned fashion, and it is her only plaint.

his is a case of a chronic obsessional rendered pletely useless by the symptoms of a severe deperlisation state. All symptoms have been relieved he operation *except an inability to visualise, but this* es her no concern. It is only eight months since operation; hence one cannot tell if that symptom will disappear.

ase 5.—A woman, aged 32, admitted to hospital in nary, 1947, complained that a feeling of unreality had denly descended on her like a cloud nearly three years iously and persisted unchanged.

er father is described as normal except for an "obsession" ut making money, and her mother is moody and quickpered. Patient is one of dissimilar twins, and the parental ction was said to have been lavished on her prettier sister. twins got on well together. She had an excellent scholastic rd, and was popular, good at sports, and head girl for two rs.

he became a student teacher, but her career was soon rrupted by a sudden attack of depersonalisation, with ciated phobias, at the age of 18. This lasted nine months, of which she spent as a voluntary patient in a mental pital.

er upbringing at home had been strict, and discussions on were taboo; the attack of depersonalisation followed incident two months earlier, when a man had exposed self to her in a wood. After a spontaneous recovery she remained well for three years, when the symptoms of ersonalisation recurred.

his second attack lasted three years, in the course of which had spells in two mental hospitals. Eight cardiazol vulsions had no beneficial effect. She became engaged during the illness but terminated this later on, and she then experienced considerable guilt over illicit sex relations with a few men.

She married a regular Army officer after recovering from the second breakdown, and they have two children. When well she is said to be energetic, capable, keen on sports and reading, houseproud, conscientious, and liable to phobias.

Patient continued well until 1944, when her husband was posted to India. She was very upset over this; and, after he left, another attack of depersonalisation came on suddenly in the street. "Everything altered and became unreal. A blackness came down, and from that moment everything was centred on self." She became tense, anxious, and depressed, sat about and cried most of the day, and eventually spent six months in a private mental hospital. There she received eight electric convulsion shocks, but without any effect on the feelings of unreality, though the depression eased.

Her husband returned from India in October, 1945, on compassionate grounds; but, since her distress continued, she returned to the mental hospital and had a further seven electric convulsion shocks, again without benefit.

She next received treatment from an unregistered practitioner but had to be admitted to another mental hospital early in 1946, since she felt unable to carry on and was considered suicidal. Here she was given twelve cardiazol fits. The treatment had to be interrupted for a time after the sixth convulsion because of a dislocated shoulder. She left the mental hospital in a pitiful state, visited several consultants, and was finally referred to Sutton.

On admission she had a forced smile, talked freely without retardation, but was preoccupied with obsessional thoughts, mainly of suicide, and most of her conversation consisted of self-accusations and descriptions of her unreality.

Ether abreaction over her fears of insanity and her husband's infidelity before the onset of her illness led to some emotional release without corresponding improvement. Further attempts, using other incidents, also failed.

Her condition deteriorated, despite the fact that she put on 2 st. in weight with modified insulin treatment. She repeatedly asserted that she did everything mechanically, had no feeling, nothing registered in her mind, and she begged for an operation to relieve her suffering, or her suicidal impulses would prove to be too much for her.

Mr. McKissock operated on her on March 3, 1947. She reported an immediate easing of tension. For some days she complained of a headache, appeared drowsy, and said she felt lazy; but, almost as soon as her mental state was clear, she declared that her unreality had gone.

A week after the operation she was cheerful, happy, and free from complications, and said: "I feel normal; everything is real; I could not contemplate before that I could feel well again." She rapidly adjusted to a normal existence, returned to her home in a fortnight, and took over full household duties.

When seen two months after the operation she had returned from an energetic sporting holiday in Switzerland, said she felt fine, had regained her normal weight, and had no problems. Her husband and relations are delighted with the result. This happy state still exists, five months after the operation.

This case of depersonalisation of nearly three years' duration, like case 2, showed an immediate response to leucotomy after exhaustive and intensive alternative methods of treatment had failed.

DISCUSSION

Before the indications and value of prefrontal leucotomy in severe and long-standing depersonalisation can be assessed a larger series is necessary, and the patients will require observation after operation over longer periods than those cited in the case-records. Nevertheless certain facts stand out. The syndrome is not infrequently met with, and, though some patients recover spontaneously, a study of the histories reveals the utter misery experienced. They drift from hospital to hospital, often spending long periods in mental hospitals, and are keenly aware of the abnormality of their symptoms. They also have the utmost difficulty in describing their symptoms and in being understood.

A sufficient indication of the *mental distress* often caused by this crippling disability is shown by the variety of treatments to which the patients submit, and the results obtained with such treatments, as seen in a study of the case-records, only serve to emphasise the difficulty in ameliorating their symptoms. The 5 patients cited have received a total of 25 cardiazol fits and 50 electric convulsion shocks. Convulsive shock therapy is of little or no use; it may temporarily ease the accompanying depression, but the feelings of unreality remain or even become accentuated. In fact, some patients have become depersonalised during electric convulsion therapy, and case 3 became considerably worse after the third electric convulsion shock, and the treatment was discontinued. Of the 5 patients 4 lost their symptoms of depersonalisation after the operation (2 immediately and 2 after several months), and the fifth patient has improved and is still improving. The 2 who recovered immediately had had previous clear-cut attacks of unreality, whereas the other 2 had had a prolonged first attack which seemed to be going on indefinitely.

Though the present series is very small on which to base conclusions, there appears to be a difference in response between the two clinical groups. On the other hand, it may well depend on the position of the incision and the amount of white matter severed at operation.

Psychotherapists and psycho-analysts, such as Schilder (1939) and Oberndorf (1941), have commented on their generally poor results in the treatment of the depersonalisation syndrome. Our patients have not had prolonged systematic psychotherapy, but they have had this form of treatment to the limits of practicability.

A few striking successes have been obtained by excitatory abreaction under ether and more recently by the use of pentothal combined with intravenous 'Methedrine.' Patients, therefore, that might have come to leucotomy have been spared the operation. But this is only an occasional result.

Though there is an abundant psychopathology in the cases here recorded it has had to be omitted in this paper, as also the results of special investigations, such as the Rorschach personality assessments. Intelligence tests carried out before and after operation in all these cases demonstrate that there is no intellectual impairment.

Papers on leucotomy have recently emphasised the deterioration in some personality traits after operation (Hutton 1947). Such patients have usually come from mental hospitals. The findings have been less pronounced and less often met with in the material of this neurosis centre with, generally speaking, patients of comparatively good personality showing little deterioration before operation, and it is this type of case with which we are concerned.

I wish to thank Dr. Louis Minski, medical superintendent, for his kind permission to publish, and Dr. William Sargant for his helpful advice and criticism.

OPERATIVE TECHNIQUE

(Wylie McKissock, M.S. Lond., F.R.C.S.)

The technique used was that described by McKissock (1943) with only minor modifications. Burr-holes are made 3 cm. behind the lateral margin of the orbit and 5 cm. above the zygoma through 2 cm. skin incisions. The openings in the dura are large enough only to expose an area of cortex free from blood-vessels. A brain needle is inserted to a point 0·5 cm. short of the midline, the needle being angulated slightly forwards to avoid the anterior horn of the lateral ventricle. The needle, with stylet withdrawn, is then swept upwards and is, at the same time, introduced more deeply to an extent of 2–2·5 cm. to cut a line parallel with the falx, and finally outwards to divide as much white matter as possible. It is then reintroduced in the original plane, swept downwards until just above the orbital plate, and finally swept outwards across the
to divide most of the white matter in this

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EFFECT OF STILBŒSTROL ON MOUSE TUMOURS

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THE occasionally favourable though transitory re
of cancers of the human breast to treatment
stilbœstrol (Haddow et al. 1944) suggested the
ability of investigating the action of this
compound on different types of malignant
Various tumours have been maintained by t
tion in mice of inbred strains for the purpose of
compounds for chemotherapeutic activity (Ludfo
and ten tumours were used to investigate the
stilbœstrol. Altogether 163 mice were treated,
were 81 controls.

Treatment was carried out by inserting
in the form of pellets into the subcutaneous tis
first pellet was inserted either at the time of
tion or when it was obvious that the tumour
begun to grow—i.e., 7–14 days after trans
according to the intrinsic growth-rate of the tumour.
dose of stilbœstrol was 1·5–6·0 mg. With smaller
a second pellet was inserted 10–14 days after the fir

It was found that the amount of stilbœstrol tol
depended on the genetic constitution of the mice.
of the C57 and A strains were decidedly more sen
to its toxic action than were R III mice. A
difference in the sensitivity of these two strai
colchicine has been observed (Ludford 1947).

The following were the tumours selected for treatm

C57 Low Mammary Cancer Strain, Black Mice

(1) A mammary carcinoma originally induced by
suckling with an A-strain female. This tumour was
adenocarcinomatous type. The 18th-generation trans
were used.

For comparative purposes the growth-rate of this tu
has been arbitrarily chosen as unity (fig. 1). The figu
parentheses after each of the other tumours listed
gives approximately its comparative rate of growth.

(2) A squamous-celled carcinoma ($1^{1}/_{2}$) which arose
taneously. The 13th-generation transplant was used. A
stage sections exhibited very little keratinisation.

A-Strain of Strong with High Incidence of Mammary
Lung Cancer, Albino Mice

(3) A carcinosarcoma ($2^{1}/_{2}$) which originated spo
as a mammary carcinoma. During the course of serial
plantation the stroma underwent sarcomatous transf
and both sarcomatous and carcinomatous elements
throughout subsequent transplantations (Ludford and D
1944, 1945). The 31st-generation transplants were used.

Histologically the tumour consisted of compact ma
carcinoma cells surrounded by sarcoma cells forming a
cellular stroma.

(4) A polymorphic-celled sarcoma ($2^{1}/_{2}$) which ori
by the sarcomatous transformation of the stroma of a
mary carcinoma. The 26th- and 55th-generation tran
were used.

A transplantable lung carcinoma ($^1/_3$) which arose neously in an old male mouse. Lung tumours of the in are generally regarded as of alveolar origin (Lorenz 1946). The 13th-generation transplants were used.

ologically the tumour consisted of large compact groups thelial cells, often arranged in alveolar fashion and ted by a narrow stroma.

A rapidly growing mammary carcinoma of spontaneous (3). The primary tumour was accompanied by numerous etastases. Histologically it was of the medullary type. 5th generation transplants were used.

or Paris Strain of Dobrowolskaja Zawadskaja, with a ncidence of Mammary Cancer, Albino Mice

A medullary mammary carcinoma (2) characterised gically by the relatively slightly developed stroma. st-generation transplants were used.

A medullary mammary carcinoma ($2^1/_2$) with a much extensive stroma. The 7th-generation transplants sed.

A spindle-celled sarcoma (3) which originated in the of a mammary carcinoma. The 26th-generation lants were used.

igh Mammary Cancer Strain, Brown Mice

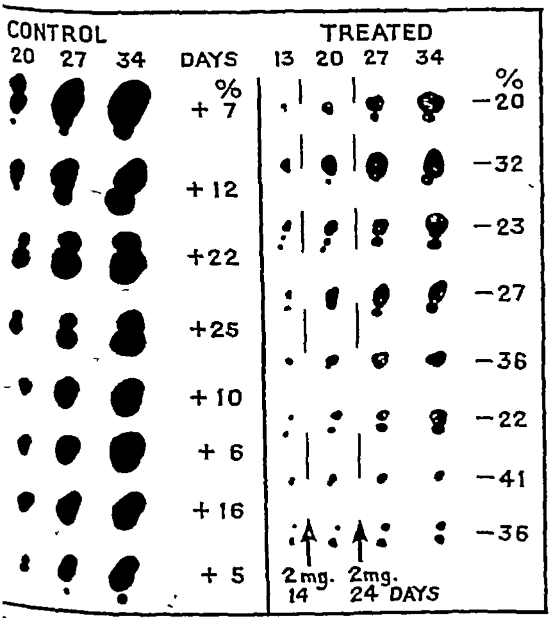
A medullary mammary carcinoma ($1^1/_2$) with poorly ped stroma. The 15th-generation transplants were

RESULTS

e of these tumours exhibited a specific sensitivity bœstrol treatment. Dosages which did not impair alth of the mice had no appreciable action on the f growth of the tumours. Tumour growth was ted only in mice suffering from the toxic action lbœstrol, which was accompanied by considerable f weight. Below are given the protocols of two ments illustrating the general results of this tigation.

ment Demonstrating Inhibition of Tumour Growth Toxic Doses of Diethyl-Stilbœstrol

mmary carcinoma no. 1 was transplanted into the ank of 16 mice of the C57 black strain. Fourteen later a 2 mg. pellet of diethyl-stilbœstrol was ed into the right flank of 8 of the mice, and a r dose was administered again on the 24th day. mouse was weighed every time the tumours were ed. Fig. 1 shows the rate of growth of the tumours, he figures after the last charting give the percentage gain (+) or loss (−) in weight since the first charting on the 13th day. From fig. 1 it is obvious that there was a considerable inhibition of tumour growth in the treated mice, but this was accompanied by a great loss of weight. The mice were extremely emaciated, and most of them ultimately died.



1—Inhibition of growth of mammary carcinoma in C57 mice by toxic doses of stilbœstrol.

It was repeatedly observed during this investigation that, though tumour growth was inhibited when animals became ill, their tumours began to grow again at the normal rate if they recovered. Sections of tumours from treated animals such as those charted in fig. 1 exhibited no specific degenerative changes. There were very few mitoses. A greater proportion than usual were metaphases, suggesting some delay in anaphase separation of the chromosomes. There was no indication of a specific mitotic poisoning of the type induced by colchicine.

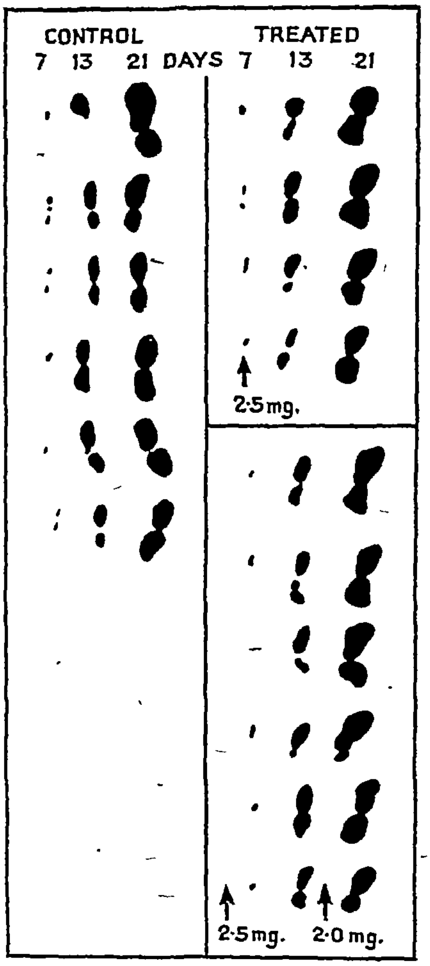


Fig. 2—Non-inhibition of growth of mammary carcinoma in R III mice by stilbœstrol in the absence of toxic symptoms.

Experiment Demonstrating that Diethyl-Stilbœstrol does not Inhibit Tumour Growth in the Absence of Toxic Symptoms

Mammary carcinoma no. 7 was grafted into 16 mice of the R III strain, of which 6 were kept as controls and the remainder received 2·5 mg. pellets of diethyl-stilbœstrol on the 7th day; 6 of these received a second pellet of 2 mg. on the 17th day. Fig. 2 shows there was no inhibition of tumour growth. All the mice increased in weight, and the average gain in weight of each of the three groups was about the same. It will be observed that 6 of the mice in this experiment received 0·5 mg. of stilbœstrol more than the C57 black mice of the other experiment (fig. 1). Yet the R III mice tolerated this larger dose without the appearance of toxic symptoms. Obviously, genetic constitution is an important factor in determining sensitivity to stilbœstrol.

It has been reported by Lettré (1943) that diethyl-stilbœstrol applied to tissue cultures of chick fibroblasts in a dilution of 100 µg./ml. has a mitotic poisoning action similar to that of colchicine. The photomicrographs illustrating Lettré's paper show numerous rounded cells in treated cultures, but it is impossible to distinguish whether these are arrested mitoses or "resting" cells which have become rounded off in the presence of a toxic substance. We therefore considered it desirable to carry out some experiments with tissue cultures to see if results comparable with those induced by colchicine could be obtained with stilbœstrol.

Lettré dissolved the stilbœstrol in alkaline solution, whereas we dissolved it in liquid paraffin and also used colloidal solutions. We had the further opportunity of testing a water-soluble phosphate derivative for which we were indebted to Prof. E. C. Dodds, F.R.S. Various concentrations of each preparation up to lethal dosages were applied to cover-slip cultures of embryonic and mammary-tumour tissue (mouse carcinoma 63). No indication was obtained of a specific action on the cancer cells, and no mitotic poisoning action was seen comparable with that of colchicine or its active derivatives.

DISCUSSION

This investigation was not carried out with the idea of contributing in any way to our understanding of the mode of action of stilbœstrol on prostatic cancer. We were concerned with the wider question, whether stilbœstrol has a specific action on the growth of malignant cells as such, either in vivo or in vitro. On the tumours used in these experiments stilbœstrol exhibited no specific inhibition of growth. Such inhibition of growth as took place with relatively high dosages was the result of a non-specific toxic action.

Further, our results do not confirm Lettré's (1943) contention that stilbœstrol has the same kind of mitotic poisoning action as has colchicine. Colchicine has a dual action on tumours: (1) it brings all cell division to a standstill at the metaphase by preventing the formation of the mitotic spindle (colchicinic mitosis); and (2) it induces hæmorrhage in rapidly growing tumours. Evidence has been adduced that such inhibition of tumour growth as can be induced by colchicine is primarily the result of hæmorrhage (Ludford 1947). In our experiments with stilbœstrol the characteristic cytological action of colchicine was absent, and a degree of intratumoral hæmorrhage sufficient to lead to tumour regression was never induced. There is no justification for including stilbœstrol in the same class of mitotic poisons as colchicine and sodium cacodylate, which both have such a pronounced action on the mitotic spindle (Ludford 1936).

SUMMARY

The action of diethyl-stilbœstrol has been investigated on ten different transplantable mouse tumours in mice of four inbred strains (C57 black, Strong A, R III, and C3H). These tumours included different types of mammary carcinomas: a carcinosarcoma, a squamous-celled carcinoma, a lung carcinoma, and two sarcomas.

On these tumours stilbœstrol showed no specific inhibition of growth; such inhibition of growth as took place with relatively high dosages was the result of a non-specific toxic action.

Neither in vivo nor in vitro did stilbœstrol induce the same type of mitotic poisoning action as does colchicine.

Genetic constitution is a significant factor in determining sensitivity to the toxic action of stilbœstrol.

We are indebted to Prof. W. E. Gye, F.R.C.P., F.R.S., for helping us to complete this investigation, which was begun when we were members of his staff.

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AUSCULTATION IN ACUTE ABDO DISEASE

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DURING the war surgeons came to regard ab auscultation as a very important part of the examination of a patient with an abdominal for often morphine had minimised signs tenderness and rigidity. In civilian practice, auscultation is commonly omitted from an a examination.

In the "acute abdomen" auscultation is showing whether peristalsis is present or not fluid splash of distended loops of intestine mo respiration must not be confused with the so peristalsis. The splash can be reproduced by ro patient and listening at the same time. With ex there is no difficulty in differentiating the two

If the sounds of peristalsis are heard over the abdomen, further auscultation is unnecess they are locally or entirely absent, further is required. The absence of sounds cannot immediately; auscultation should be done for 2 or 3 minutes at a time until the presen of peristalsis has been confirmed beyond the normal abdomen may be silent for periods.

RESULTS

The results of such auscultation in 250 an acute abdominal catastrophe, and in 15 of the abdomen, are given in tables I an figures show that auscultation is of little early case of acute appendicitis, but of help once a local or general peritonitis ha Silence on abdominal auscultation is patho peritonitis, though it is of less value in the di of its cause. The following case illustrates the of abdominal auscultation in such patients:

TABLE I—FINDINGS ON ABDOMINAL AUSCUL
250 CASES OF ACUTE ABDOMINAL DIS

Diagnosis (established at operation)	No. of cases	Peristalsis present over whole abdomen
Acute appendicitis without perforation	124	114
Local peritonitis (perforated appendix, leaking peptic ulcer, &c.)	36	10
Pelvic peritonitis (perforated appendix, salpingitis, &c.)	14	1
General peritonitis (perforated peptic ulcer, perforated appendix, &c.)	36	0
Intestinal obstruction without strangulation	16	16
Intestinal obstruction with strangulation	12	7
Hæmoperitoneum (ruptured ectopic gestation, ruptured spleen, &c.)	6	6
Intraperitoneal rupture of urinary bladder	3	3
Acute hæmorrhagic pancreatitis	2	0
Bile peritonitis	1	0

A young police constable was admitted wi history of generalised abdominal pain. On exa abdomen was rigid and tender. A perforated peptic vas suspected, but abdominal auscultation revealed lsis in the epigastrium and silence in the hypogastrium. d to a diagnosis of perforated acute appendicitis, which nfirmed at operation.

his patient the information obtained by abdominal tation enabled the incision in the abdominal wall ocated correctly.

stinal obstruction without strangulation produces t increase in peristalsis. Once strangulation has place, however, sounds of peristalsis may disappear. of particular interest if the cause of the strangula- not an external hernia. The present series includes patients with a complete absence of abdominal lsis. In these patients abdominal auscultation in deciding whether intestinal strangulation has place, which is of great importance now that a onservative attitude to simple intestinal obstruc- customary. The following case illustrates this

LE II—FINDINGS ON ABDOMINAL AUSCULTATION IN 150 ABDOMINAL WOUNDS [1]

n of hollow viscus	Peristalsis present	Peristalsis absent over whole abdomen
.. ..	6	92
.. ..	51	1

ldier was admitted with 18 hours' history typical of nal obstruction due to adhesions from an old abdominal . Peristalsis was increased, and he was treated by nal suction and intravenous saline, followed by recovery. before his discharge from hospital a second attack ped. This time his pain was continuous and his abdomen with complete silence on auscultation. Intestinal ction with strangulation was diagnosed and confirmed ration, when a volvulus of the small intestine was and the strangulation was relieved.

uncomplicated hæmoperitoneum was present in r wounds and 6 other patients in the present series. ery case sounds of peristalsis, though sometimes were heard—a very valuable aid in the differentiation is condition from peritonitis. An intraperitoneal re of the urinary bladder was found to be the only abdominal lesion in 5 war wounds and 3 other nts, and again sounds of peristalsis were heard in one. Acute hæmorrhagic pancreatitis, or free bile e peritoneum, has produced complete silence on ltation.

ring convalescence the first return of peristalsis a period of silence is a point worthy of note, because often the first indication that gastric or intestinal on may be discontinued.

SUMMARY

250 patients with an acute abdominal emergency, 150 patients with an abdominal wound, abdo- l auscultation has provided valuable diagnostic

e absence of peristalsis can only be established by and repeated periods of abdominal auscultation.

this series intestinal peristalsis was abolished by presence, in the peritoneal cavity, of intestinal ents, pus, bile, hæmorrhagic exudate from strangu- l intestine, and exudate from an acutely inflamed reas. It was not abolished by the presence of blood urine in the peritoneal cavity.

nfirmed silence on abdominal auscultation, whether or general, is a positive sign of peritonitis and a able aid to the diagnosis and localisation of an acute minal lesion.

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RUPTURE OF RECTUS ABDOMINIS MUSCLE DURING PREGNANCY

REPORT OF TWO CASES

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SPONTANEOUS rupture of the rectus abdominis muscle is a rare complication of pregnancy, usually undiagnosed before operation, though the signs and symptoms are so constant that diagnosis should be easy.

Torpin (1943) collected 27 cases published since 1900 and added 1: 25 were in multigravidæ and 3 in primigravidæ; and 15 occurred after the strain of severe coughing, 5 during that of labour, 2 after a fall, and 1 during labour complicated by typhoid fever. In 5 cases the history was incomplete. There were 4 deaths: 2 from hæmorrhage and shock, 1 from postoperative pneumonia, and 1 in which the cause was not stated. The earliest cases occurred at 18 weeks' pregnancy. In 3 early cases the patients aborted, and there were 4 stillbirths. In 4 cases the condition was diagnosed and treated conservatively; all these patients recovered. Blood-clot was evacuated in 17 cases, 2 of the patients also having cæsarean section. After this method of treatment 2 patients died, 2 aborted, and 9 recovered; in 4 cases the result was not stated. In 1 case treatment was by cæsarean section only, and the patient recovered.

Of 2 cases reported by Fahmy (1944) the first was treated by evacuation of clot and the pregnancy continued to term; and in the second a small swelling below the right subcostal margin was at first diagnosed as acute cholecystitis and subsided without treatment.

Thomas (1943) reported 1 case which he diagnosed as concealed accidental hæmorrhage and treated by rupture of membranes, followed by application of Willett's forceps, and finally by cæsarean section, two pints of blood-clot in the right rectus muscle being evacuated incidentally. The patient recovered. Thomas (1945) summarised Torpin's (1943) cases and published a further case. This patient was diagnosed on admission to hospital and was at first treated conservatively. Bleeding increased during rest and necessitated operation, at which it was found that the bleeding was from a branch of the deep epigastric artery, which had to be ligated. The patient came into labour spontaneously a few days later and was delivered of a stillborn infant. She made an ultimate recovery.

Dawson (1944) reported 1 case, which was treated by cæsarean section, the hæmatoma being left to subside. This patient also made a good recovery.

The present cases may be of interest to add to the list.

Case 1.—A woman, aged 41, who had had one previous pregnancy in 1938, associated with "kidney trouble," but terminating in a normal delivery of a healthy infant weighing 6 lb. 4 oz., was first seen at the clinic on Aug. 10, 1946. Her last monthly period had been on May 10, 1946.

On examination: a pale woman in poor general condition, breathless on exertion. Heart and lungs normal. Blood-pressure 166/108. Abdomen soft. Uterus just palpable above symphysis.

Investigations.—Blood-count: red cells 4,550,000 per c.mm., Hb 94%, colour-index 1·0. Urine: no red cells; a few leucocytes; no casts; many gram-positive cocci; no albumin. Intravenous pyelography showed calcified abdominal glands; anatomy and function of each kidney normal.

Patient was admitted for rest, and at the end of a week the blood-pressure fell to 130/90. She was regarded as a case of essential hypertension, and was seen every month at the antenatal clinic. Her blood-pressure remained about 140/100 until the thirtieth week, when it rose again to 160/110. At this stage the patient developed a severe attack of bronchitis and was in bed at home for a fortnight.

specific therapy. He lays greater stress on the signs which the ordinary clinician can elicit than on those special tests, such as estimation of the vitamin content of the blood, which are available only to the expert.

Principles of treatment are fourfold: conditions such as infections and hyperthyroidism, which increase the nutritional requirements, are alleviated or removed; any coexisting disease is treated; a liberal diet is prescribed; and, since such diets often cannot be consumed in the early stages of treatment, supplements of vitamin and yeast preparations are given. In this way, all the patients were improved to an extent which allowed them to resume work.

Dr. Gordon's book is a fine concise account of clinical nutrition for the practitioner. It describes the great advances in knowledge made in this young science and critically appraises the many beliefs based on less certain evidence. No-one reading this book will have any doubt as to which diseases warrant nutritional therapy and which will react disappointingly. There are first-class descriptions of the mode of action, results of deficiency, and indications for giving supplements of the vitamins and mineral elements, and of the rôle of protein, carbohydrate, and fat in the diet. Additional chapters describe the basis of weight control; the influence of nutrition on dental caries, and the economic aspects of nutrition. The book is fortunately not burdened with detailed tables of the composition of foods, though there is an appendix which contains as much of such information as would ever be required by the practitioner.

Electronics and Their Application in Industry and Research

Editor: BERNARD LOVELL, PH.D., F.INST.P., physical laboratories, University of Manchester. London: Pilot Press, 1947. Pp. 660. *42s.*

THIS book will be very welcome to those who try to keep abreast of electronic applications either in laboratory work or industry or medicine. The chapters on electronics in medicine (Grimmett), electronics in physiology (Pumphrey), the betatron (Craggs), and electron microscopy and electron diffraction (Cosslett), are of interest to doctors, and are written by people who have all made significant contributions to their subjects.

Grimmett demonstrates his detachment when he says: "Radiotherapy is only a passing phase in cancer treatment, in the sense that it must sooner or later give place to biological methods of treatment. . . . The future may well show that the truly valuable contributions to medical science in this field are rather to be found in the fundamental knowledge which is being gained of the ultimate nature and structure of the cell." Pumphrey shows what a new era opened to physiology when the almost inertia-less electron became the prime recorder of electrical impulses. It is to be hoped that instrument-makers will note that "there is literally no equipment available for reproducing or recording sound in the range of 10–100 Kc./s." The first betatron to reach this country was operated at 4 M.e.v., but the article on this electron accelerator describes in some detail the construction of an instrument operating at 100 M.e.v. What the electron has done for vision is described by Cosslett with the aid of a superb set of photomicrographs taken by means of the electron microscope. Bacteriophage is here visible, in support of the imaginative flight of the French bacteriologists of a former decade.

Dr. Lovell, chief editor of the book, could hardly have selected his authors with more felicity.

The Child from Five to Ten (2nd ed. London: Hamish Hamilton. 1947. Pp. 475. 18*s.*).—This is a sequel to Dr. Arnold Gesell's earlier work, *Infant and Child in the Culture of Today*, and he has had the collaboration of Dr. Frances L. Ilg in writing it. Though it was compiled in the Yale clinic of child development, where so much careful observation has been put on record, the material is thin and much of it banal. The style can be illustrated at random: "EIGHT is coming out from his more serious, thoughtful inward self of SEVEN. Indeed, this new outer self seems to want to be constantly contacting people, going places, and doing things." "He may still have a lingering fear of the dark, and is said to be leery or shy of the dark." And so on. A general atmosphere of whimsy about the presentation, the illustrations, the tions, and the use of exclamation marks is likely to le English reader cold. There may be a place for a book of kind, but hardly on the busy practitioner's bookshelf.

New Inventions

RETRACTOR FOR OPERATIONS ON NUCLE PULPOSUS

THE retractors illustrated here have proved satisfactory in operations on the nucleus pul They are modifications of the original idea described Taylor,[1] and their principle is to use a fixed bony on the skeleton as a fulcrum against which le can be exerted to retract the superjacent muscle.

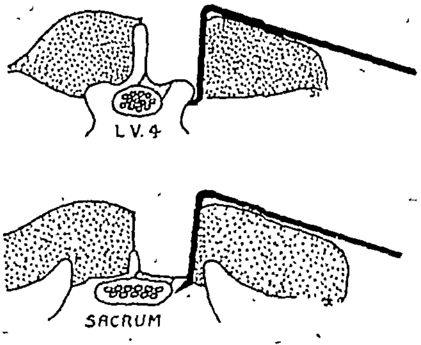

Fig. 1—Above: the retractor with two blunt hooks, used to ret muscles from the spine above the level of the sacrum. Below retractor with a single sharp hook, used to retract the musc lying the sacrum. The spike is hammered into the bone with a

are most suitable for laminectomy in the prone p *when they can be rendered self-retaining* by att. weights to their handles with sterile chains or ba

Experience has shown that two shapes of retract advisable in the exposure needed for hemilaminect One of these retractors (fig. 1 above) is provided with blunt hooks; this can be hooked under the bones of the vertebræ lateral to the posterior articulations, at the level of the 3rd, 4th, or 5th lumbar vertebra. The other retractor (fig. 1 below) is provided with a single sharp hook; this is required for retraction of the muscle superjacent to the sacrum, because at this site it is impossible to reach any lateral bony ridge under which a blunt hook could be lodged. At this site the spiked retractor is passed under the muscle and the term *spike is driven into the smooth posterior* surface of sacrum by a few blows with the mallet; the handl the retractor can then be depressed in order to ret the muscle (fig. 2). In this position both retractors be rendered self-retaining by means of sterile cord chains attached to the handle at the end of which a wei of about 3 lb. is secured. These retractors appear assist hæmostasis during operation by the const tension they maintain on the muscle.

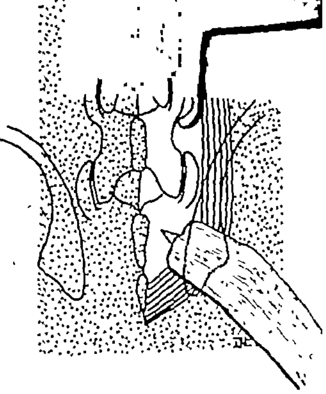

Fig. 2.—The two retractors in place.

They are made by Messrs. Down Bros. and Mayor & Ph Ltd., of London.

JOHN CHARNLEY, M.B., B.SC., F.R.C.S.
Lecturer in Orthopædics, University of Manchest

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1. Taylor, G. M. *J. Bone Jl Surg.* 1946, 28, 183.

Leading thoughts on CHILBLAINS

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THE LANCET

LONDON: SATURDAY, NOV. 15, 1947

Punishment and Reform

the new Criminal Justice Bill does not do all students of criminal psychology might wish, it rtheless does much; and it opens the way to er advances. Its general object is "to improve methods of dealing with persons found guilty of ces, including adolescent offenders and persons commit repeated offences." An early clause ves the legal distinction between imprisonment penal servitude: "hard labour," which originally nt labour at the crank and the treadwheel, is go, and the various prison "divisions" are to ppear. All sentences will become sentences of risonment, and during his stay in prison the nder will experience the sort of treatment—so it ntended—most likely to help him to reform. chance of reformation will be extended, within ts, to persistent offenders, for whom two types of ence are proposed: young adults with two ious convictions for serious offences may be ed corrective training for a period of not less n 2 and not more than 4 years; but those over 30 have had at least three such convictions, and se reform is considered unlikely, may be ordered, the protection of society, 5–14 years' imprisonment. power of the courts to pass sentences of corporal ishment is to be abolished, though this method is be retained for dealing with certain serious prison nces. The Cadogan Committee's figures consively demonstrated that corporal punishment does deter, and that its effects are the opposite of rmative; and in the face of this plain evidence abolition will hardly be opposed, unless by persons ayed by subconscious motives.

The sections of greatest interest in the Bill are those lating to young offenders. At present those over are sent to prison when remanded or committed trial; but the Bill proposes that State remand ntres should be set up where people of 14–21 may retained for this period. A court of assize or arter sessions will no longer be able to sentence a rson under 15 to imprisonment (the age is now 14): nd a court of summary jurisdiction will not be able imprison a person under 17. No court is to sennce anyone under 21 to imprisonment unless there ppears to be no other way of dealing with him; ed, if experience justifies these experiments, provision made for raising the age at which a prison sentence ay be received, and to prohibit, by Order in Council, he sentencing to imprisonment by summary courts persons under 21. Furthermore, new institutions, nown as detention centres, are proposed, to which eople between 14 and 16 may be sent for 3–6 months. They are to be set up gradually throughout the ountry, and will provide an alternative to prison for he young offender who does not need training in an approved school or borstal, but whose offence is beyond the scope of a fine or a probation order. It is thought that in such cases a short period of brisk discipline and hard work may prove a deterrent.

The probation system, which has long proved its worth, is to be amended and simplified. The binding-over procedure is replaced by power to discharge an offender subject to the condition that he commits no offence for 12 months. In order that young offenders may be properly impressed with the gravity of probation, the Bill proposes that a conviction shall be recorded in every case before probation begins; but probationers, whether juvenile or adult, are still to be exempted from legal disabilities attaching in after life to a conviction. The minimum period of probation is to be a year. State financial help is proposed for probation homes (in which offenders are given resident training) and probation hostels (from which offenders go out to work daily). Such homes and hostels are at present all run by voluntary societies; the courts have power to require an offender to live in one while he is on probation, and the influence has proved valuable. The Bill proposes that the State shall maintain some homes and hostels of the kind; and that a sufficient number of probation officers shall be appointed for every area, as well as a woman officer for every petty sessional division. The plan, adopted in 1936, of admitting offenders up to the age of 23 to borstal institutions has not proved a success and is to be ended. Many of these older offenders are married, with children, and no doubt the method of treatment was hardly suited to their outlook and responsibilities. Provision is made, however, for the release on licence of young offenders sentenced to a term of imprisonment.

Some new arrangements are made for the care of mental cases. At present courts of summary jurisdiction can get a medical report on the mental condition of an offender by remanding him to prison; but the Bill provides that an offender can be remanded on bail with a provision that he submits to medical examination. If an offender is certifiable as insane the same courts are to have power to make an order for his reception in an institution for persons of unsound mind. The term "criminal lunatics" is to be replaced by "Broadmoor patients," and the responsibility for "Broadmoor institutions" is to be transferred to the Board of Control; though the responsibility for the discharge of their patients will remain with the Secretary of State.

The Government have not decided whether the time has come to reconsider the death penalty, and the decision here will be left to a free parliamentary vote. Another question that should be raised in debate is the need for change in the law dealing with homosexual offences, which is conspicuously archaic. Dr. EDWARD GLOVER[1] has indicated the legal injustice to which such patients are at present exposed; and Dr. ALEX COMFORT[2] has lately suggested the lines which such new legislation might follow. There is certainly room for discrimination between, in Dr. COMFORT's term, "the constitutional invert who conducts himself decently," and the type of homosexual offender who is a danger to others, because he is capable of sexual assault, the seduction of minors, or conduct offensive to public decency.

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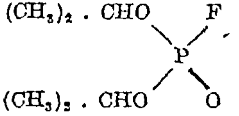
[1] See *Lancet*, Nov. 1, p. 661.

[2] *Ibid*, Nov. 8, p. 700.

D.F.P.

ONE of the many compounds developed under the impetus of war is di-isopropylfluorophosphate (D.F.P.), which, though chemically unrelated to physostigmine or 'Prostigmin,' inhibits the cholinesterase of serum, red cells, muscle, and brain. Alkyl esters of fluorophosphoric acid were known in 1932 as substances forming toxic vapours capable of causing laryngeal, respiratory, and visual disturbances. But it was not until 1941 that MCCOMBIE and SAUNDERS[1] prepared D.F.P. and found it to be lethal if inhaled. ADRIAN et al.[2] and American workers observed that it is an *inhibitor of cholinesterase, and that this inhibition is permanent* and irreversible, whereas that produced by physostigmine is temporary and reversible and also less potent.

A colourless oily liquid with a specific gravity of 1·055 and a solubility of 1·54% in water at 25°C, D.F.P. has the structural formula:



In aqueous solution it is unstable, undergoing half-hydrolysis in 16 hours. For clinical use it may be prepared as a 0·1% or 0·2% solution in peanut oil; this may be autoclaved and retains its potency for at least a year. In this concentration it has no local irritant effects when injected intramuscularly or applied to the eye. It is moderately volatile and has little smell even at toxic concentrations. Since it is only slowly detoxified, those who have been exposed to the vapour should avoid it for several weeks afterwards, even though only mild symptoms may be produced, such as pupillary constriction, chest pains, nausea, or diarrhœa.

Like physostigmine, D.F.P. inhibits both true cholinesterase and pseudo-cholinesterase,[3] but it is true cholinesterase that hydrolyses the acetylcholine released *at nerve-endings, and it is therefore the degree of this* inhibition which is significant for correlation with pharmacological action. The pharmacological effect of D.F.P. is related to the inhibition rather of red-cell cholinesterase than to that of serum or tissue esterases. It differs from prostigmin, and resembles physostigmine, in being a central excitant; *after intravenous or intrathecal injection the knee-jerk is enhanced, but the most striking effect is on the after-discharge, which is increased and prolonged. It probably facilitates excitatory* transmission in the cord and brain-stem.[4] Intoxication may manifest itself by both *muscarine-like* effects (miosis, bradycardia, salivation) and a *nicotine-like* effect (fasciculation of skeletal muscles). In animal experiments magnesium and calcium have afforded protection against the nicotine effect; small doses of physostigmine, administered before treatment, give added protection, but when they are administered after treatment the toxic symptoms are enhanced. Animal experiment indicates that D.F.P. is much less effective than prostigmin in antagonising curare.[5] *Investigations have been extended to man*, in whom it has been tried in myasthenia gravis, glaucoma, and postoperative paresis of the intestine. *effective ratio of intramuscular to oral* *about 1 to 4.* The administration of 2–3 mg. *muscularly decreases plasma and erythrocyte* *terase, and since the action is irreversible,* even *a single dose the plasma esterase* does not re *normal for several days or even weeks.* Large doses may produce gastro-intestinal sympt increased peristalsis, vomiting, diarrhœa—d *stimulation of the parasympathetic* system. myasthenia gravis D.F.P. has proved less than prostigmin; but COMROE and his ass suggest that, with its prolonged action, it useful as a supplement to prostigmin, dimi fatigue when the patient first awakes. GAD WILSON[7] found that 0·1–10·0 mg. intramus caused no immediate relief of weakness, diplopia, or dysphagia; but there was some im ment in patients given 0·5–2·0 mg. daily for months. Applied to normal eyes, D.F.P. has nounced and prolonged miotic effect, producin myopia and a decrease in intraocular tension; may be spasm of accommodation, visual blurrin ciliary pain. It is about five times more poten persistent than physostigmine; and it can ove the effects of atropine and homatropine on pup *ciliary muscle. In concentrations of 0·05 to* which are non-irritant, it usually lowers the intra tension of glaucomatous eyes even where piloc and physostigmine have failed.[8] It has no direct on the iris muscle. On the gut D.F.P. exerts a po stimulant action, with increase in the tone, and amplitude of contractions; this can be abo by atropine. In postoperative *paralytic ileus* said to be more effective than prostigmin or pos pituitary extract.[9] The drug appears to ha promising future both in therapeutics and fo light it may throw on the mechanism of neuromu transmission.

Our Hospitals

THE shortage of nurses has perhaps obscure *fact that we are also short of hospital buildings* between the two world wars Britain, unlik United States and the Scandinavian countries, u took no large programme of hospital constru In last week's Chadwick lecture Dr. C. T. MAIT a principal medical officer of the Ministry of H showed that these two shortages are closely rel *no less than half of the recently approved ho* rebuilding plans have been concerned with improvement or extension of nurses' homes.

MAITLAND suggested two means whereby the of these shortages may be lessened: (1) a full outpatient departments, and (2) careful classific according to their needs, of patients admitte treatment. The outpatient department, pro used, hastens investigation and spares hospital and he pleaded particularly for the preservation "*the tragedy of hospitalisation*" of children, whenever possible, should be treated at home. *commended the example of a hospital in Midd* where each year 11,000 inpatients are received

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1. McCombie, H., Saunders, B. C. *Nature, Lond.* 1946, 157, 287.
2. Adrian, E. D., Feldberg, W., Kilby, B. A. *Ibid*, 1946, 158, 625.
3. Hawkins, R., Mendel, B. 17th International Physiological Congress, Oxford, 1947.
4. Chennells, M., Wright, S. *Nature, Lond.* 1947, 160, 503.
5. Hunt, C. C. *J. Pharmacol.* 1947, 91, 77.
6. Comroe, J. H., Todd, J., Gammon, G. D., Leopold, I. H., G. B., Bodansky, O., Gilman, A. *Amer. J. med. Sci.* 212, 641.
7. Gaddum, J. H., Wilson, A. *Nature, Lond.* 1947, 159, 6
8. Comroe, J. H., Leopold, I. H. *Arch. Ophthal., N.Y.* 1946,
9. Quilliam, J. P., Quilliam, T. A. *Med. Pr.* 1947, 218, 37

)0 new cases are seen in the outpatient depart-
t; in another hospital only 7% of medical out-
nts and about 25% of surgical outpatients are
d to require admission. In the staffing of out-
nt departments MAITLAND believes that general
icians and general surgeons should be brought
he fore, though they should be able to call on
al knowledge or techniques. Science, he reasons,
be matched with humanism, and humanism
short shrift where there are many separate,
ly specialist clinics. Again on humanistic grounds,
emphatic about the maximum number of beds
e hospitals; in their design they should respect
nity of medicine by including a department in
of the major specialties; but lay, medical, and
ng personnel should not be asked to supervise a
tal with more than 500–750 beds, even though
er number may be administered with equal ease.
is a welcome plea, particularly if it takes
iatry within its compass. As for the special
itals, he pointed out that in large centres such as
lon these were founded at a time when surgeons
physicians in new branches, in peril of being over-
e by the main stream, withdrew to evolve their
ial techniques. The peril is now past; and, rightly
ending that continued detachment is harmful,
TLAND would bring them back into the community
he general hospital. He allows, however, there
be a case for the separation of maternity.

ith an eye to economy in skill he proposes that
e needing active treatment should be separated
others who require only maintenance. This
ept is in fact followed in some hospitals caring for
aged sick, notably the West Middlesex; but his
her proposal—that recovery wards should be run
ssociation with wards for the acutely ill—is more
l Such an arrangement would undoubtedly be
omical; but implying, as it would, the transfer of
ents from one ward to another, it cannot be said
romote the mental comfort of the patient that he
s to foster. This consideration is perhaps less
ortant with patients admitted for diagnosis if
r stay is likely to be short. We are all familiar
the patient who, simply because a particular
stigation demands his presence in hospital, takes
a bed which might otherwise be occupied by an
ely sick man or woman. To avoid this there is a
ng case for setting up a special investigation ward
lose geographical and administrative proximity to
outpatient department, where patients, until their
harge or admission to the hospital proper, would
e dormitory accommodation, with food provided,
a help-yourself plan, in a nearby dayroom.

AITLAND argues against vested interest in hos-
ls; despite their emotional appeal, "bigger and
er" hospitals should not be the prime objective
he new service. Pride of place, he thinks, should
rather to the public-health branch. Meanwhile
pitals, handicapped by shortages, will pass on a
y load to the local health authorities which are
onsible for the patient after his discharge. Here
attaches great weight to a close nexus between the
pital management committee and the local health
hority; and he casts the hospital almoner for the
of liaison officer. For the operation of the service
whole he pointed to JOHN STUART MILL's dictum
power at the periphery: wisdom at the centre."

Annotations

NEGOTIATION

As already explained, discussions between the medical profession and the Ministry of Health on the National Health Service Act have so far been conducted by subcommittees of the Negotiating Committee meeting officials of the Ministry. A meeting between the full Negotiating Committee and the Minister himself was arranged for Nov. 11 and 12; but this has now been postponed, at Mr. Bevan's request, until Dec. 2 and 3. The postponement will enable him to make a closer study of the document he received from the Negotiating Committee on Nov. 7, in which they present their observations on a number of disputed issues affecting general practice. Before members of the profession are asked to reach any decision about participation in the service, they will receive a larger document which will contain the committee's observations on all the subjects under discussion, and the Minister's replies to any criticism of his proposals.

PATIENTS AS SANATORIUM NURSES

EX-PATIENTS are now fairly often engaged as sanatorium nursing staff; and on another page Dr. Watt and Miss Sheehan describe a successful scheme of the kind at the King George V Sanatorium, Godalming. Elsewhere Dr. Kissen [1] has told of a less satisfactory experience at Bellefield Sanatorium, Lanark, where a process of continuous reablement of selected patients was attempted.

Five two-bed side-rooms of a ward (closed owing to lack of staff) were converted into three double bedrooms, a sitting-room, and a dressing-room, for six patient-nurses, each of whom was provided with a rest chair. Meals were taken in the main nurses' dining-room—Dr. Kissen does not say whether with the rest of the staff or separately. It was intended to transfer each batch of six patients to the nurses' home as each fresh group of six was recruited. At the start they were engaged for a 24-hour week with a 4-hour day, the duty periods being in the morning, afternoon, and evening of successive days; they were not asked to take night duty. Later it was found possible to increase the hours to 36 a week with a 6-hour day, sometimes broken by a long rest-period. The patients were paid at the rate of student nurses for the hours actually worked, and this very low rate of remuneration —for a 24-hour week they got 11*s*. 8*d*.—was one of the chief causes of failure; for most of the girls lived in Glasgow, a half-crown return journey away; and had they chosen to go home for convalescence instead of working they would have received the basic tuberculosis allowance of 25*s*. a week.

Nevertheless 11 girls took part in the scheme, including 2 from another sanatorium. Their lesions were inactive, and they were all free from symptoms and had been up all day and on graduated exercise for some time. Most of them spent a week or two at home before beginning work. They were warned thoroughly about the proper use of leisure, but only 4 seemed to take the warning to heart; most of them spent much time at entertainments in Lanark and Glasgow, and their long off-duty times—put to such improper use—roused the resentment of the permanent staff.

The patients were evidently not happy in the work, for Dr. Kissen reports many petty squabbles; and only 1 patient is still on the staff after some ten months' service. They were advised to stay a year, to enable the medical staff to assess their condition and working capacity, but 6 resigned after less than three months, 3 after less than four months, and 1 after five months. On the whole their physical health had improved, Dr. Kissen considers, despite a slight loss of weight after taking up work. The scheme was abandoned when the closed ward was reopened, and though there have since been requests by other patients to join the scheme, it can hardly have been said to have proved a success.

One or two reasons for the greater success at Godalming are immediately apparent. Only really fit staff are engaged, and they have to be able to do a full day's work; they are not segregated from the rest of the nurses but share the same mess-rooms and sitting-rooms. Their leisure is more controlled: they may attend dances, but tennis is forbidden, and they must be in by 10.30 P.M. unless they have the medical superintendent's permission to stay out later. Moreover, they are a much-valued section of the staff. It must be recognised, however, that the aim in the two schemes was rather different: Dr. Kissen set out with the deliberate intention of reabling convalescent patients, whereas Dr. Watt employs only patients who are thoroughly fit. Dr. Kissen's experiment has been useful in drawing attention to the special difficulties encountered when a reablement scheme is attempted in a sanatorium mainly staffed by full-time healthy nurses.

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[1] Kissen, D. M. *Tubercle, Lond.* 1947, 28, 185.

CASTRATION AND ŒSTROGEN IN PROSTATIC CANCER

NO-ONE now doubts that in prostatic cancer temporary relief can be obtained from either castration or the administration of œstrogen. Yet the rationale of these procedures remains in part unknown. Either of them, though in different ways, will check the supply of androgen on which the development, maintenance, and activity of the normal prostate depend: œstrogens will reduce the supply of pituitary gonadotrophin and so inhibit the capacity of the testicles to supply androgen, whereas castration will cut off the supply of androgen directly. And any condition in which the concentration of androgen in the blood is greatly diminished will be accompanied by ischæmia and atrophy of the prostate gland and other accessory male genital organs. It seems reasonable to assume that the consequent shrinkage of these organs would at once lower the tension in the affected parts and so alleviate pain, and that the local ischæmia would retard the growth of a tumour. An inquiring man, however, will wonder whether such a simple explanation covers the whole problem. He may ask if a malignant growth in the prostate is ever, apart from the blood-supply, to some degree dependent on androgen for its vigour. Cancer cells are usually regarded as uncontrolled by the tissues of the host; but this may not be a universal rule. Malignancy varies in degree, and it is conceivable that some cancer cells are not so entirely undifferentiated as to be irresponsive to the normal hormones.

Some clinicians regard the giving of œstrogen to patients with prostatic cancer as a more potent remedy than castration, though castration is the readier way to stop the main supply of androgen. If this view is correct, œstrogen must exert some beneficial effect which removal of the testicles does not afford. Possibly œstrogen curtails the output of androgen by the adrenals as well as by the testicles, whereas castration would not have this effect. Meanwhile it has to be remembered that no general anticarcinogenic property has been demonstrated in œstrogen, the reactions to which are mainly confined to those tissues which it regulates in health—namely, the organs concerned with reproduction. Elsewhere in this issue Dr. Ludford and Dr. Dmochowski report that stilbœstrol had no specific inhibitory effect on growth of the mouse tumours used in their experiments.

Œstrogens, however, possess the capacity of increasing the connective-tissue stroma, with an excessive deposition of collagen, in many organs of the body, including the prostate. This reaction has been recorded by numerous observers and has been discussed with abundant histological detail by Mosinger[1] in a comprehensive monograph based on the results of giving large doses of œstrogen weekly to guineapigs. The practical importance of this reaction needs further experiment in connexion with the treatment of cancer; for it has been thought on reasonable grounds that the speed of neoplasia may occasionally be restricted by the local d fibrous tissue—in fact, deposits of collagen to represent a definite, if ineffectual, curative Until this point has been quite elucidated, t siderations suggest that a combination of castrat the administration of œstrogen may be more b prostatic cancer than either remedy used alone.

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[1] Mosinger, M. Le Problème du Cancer, Paris, 1946.

MALARIA IN NORTHERN CLIMES

THE spread of malaria as an endemic disease is by temperature, the northern limit for benign te for quartan malaria in Europe being the summer of 60°F, and that for malignant tertian 70°F.[1] ture also governs the development of the sexual the plasmodium in the mosquito. This developm 10–14 days at a temperature of 77°F and 14–18 a somewhat lower temperature, and does not t at all if the temperature is permanently below Moreover, in temperate climates malaria tends peaks in spring and autumn. Swellengrebel Buck[3] showed that, in the Netherlands, the peak was due to infection which had been previous autumn and had remained latent winter. An even longer incubation has been proved by Hornberg's account[2] of the out tertian malaria in Finland, which lies north summer isotherm of 60°F—i.e., beyond the bo endemic malaria.

Finland had been almost entirely free from about twenty years when the infection was there during the late war by Finns who had been the Russians. By the end of the summer of isolated cases had been reported; there were in 1942, 262 in 1943, and 892 in 1944. These were all in soldiers. The civilian cases numbered 1941, 75 in 1942, 53 in 1943, and 17 in 1944; of these patients were probably demobilised After general demobilisation in 1945, however, was a great spread of malaria among civilians, the for 1945 being estimated as 1252 cases, excludin Hornberg investigated 856 of these cases. In spi the high susceptibility of children to malaria were no cases in children under 15 years of age, there were not many in youngsters of 15–20. seasonal incidence is illuminating. Between Febr and April, 1945, the mosquito-free period, there 142 cases, and the peak of incidence was in May cases) and June (352 cases), whereas in July and Au while mosquitoes were most abundant, the numb cases fell off rapidly. Hornberg says:

> "As 24–36 days must be assigned in Finland to development of a complete picture of disease in t mission of infection from man to man via the mos half the number of cases would have been infected al before the middle of April—i.e., before there were mosquitoes at all—providing the infection had occ in that year."

The seasonal incidence and the great preponderanc military cases show that most of the patients must been infected the previous year while in military ser elsewhere. Further, the geographical incidence in m cases was too disconnected for infection to have ar where the malaria developed; and in some districts summer temperature was too low to permit infec by mosquito bites that year. The view that infec came from hibernating mosquitoes is put out of c by the appearance of malaria in districts which been free the year before. A questionary sent to patients showed that all but 13 of the 596 who rep had been in military service the previous year in relian Isthmus, where there had then been much laria.

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[1] Christophers, S. R. British Encyclopædia of Medical Pra London, 1938, vol. VIII, p. 304.

[2] Hornberg, C. A. *Acta med. scand.* 1947, **127**, 342.

[3] Swellengrebel, N. H., De Buck, A. Malaria in the Net London, 1938; see also *Lancet*, 1938, ii, 891.

The possibility of an epidemic of benign tertian laria in England owing to the return of soldiers ated with mepacrine has already been discussed these columns.[4] In the Finnish cases the incubation-riod must have been 6–14 months, unless the cases re relapses. A long winter incubation in man is not ely to arise in cases of malaria developing in England, ere the temperature lies well within the thermal undaries of endemic malaria.

CARE OF THE AGED IN DENMARK

DENMARK was the first country to introduce the nciple of free provision for the old. In his address the International Conference of Physicians on Sept. 9 Johs. Frandsen noted that the Danish Old Age lief Act of 1891 differentiated clearly between support old age and help to the poor, though the extent of ef to the old was left to the discretion of local horities. In 1922, however, the last flavour of poor- was removed from the Act, and "old-age relief" ame the old-age pension. It is paid to men over and women over 60 whose income is below a prescribed el, provided they have a clean police record for the vious five years and have not lived lives offensive public morals; presumably those who fail in these pects are relieved in other ways. The amount of pension is a basic sum calculated on the cost of ing in the capital, the provincial towns, and the ntry districts. Thus a married couple receive about 5 a year in Copenhagen, £98 in provincial towns, and in country areas; this amounts to about 46% of average net income of an unskilled worker. The m varies with the cost of living, and there are various pplements—for example, a children's allowance for ose who are responsible for children under the age of , fuel and clothing supplements, and a personal pplement for those with special difficulties. Of enmark's 4 million inhabitants some 200,000 are at resent drawing the pension.

As in England, there are both voluntary and municipal omes for the old. The council homes are exclusively r pensioners, the pensions being paid to the homes ith the proviso that the old people are to live under nditions as good as they could buy with their pensions sewhere. Entrance to the homes is voluntary, and e old people usually take their own furniture in with hem; they can prepare meals in a common kitchen, nd suitable interests and occupations are provided. ost of the voluntary homes were founded before gislation for the old was introduced.

Though small properly equipped flats are the most itable homes for old people living alone, they are pensive to provide, and the Danish housing problem as acute as our own. There are, however, some locks of flats for old people, built by the local authorities efore the war. A woman inspector lives in each block help and look after the old people, and in many of he blocks there are assembly rooms for concerts and elebrations. In 1942 there was accommodation, in oluntary and municipal homes and in flats, for some 5,000 old-age pensioners throughout the country. In openhagen most of them are housed in flats; but it is stimated that 285 "places" per 1000 pensioners are eeded in Copenhagen; while in other towns the figure put at 250, and in rural areas at 200 per 1000.

Most of the homes have a sick-bay, and the largest f them has a hospital with a full-time medical officer. n other homes the old people can choose their own loctor, but if they have no preference they are attended y one appointed by the local authority.

"THEY ORDER THIS MATTER BETTER IN FRANCE"

THE tendency in France to elevate therapeutics into an art in its own right has led at times to a finical refinement ill suited to crowded evening surgeries. Perhaps we in this country have erred in a contrary sense in guiding our treatment by its apparent effect on the patient, without much theoretical consideration of the modus operandi of the remedy. In the case of penicillin the charge of pragmatism will not lie against us; but it is interesting to note the methods of our French colleagues in handling a drug of which our experience is somewhat longer than theirs.

A paper by Mollaret[1] on guiding principles in the use of antibiotics makes three major suggestions. The first is that, so far from decreasing as treatment proceeds, the dose should be maintained at its original high level; by this means he hopes to discourage the organism from becoming penicillin-resistant. (We doubt if, in this country, penicillin dosage is often arranged on a decreasing scale, since it is recognised by most users that a drug so rapidly excreted can be kept at optimum levels only by continuous or repeated dosage—in contrast to sulphonamide therapy, for example, where a large initial dose allows a high concentration to be built up which may be maintained by subsequent smaller doses.) His second suggestion is that the final dose should be double that administered previously, so that it shall give the coup-de-grâce to any organism that still resists. Since the concentration in the tissues is usually in excess of that required to deal with the organisms, the advantage of this procedure is questionable; but certainly nothing is lost by it beyond a few hundred thousand units of penicillin. Thirdly, and most ingeniously, he suggests that by giving penicillinase after the last dose of penicillin it may be possible to avoid creating a residue of drug-fast organisms at the end of treatment. This, however, seems to be a case of pursuing logic altogether too far. That strains of organisms exposed in vitro for many generations to sublethal concentrations of penicillin may become resistant to penicillin nobody doubts; but that this resistance will develop in the few hours while the last remnants of a therapeutic dose are being excreted from the body seems most unlikely. In fact resistance to penicillin seems to develop only rarely under therapeutic conditions, and may best be avoided by attention to Mollaret's first suggestion.

Though the last words on the administration of penicillin have yet to be said, we do not yet see reason to echo here the dictum of the Rev. L. Sterne.

DEATH ON THE ROAD

METHODS of reducing road accidents still need much study. Mr. J. S. Dean, in a recent book,[2] makes some interesting and meritorious suggestions for reducing these accidents. The installation of governors on vehicles subjected to a general speed-limit would doubtless be beneficial, though the manufacture of any mechanical device presents difficulties at the present moment. Footpaths beside all roads are also desirable, but the arrears of road maintenance which piled up during the war years will use up most of the money available for the improvement of highways for a considerable time to come. Mr. Dean notes that in 1937 private cars were involved in 33·2% of the total road accidents, public conveyances in 6·8%, and commercial vehicles in 14·3%; and he concludes that private cars have the worst accident record. This hardly tallies, however, with the car-mileages he gives for these different types of vehicles, which have the ratios of 14·40 : 3·04 : 7·18. Private cars seem in fact to have just about their share of road accidents having regard to the car-miles driven. There are, of course, more of them than of other types of vehicle on the road.

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[4] *Lancet*, 1945, ii, 49.

[1] Mollaret, P. *Bull. Soc. méd. Hôp. Paris*, 1947, 63, 643.

[2] Murder Most Foul. A study of the road deaths problem. London: Published for the Public Affairs News Service by George Allen & Unwin. 1947. Pp. 114. 3s. 6d.

Mr. Dean is an advocate of prosecution rather than persuasion of the offender, and there can be little doubt that the enforcement of discipline among all users of the road would reduce road accidents. It is understandable that the motoring associations and the motor industry, which depend for their existence on the good will of the motorist, should advocate persuasion rather than legislation ; but it is perhaps less easy to understand why the Royal Society for the Prevention of Accidents should support a similar policy. When, however, he advocates immediate institution of strong disciplinary measures against the erring driver, yet not against pedestrians who are at fault, Mr. Dean's attitude can hardly be called unbiased ; the fact that he is the chairman of the committee of the Pedestrians' Association may have influenced him to some extent. It is noteworthy that the Committee on Road Safety appointed by the Ministry of Transport in 1943 recommend in their final report[3] that the pedestrian should be treated as traffic, and therefore liable to prosecution on failure to obey traffic-signals—an amendment to the existing law which is long overdue.

In discussing the report at the annual conference of the Royal Society for the Prevention of Accidents, Mr. G. R. Strauss, recently parliamentary secretary to the Ministry, pointed out that there was a drop in the number of accidents in the second quarter of 1947 compared with the same quarter of 1939—a drop from 1560 killed and 58,722 injured in 1939 to 1174 killed and 43,154 injured in 1947. The number of vehicles licensed in the 1947 period was slightly higher. Commenting on this, the Pedestrians' Association[4] note that the improvement chiefly relates to adult users of the road. Child-pedestrian deaths fell less than 5% between 1937 and 1946, while adult deaths fell by nearly a quarter. There has been some improvement among school-children, who can be taught road drill, but 347 children under the age of five were killed in 1946, compared with 329 in 1937 ; and three has now become the most dangerous age for children instead of five or seven.

POTATOES

During the war the housewife's main preoccupation in the kitchen was with masking the monotony of the food she laid before her family. In the last two years her problem has changed : the release of shipping and the resumption of trade with other countries has brought back fish, fruit, and other foodstuffs which had not been seen for six or seven years ; but at the same time, mainly through the rationing first of bread and now of potatoes, the diet has tended to shrink in quantity. The housewife's concern is not so much that her dishes will not be palatable as that they may prove insufficient.

The Minister of Food, faced with the worst potato crop since 1931, has explained that with free purchase potatoes would disappear from the shops next spring. Accordingly he is restricting the normal consumer to 3 lb. a week and the expectant mother to $4^{1}/_{2}$ lb. a week. To offset this he is allowing one extra bread unit a week to children aged between five and eighteen years, and it is possible that for some of these the net result will actually be a gain in calories. For example, in one boarding-school, where the average age of boys is fourteen years, the 3-lb. ration will mean a reduction of only about $1^{1}/_{3}$ lb. (about 527 calories) on the former free consumption of $4^{1}/_{3}$ lb. Used for flour (5·3 oz.) the B.U. is capable of yielding 554 calories, and used for bread (7 oz.) it will yield 454 calories. For many adults however, and notably for heavy workers, the pensated restriction means a loss of both calories bulk ; and for all it means a loss of vitamin C, of potatoes are a principal source.

Those who have the money can turn to other tables, and will thus be sure of getting enough vitamin Those who are poorer may be less fortunate. The of those other vegetables, except that of carrots cooked beetroot, is uncontrolled ; and the cost, h high; may be expected now to rise still further, implies rationing by the purse. Apart from the bility of more controls, a question that needs im attention is whether the time has now come for general issue of ascorbic-acid tablets, as was p the Forces during the war.

A HAPPY BIRTHDAY

Some fifty of his grateful colleagues entertained R Arthur Young to dinner on his birthday on Nov. 6. C. E. Lakin, who presided, described Sir Robert one of the greatest of living physicians, "but best of a great friend." His teaching career at Middlesex H pital began as demonstrator in physiology and contin as pathologist. Finally, in the late war, he had retu to astonish students by showing them how the inte of the chest could be displayed by what they regar as the old-fashioned methods of inspection, palpati percussion, and auscultation. In his years at Middle and at the Brompton he had trained many great physici and even surgeons ; and all whom he had taught wa to express their thanks and good wishes. Mr. Vi Bonney spoke of early days in which Young, alread godsend to students, inculcated the method of learn —applying that logical sequence of ideas which more serviceable than the parrot memory. Thro all the following years he had gone from strength strength, earning the respect of everyone that had to d with him. If honours came late, this did not matt "because in the hearts of all of us he has been top do In his reply Sir Robert admitted to difficulties during time as warden of the medical college : indeed they h led him to join the Eccentrics Club so that a part of existence might be on normal lines. (Perhaps this w also the reason for his association with The Lancet, our principal medical adviser for many years, beginni as he said, when he "used to vet papers of doubt medical veracity, and correct proofs," under the edit ship of Thomas Wakley, jun.) At Middlesex, since the d 58 years and 1 month ago when he entered the sch (younger than is now allowed), he had seen such men Lowne, Powell, Kingston Fowler, Cayley, Couplan Pringle, Bland-Sutton, and Andrew Clark ; and as student in Vienna he had met Ghon. He had started h professional career with two ideas—to be on the staff the Brompton and on the staff of Middlesex—and was deeply thrilled, touched, and gratified to be ent tained on this occasion by a company containing many representatives of these two hospitals, which held in equal affection.

THE CHRISTMAS GIFTS

Though many generous contributions have be received, the Royal Medical Benevolent Fund is st far short of the sum needed to ensure that all its regul beneficiaries are remembered this Christmas. Sir Alfr Webb-Johnson, as president, appeals for further don tions to be sent as soon as possible to the R.M.B. (Christmas Gifts), 1, Balliol House, Manor Field London, S.W.15.

Mr. W. Rowley Bristow, consulting orthopæd surgeon to St. Thomas's Hospital and honorary co sulting orthopædic surgeon to the Army, died in Londo on Nov. 10 at the age of 64.

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[3] Published Oct. 6. H.M. Stationery Office. 2s. 6d.

[4] Quarterly News Letter, no. 58. October, 1947.

Special Articles

LOYMENT OF TUBERCULOUS STAFF IN A SANATORIUM*

JAMES WATT
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ICAL SUPERINTENDENT

MILLICENT SHEEHAN
S.R.N.
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ING GEORGE V SANATORIUM, GODALMING, SURREY

SCHEME was started at the King George V Sana- m in 1928 to employ as nurses and domestics culous women who had satisfactorily completed orium treatment elsewhere and needed a period of ilitation in healthy employment under skilled al supervision. Difficulties experienced in engaging eeping tuberculous domestics led after four years e scheme's being limited to nurses. During the uberculous medical and male domestic staff were ngaged.

was primarily a welfare scheme for the transition sanatorium treatment to normal employment, the d when relapse is most likely to occur. This period habilitation was normally limited to six months to it as many women as possible. Three women to be engaged for every two posts and, in compensa- o their employers, their pay for the first 3–6 months half the normal rate for the post but with full uments. As competition developed with other ona for these women, and as the shortage of its to the nursing profession increased, the scheme ged; after 1937 full pay was given from the time ining, and the idea of three women for two jobs dropped. Still later, as a result of the work of the cliffe Committee, these women were granted very the same rights to pay during sickness and ssion to the superannuation scheme as healthy bers of staff, though still classed as temporary Admission to the superannuation scheme imposes extra liability on employers, because in case of kdown in health pension cannot be claimed for less ten years' service, by which time the risk of relapse mes very small.

STANDARD OF HEALTH

e standard of medical fitness required of candidates high. Their lung disease had to be quiescent and rcle bacilli absent for several months from any um they might still have. If tubercle bacilli peared in their sputum, they were (except 5 persons hom tubercle bacilli were found once without other ence of activity) sent back to a sanatorium for further tment and written off the books. This policy was ned necessary for the protection of healthy members he staff, who were aware of it and reassured by it. healthy and the tuberculous members of staff shared same messrooms and sitting-rooms. We have had evidence of the transmission of infection by this ciation, and it has only been on two or three occasions t healthy staff or their parents have shown any dread nfection.

andidates had to be fit for a full day's work. Part- e workers require much more bed-room and other ommodation and supervision by senior staff than are c available. Though these standards of fitness were uired in most of the cases, a few women who, though had no tubercle bacilli in their sputum, did not form to them were accepted either on compassionate unds or because they had broken down in other hos- als of the same local authority. A risk to be guarded inst is that the sanatorium may be regarded as a mping ground for "crocks" from other hospitals. r that reason the sanatorium officers must have the right to accept or reject sub-standard candidates. As the years have passed, an increasing proportion of those joining under the scheme are trained or partly trained nurses who have broken down with tuberculosis in general hospitals to which it is inadvisable they should return. It is further very important that candidates should be seen personally before acceptance, both by the medical superintendent in regard to medical condition and by the matron for suitability on other grounds. Without this there are sure to be disappointments either for the candidate or for her employers.

CONDITIONS OF WORK

The care of the tuberculous staff here is the responsibility of the medical superintendent, who examines them every month with the matron present. A few who are very fit are examined only every second or third month. They are weighed monthly and have chest radiograms taken every 3–6 months according to the stability of their chest lesions. Sputum, if they should have any, is examined every month or immediately they report having sputum. Radioscopy of artificial-pneumothorax (A.P.) cases is done both by the experienced medical officer giving the refills and monthly by the medical superintendent. Except in the case of the very fat, the tuberculous staff receive each a total of $8^1/_2$ pints of milk a week. They are not allowed to play tennis, but may take part in dances and may stay out after 10.30 P.M. only with the permission of the medical superintendent.

The precautions taken to guard healthy staff from both their tuberculous colleagues and the patients include the wearing of overalls and masks in the handling of soiled linen but not at other times, such as during bed-making; insistence on careful washing of hands before going to meals; on gentleness in stripping beds and moving pillows; on no meals being taken in the wards; on routine disinfection by boiling of all crockery and cutlery used both by patients and staff; and on the usual damp dusting and sweeping. Special emphasis is laid on the risks of borrowing patients' books, accepting sweets or fruit from patients, moistening finger or pencil in the mouth, and allowing patients to talk over a nurse seated at a lower level. They are drilled in careful handling of sputum mugs and flasks, handkerchiefs and pockets, and infected dressings.

The tuberculous staff, having been drilled in all precautions during their own treatment, appreciate all the special points better than do the healthy staff. Their service therefore is in general more intelligent and more sympathetic, and they have a wider understanding of the psychology of the tuberculous patient. The type of nurse who appears to contract tuberculosis is so often the highly conscientious nurse who never spares herself in the interests of her patients.

Here perhaps it is appropriate to pay tribute to the work performed by these staff. We are fully aware of the debt of gratitude that we—and perhaps to a far greater extent the patients of this sanatorium—owe to them. We can with sincerity say we have never had to spur them on to play their part but rather to curb their energies. They have been of all grades up to the rank of assistant matron. All took their share of fire-watching and other activities special to war-time. Many of the student nurses have gone forward for general training with great success and early promotion. Quite a few have served with distinction and maintenance of health in the Services at home and abroad. Many of the post-graduate nurses have reached high rank in the nursing profession—three during the past two years having been appointed matrons of large hospitals.

Apart from any systematic scheme of employment, tuberculous persons tend to drift into sanatorium jobs, sometimes without disclosing a past history of

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Paper read to the Tuberculosis Association, April 19, 1947.

treatment, sometimes in ignorance that they have had any chest disease. During the 25 years since the sanatorium was opened, about 2200 persons have been taken on the staff. Of these, 4 were discovered who had concealed a previous history of tuberculosis, and 14 were discovered, mostly by radiography on joining, with preexisting tuberculosis of which they had been ignorant. Of these 18 so screened out, 9 were sent away for sanatorium or hospital treatment and 2 for observation without treatment. Others with previous tuberculosis may have been missed, especially before 1929, the year when it became the rule for all staff joining to have their chests radiographed.

RESULTS

Since 1928, when the policy was adopted of employing tuberculous staff, 203 more have been engaged up to March 8, 1947, and the fate of these persons is the main subject of this report. They are dealt with separately, as they were deliberately accepted as suitable cases for employment, though sometimes, as already indicated, under pressure of compassion or expediency.

Their average duration of service was 20·3 months, which gives an aggregate of 343 person-years. Their average age on joining was 25·5 years, and 28 of them were under 21 years of age. Their rank was as follows:

Student nurses	62
Staff nurses	51
Assistant nurses	36
Sisters	15
Domestic assistants	12
Porters..	12
Medical officers	10
Others	5

They were classified medically as follows:

Respiratory tuberculosis:

A	77, of which 8 were pleural only
B1	29
B2	88
Not classified ..	5

Other forms of tuberculosis:

Peritonitis	1
Chondritis	1
Adenitis	2

The medical quality of the material dealt with may also be judged from the forms of treatment they had had:

Artificial pneumothorax ..	84 cases, of which 9 had been terminated before they joined (2 were bilateral)
Phrenic evulsion	18
,, crush	9
Thoracoplasty	5
Extrapleural A.P.	3
Oleothorax	4
Plombage	1

Weight:

83 gained an average of 6 lb.
86 lost an average of $6^1/_4$ lb.
34 no change or not recorded.

Condition on leaving:

Quiescent	157
Much improved	2
Improved	2
Stationary	12
Worse	30

Fitness for work on leaving:

Full work	156
Light work	7
Unfit	40

Relapses.—Of the 203 persons 8 had minor chiefly pleural effusion in A.P. cases, ending in and resumption of work. In 30 there were major rel which led to their discharge from the service; 28 of were returned to sanatoria or hospital for further ment. Tubercle bacilli returned to the sputum in these cases.

Exactly half of the relapses occurred in the 12 1928–39, and the other half in the $7^1/_4$ war and p years from 1940 to March, 1947. The number at during the first period was 94, and during the the shorter, period was 109. The strain on all staff, even apart from conditions directly caused by war, has been greater during the second period to increasing shortage of staff, rationing of food, the more intensive character of treatment patients.

Deaths.—No complete follow-up has been but of the 203 persons 10 are believed to have tuberculosis, 1 of abdominal cancer, and 1 of pancreatitis. Of the group of 18, 2 are known to dead.

CONCLUSIONS

Taking into account the medical quality of the dealt with and what might be called the normal expe tion of relapse, especially during the first year completing sanatorium treatment, we judge that relapses among 203 tuberculous persons in an ave period of observation of over 20 months is consider less than would have occurred had these ex-pati gone to their homes or their ordinary employm We have no means of testing this by a control, tuberculosis officers working in a busy dispensary in a better position to pass judgment. Alternati other sanatoria with similar employment sche may be able to test their results against those descri today.

NEW CASES OF TUBERCULOSIS AMONG STAFF

A matter of very great importance but not stri relevant to the main part of this investigation is question of the incidence of tuberculosis among sa torium staff hitherto free from that disease. Since sanatorium opened in June, 1922, records have b kept of all sickness among staff; and, though it did become routine procedure to radiograph the ch of all joining till 1929, we think it unlikely that cases were missed while they remained here. Exclu medical, clerical, and male domestic staffs, none of wh developed tuberculosis, and for whom exact figures not at present available, 2009 persons joined the staying various periods. This number includes student nurses seconded here for an average period three months. The total period of exposure to was 2118 person-years or the equivalent of about persons on the average at any one time. In this pe of nearly 25 years, 14 members of staff have develo tuberculosis:

4 had a primary infection, all with a good prognosis.
4 had erythema nodosum alone.
3 had a pleurisy alone.
3 had frank pulmonary tuberculosis.

These 14 cases represent an incidence of less than 0· per annum of those at risk. If we remember that great majority of staff joining belong to the age-gro in which tuberculosis has the highest incidence, we cl that this result is extremely satisfactory; and, if ot sanatoria up and down the country can publ equally good figures, the fear of sanatorium nurs which is so often expressed should be complet dispelled.

NATIONAL INSURANCE AND THE SELF-EMPLOYED

MINISTER'S SPEECH

OCTORS will be interested in last week's speech by JAMES GRIFFITHS, Minister of National Insurance, hich he explained the self-employed man's rights responsibilities under the new National Insurance me. The scheme, which is to come into force next , is, he said, to be universal; but the conditions been varied to suit the different ways of life. There be three classes: class 1 comprises those employed r a contract of service, no matter how high their ies; class 2, those gainfully occupied on their account, including those who, while not employed r a contract of service, are employed under a contract ervices; and class 3, those who are not gainfully pied. For the three classes there are different ributions and benefits.

OBLIGATIONS UNDER THE ACT

lf-employed people who are not already insured under r the health, pensions, or unemployment schemes have to register early next year. They will complete m of application which will be available at post es, employment exchanges, and local offices of the stry of National Insurance. They will receive a ribution card which, when the scheme starts in , they will have to stamp each week. The weekly 2 contributions are 6s. 2*d*. for a man and 5s. 1*d*. a woman; but the Minister has powers to exempt payment those whose income does not exceed a year.

BENEFITS

return for his contributions the self-employed man sickness benefit, maternity benefit for his wife, fit for his widow if he dies, guardian's allowance his children if both parents die, retirement pension his old age, and death grant to help with funeral enses.

kness Benefit.—The Act provides that the self-employed shall get this benefit on the same terms as an employee. weekly rate is 26*s*. for himself, 16*s*. for his wife, and *d*. for his first child. A single woman gets 26*s*. a week, for a married woman who is herself insured the rate is

If the insured person has contributed for three years more the benefit continues, however long the illness, replaced by retirement pension; if contributions have paid for only six months the benefit lasts for a year.

aternity Benefit.—This is of two kinds: a lump sum and a weekly payment of £1 for four weeks. A woman is in gainful employment will be entitled to a special wance of 36*s*. a week for thirteen weeks.

etirement Pensions.—Pension age in the scheme is 65 a man and 60 for a woman; and the basic rate is 26*s*. ek for men and 16*s*. for women. The pension will not be at 65 to a man who continues at his ordinary work; when eventually he retires he will receive pension for self and his wife. Special provision has been made for es who are doing paid work outside their own home es. There is no means test; but if a man, after retiring, es up other work his retirement pension will be reduced 1*s*. for every 1*s*. he earns over 20*s*. a week.

f, on reaching pension age, a man carries on with his inary work, his pension when he does retire will be at a her rate: the amount is to be increased by 1*s*. a week every twenty-five contributions paid after pension age. wife's pension, paid on his insurance, is increased in same way for every twenty-five contributions he makes ile both are over pension age. If he is still in business at 70, n the retirement pension, with the increase, is paid without restriction. After age 70 for men and 65 for women re are no retirement conditions for payment of pension, there is no reduction on account of earnings.

he husband's pension insurance provides a pension for wife as well as for himself; the basic rate for her is 16*s*. ile she is under 60 this 16*s*. is paid as part of the husband's sion. After she reaches the age of 60 the pension is paid ependently to her, unless she is gainfully occupied and has retired from her regular employment.

If a man is over 65 or a woman over 60 years of age at the beginning of the scheme, he or she will not be in the scheme at all. A man over 55 or a woman over 50 will have to contribute for ten years before they are eligible for retirement pension: and if they do not wish to qualify for pension they may, on reaching pension age, decide to receive a refund of the retirement pension part of their contributions. Those who enter the scheme at earlier ages will have no reduction in pension.

Widows.—For each of the first thirteen weeks of widowhood 36*s*. is to be paid. Further pension depends on circumstances. With a child under school-leaving age, a widow will receive an allowance amounting to 33*s*. 6*d*. a week; but this sum is reduced by 1*s*. for every 1*s*. by which earnings exceed 30*s*. If she is not entitled to this benefit but is over 50 years of age when widowed and has been married at least ten years, she will get a pension of 26*s*. a week, similarly reduced if she is earning. At 60 these benefits are replaced by retirement pension. New entrants must contribute for three years before their widows will be entitled to these benefits.

Guardians' Allowance.—This allowance amounts to 12*s*. a week for each child where both parents have died; it is paid so long as one parent was insured.

Death Grant.—The amount is £20 if the deceased person was over the age of 18, with smaller amounts for younger people. It will not be paid for anyone who dies during the first year of the scheme, or for anyone who was over pension age when the scheme started, or for a child born before the start of the scheme who dies under the age of 10. For men over 55 or women over 50 at the beginning of the scheme the amount will be £10.

Regulations for the operation of the Act, said Mr. Griffiths, are being formulated by his Ministry with the help of the new National Insurance Advisory Committee.

HOSPITAL RECORDS

COURSE AT OXFORD

A COURSE-CONFERENCE * for hospital records officers held at Oxford in September provided, so far as is known, the first opportunity for those in Great Britain interested in hospital medical records to meet and exchange information. The meetings were attended by 100 people.

Miss ELSIE ROYLE, of the Christie Hospital, Manchester, dealing with the duties and responsibilities of records officers, said:

> "The qualifications of a records officer include all the virtues of tact and diplomacy, initiative and energy, good humour and patience, a progressive outlook, and the ability to organise and to teach. To these personal attributes, a knowledge of medical terminology, anatomy, and physiology, and an appreciation of statistical theory should be added, and last—and probably most important—experience in hospital and medical ethics."

Miss Royle's theme was that the medical profession needs trained help in the analysis and presentation of the results of its hospital work, and that if hospitals are to have good medical records and to use them intelligently someone must organise their preparation and analysis. This organisation is a task for which clinicians have insufficient time; and all the work connected with records should be concentrated in the hands of a trained officer.

Mr. H. COTTON, of the Nuffield Bureau of Health and Sickness Records, Oxford, described the purposes and uses of medical records in hospitals. He observed:

> "The main need today is for a broadly uniform system of medical record-keeping in British hospitals. If record-keeping is indeed a scientific task, the laws of the science should be discovered and generally applied. A uniform system would not mean regimentation. It would mean that certain well-defined principles would be followed by all hospitals, with adjustments best suited to individual requirements. It follows that if medical record-keeping

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* A digest of the proceedings, price 2*s*. 6*d*., may be had from Mr. H. Cotton, 10, Parks Road, Oxford.

is to have a broad plan, and if the best techniques are to be adopted by all concerned, there is a need for persons versed in the plan and skilled in the techniques. This means that the production and care of medical records should not be allotted haphazard to persons with no special aptitude, training, or experience. Trained medical records officers are essential members of modern hospital staffs."

Prof. J. A. **Ryle** indicated how the absence of records, or the inability to use them, can be a very real handicap to a clinician, whether a junior or senior member of the hospital staff, a consultant, or one holding a public appointment. He emphasised the advantage of teamwork, adding that today the almoner and the records officer are just as much a part of the medical team as the pathologist, the physiotherapist, and others. Follow-up, he said, should not be limited to a few special diseases; and any follow-up scheme depends for success on accurate and readily accessible records.

Dr. P. L. **McKinlay**, medical statistician to the Department of Health for Scotland, speaking on records as potential data for statistics, pointed out that hospital records will provide information only on intercurrent morbidity, and even in this respect their capacity must not be over-estimated. For instance, one result of modern drug therapy is that many diseases formerly treated in hospital are now being treated at home; moreover, hospitals select their cases to some extent. The sickness of the community as a whole, therefore, is not reflected in hospital figures. Other elements which have to be studied in assessing public health are predisposing factors, prognosis, and criteria of response to therapy. Hospital records can contribute some information regarding the first and second questions. Prognosis is more easily determined, from the community point of view, from data contributed by general practitioners.

The hospital administrator's view was put by Mr. **Stephen C. Merivale**, house governor of the Bristol Royal Hospital, who said that the position of the records officer is clearly that of a departmental head, responsible to a records committee consisting almost wholly of medical staff for all matters affecting records generally, and to the house governor for administrative matters affecting the hospital as a whole. The records officer should be responsible for the appointments system, the registration of all patients, the journeys of notes throughout the hospital, the allocation of typists and stenographers engaged on typing clinical notes and letters to outside practitioners, and the more generally recognised duties of filing, indexing, and analysing medical records. Where there is a medical library, it should be under the records officer. If the best use is to be made of a hospital's beds, a central waiting-list should be compiled by the records officer, who under the direction of the various clinicians would initiate the admission of patients to hospital.

The subjects dealt with in a syllabus covering eight days included medical nomenclatures and classifications, unit records, diagnostic indices, appointments systems for patients, medical terminology, microfilming, and medical and surgical dictation.

The following expressions of opinion by those attending the course-conference appeared to command general assent:

1. In all hospitals adequate documentation of medical service should be the rule.

2. In the larger hospitals at least, responsibility for the production and care of medical records should be assigned to a person (not necessarily medically qualified) skilled in this work.

3. The person to whom this work is assigned should be designated "medical records officer" and should have the status of a departmental head.

4. The medical records officer should be qualified by training and practical experience for the work undertaken; the subjects studied should include anatomy, physiology, medical terminology, organisation techniques, filing and indexing methods, photographic and microfilming methods, coding and classification, interdepartmental relations, interview technique, simple statistical methods, and, in some cases, punched-card methods.

5. There is a need for training facilities. One meeting this need initially would be by the establ training schools for medical records officers in one hospital and one provincial hospital; the hospitals should be first equipped with a records department of the efficient and up-to-date kind.

6. A basically uniform system of medical record should be devised, not to prescribe pro formas for doctors but to standardise methods of registration techniques for the preparation, storage, and indexing medical records.

REGIONAL OFFICERS

The following is a complete list of the senior trative medical officers who have been appointe the regional hospital boards:

North-east Metropolitan.—Dr. J. I. P. **Wilson**, intendent, Hackney Hospital, and a former E.M.S. hospital officer.

North-west Metropolitan.—Dr. H. M. C. **Macaulay**, for Middlesex.

South-east Metropolitan.—Brigadier H. L. **Glyn Hu** commandant of the R.A.M.C. depot, and inspector of Home Command.

South-west Metropolitan.—Dr. W. J. **Gill**, superinte Paddington Hospital, director, E.M.S.

Birmingham.—Dr. S. J. **Sourlock**, superintendent, Mary's (Roehampton) Hospital, Ministry of Pensions.

East Anglian.—Dr. J. B. **Ewen**, principal assistant m officer, hospitals section, Middlesex County Council.

Leeds.—Dr. A. B. **Williamson**, M.O.H., Portsmouth.

Liverpool.—Dr. T. **Lloyd Hughes**, M.O.H., Middlesbr

Manchester.—Dr. F. N. **Marshall**, a senior medical Ministry of Health.

Newcastle.—Dr. W. G. **Patterson**, M.O.H., Surrey.

Oxford.—Dr. G. C. **Williams**, M.O.H., Oxford.

Sheffield.—Dr. W. A. **Ramsay**, superintendent, Crun Hospital, Manchester.

South-western.—Dr. G. C. **Kelly**, a senior medical of the Ministry of Health.

Wales.—Dr. A. T. **Jones**, medical officer, Welsh Boa Health.

Parliament

QUESTION TIME

Cholera Vaccine for Egypt

Dr. S. **Segal** asked the Secretary of State for Fo Affairs how many thousands of doses of cholera vaccine been sent from this country to Egypt; and how had been distributed.—Mr. E. **Bevin** replied: Quantities represent about 1,400,000 doses. Of this total I am info that 155,000 c.cm. were supplied from stock at the tin the outbreak and were manufactured in or after June, The balance was manufactured in September and Octob this year. As regards distribution, 25,000 c.cm. have supplied by the War Office to the Egyptian Air Fo 220,000 c.cm. to General Headquarters, Middle East, an the British Embassy in Cairo for inoculating members o British Forces and British civilians. The balance of 1,800,000 c.cm. was supplied by British firms to the ord the Egyptian Government. Dr. **Segal**: While I thank Minister for the detailed reply, which I hope will do a g deal to remove some misconception in Egypt, may I a it would not be a humane action on the part of this cou if a team of expert epidemiologists could be sent out to Eg to assist that country in coping with this dreadful plag Mr. **Bevin**: I must say that with all the difficulties going in the world I am extremely short of this type of per but I will look into it.

Three in One

Dr. **Segal** asked the Minister of Defence when he w undertake to institute a unified medical organisation for three defence Services, in order to economise in man-p and medical supplies.—Mr. A. V. **Alexander** replied: I explained on July 9, it has not yet been established the institution of a unified medical service is to be pref e maximum degree of coördination between the existing ices. Dr. **Segal**: Has the mind of the Minister really not able to travel any further distance on this matter since 9? Mr. **Alexander**: I said that the matter was under mination, but if one is talking about either coördination tegration, one must first be satisfied that it is going to ove efficiency or reduce costs.

r **Henry Morris-Jones**: Is not the Minister aware medical officers of both the R.A.F. and the Army writing to the medical journals week by week to say they have virtually nothing to do, and, in those mstances, would he take steps to economise in man-power regard to such men? Mr. **Alexander**: I must say that ve seen one or two comments of that kind, but they do agree with the advice given by their senior professional sers. Dr. **Segal**: Would the Minister take steps to some coördination of the specialist services of the e defence Forces? Mr. **Alexander**: Certainly; that is dy being done.

Specialists in the Services

lonel M. **Stoddart-Scott** asked the Minister of Health hether, in view of H.M. Government's decision to reduce size of the Services, he would reduce the age-limit of ical and graded specialists, who were now liable to be cripted up to the age of 40, in view of the shortage of ialists in civil life, and (2) if, in view of the large reduction e size of the three Services, he would accelerate the release octors and dentists now serving with the Forces; and if would assure the House that there was a proportionate ction in the number of those who were now conscripted iew of the shortage of doctors and dentists in civilian tice.—Mr. **John Edwards** replied: The Minister is ised on the recruitment and release of doctors by the ical Priority Committee under the chairmanship of Haden Guest. I am awaiting their advice on the effect e recently announced reductions in the size of the Forces. regards dentists the position is to be examined by my rtment with representatives of the Services and the dental ession later this week.

Venereal Diseases in the Services

eplying to a question, Mr. E. **Shinwell** gave the following s per 1000 strength for the incidence of venereal disease ong British troops during the first two quarters of 1947:

—	1st quarter	2nd quarter
ted Kingdom	5·2	5·6
many	36·4	34·8
y	23·7	34·1
tria	36·8	34·7
ddle East *	6·7	4·7
East	32·6	27·7
an †	61·2	46·8

s a result of administrative changes. Middle East includes Malta and East Africa as from April 1, 1947. The sharp fall in the 2nd quarter is at least partly attributable to a reduction in the number of troops in Greece, where the rate of venereal disease was high.

e number of troops in Japan is small and sharp fluctuations are therefore to be expected.

Our Calories

Mr. H. R. **Spence** asked the Minister of Food what was the orie intake per head shown by his most recent dietary vey; and what was the figure for the nearest corresponding te last year.—Dr. E. **Summerskill** replied: The most recent vey results are for July, 1947, which show an average ake of 2287 calories for working-class households from d eaten at home. The figure for July, 1946, was 2282 lories.

Replying to a question, Dr. **Summerskill** stated that the timated national average calorie intake from all foods, tioned and unrationed, was 2870 per head per day. Consumption by individuals within this total differed widely. e added that the figures were obtained by dividing the nsumption of the country by the population.

Winter Rations in British Zone

Mr. R. W. **Sorensen** asked the Secretary of State for oreign Affairs what calorie scale was likely to operate in e British zone of Germany during the winter: and whether ere was an increase of available German-grown foodstuff er last year.—Mr. C. P. **Mayhew** replied: It is calculated that the ration in the Combined zone can be maintained throughout the winter at its present level of 1430 calories per day for the normal consumer. Owing to last winter's severe weather followed by the summer drought supplies of German-grown foodstuffs in the Combined zone will be less than last year. Mr. **Sorensen**: Can we take it that the ration of 1400-odd calories will be honoured? Mr. **Mayhew**: Yes. At least I can say that the stock position, so far as bread grains are concerned, is very much better than last year. Mr. R. R. **Stokes**: Will the Minister confirm that there is not the slightest chance of doing this unless the imports of food during the October and November months reach 814,000 tons and during December 700,000, and that there is not the slightest possibility of those figures being achieved? Mr. **Mayhew**: I think that is over-pessimistic, but I would not like to challenge the figures without notice.

Help for the Children

Mr. **Sorensen** asked the Secretary of State for Foreign Affairs what was the position respecting the British contribution to the Children's Emergency Fund of the United Nations; and whether our contribution was financial or in kind.—Mr. **Mayhew**: H.M. Government regret that in present economic conditions they cannot make a contribution to the International Children's Emergency Fund either in money or in kind. It is hoped, however, that the fund will benefit from voluntary contributions raised in this country under the United Nations Appeal for Children which H.M. Government have agreed to facilitate. Mr. **Sorensen**: Is it not correct that a promise was made that contributions would be made to this fund, and in that case, is not the fund likely to be embarrassed if promises are not honoured? Mr. Mayhew: No. I do not think we are going back on former promises. I should emphasise that it is the Government's contribution that is at stake and not the voluntary one. Mr. D. L. **Lipson**: If it is possible for private individuals to send money to this fund, why is it not possible for the British Government to do so? Mr. **Mayhew**: There is a limited supply of goods and services which can be supplied overseas. It is better for this to be covered by voluntary contributions rather than Government contributions.

Accommodation in Mental Hospitals

Mr. **Sorensen** asked the Minister of Health to what extent overcrowding of patients existed in public mental hospitals; what was the present shortage of staff and closing of beds compared with a year ago.—Mr. A. **Bevan** replied: In January patients exceeded the available recognised accommodation by some 16,600 out of 112,000, and 3000 beds were out of use through staff shortage. Comparisons with other years are useless, as accommodation standards were revised in 1946.

Use of Cars by Doctors

Mr. L. **Hutchinson** asked the Minister of Fuel and Power if he would allow medical practitioners, with the limited amount of time at their disposal, and who had to be on call all day and every night, to use their cars for all purposes within a radius of ten miles of their consulting-rooms, in order to permit them some measure of relaxation and yet remain within speedy recall. Mr. H. **Gaitskell**: This matter on which I have received certain representations from the British Medical Association is under consideration.

Deaf-aid Prototypes

Mr. F. J. **Erroll** asked the Lord President of the Council how many prototypes of the two-piece deaf-aid now being manufactured for free supply to the deaf were produced; how many were tried out on deaf persons, and for what periods of time; and if these persons were given an opportunity of comparing the Government deaf-aid with the best types of deaf-aid currently available.—Mr. H. **Morrison** replied: For the final tests, four working models were made of the hearing-aid designed by the electro-acoustics committee of the Medical Research Council. These models were tested at clinics in London and Manchester on 27 persons with various degrees of deafness and well practised in the use of aids. The individual tests of the aid lasted about three hours. Comparison was made in each case with the patient's own previously prescribed aid, and also with a highly recommended American instrument. Twenty of the patients heard best with the new aid, and three others equally well. All the subjects commented on the new aid's exceptionally good reproduction of speech and preferred it on that account.

In England Now

A Running Commentary by Peripatetic Correspondents

"Is this your medical electric brain?" I asked. "Yes," said the Great Inventor, "it is designed to perform systematically and mechanically what doctors have previously managed by a mixture of astuteness and luck—to notice that one thing varies significantly with another. For example, there has probably been a significant relationship between maternal rubella and congenital deafness for centuries, but it was not till the last few years that anyone noticed it.

"On all these cards I have marked (with the punched-hole system) everything that could possibly influence health—sex, age, habits, hobbies, diet, and so forth. The machine goes steadily through the cards, and whenever it finds that one factor is accompanied by another in a significant proportion of cases it rings a bell and displays the two key numbers and the degree to which they are related. I thought I was going to make hundreds of important discoveries and also be able to stop thinking, which I have always found a strain."

"Wasn't it enormously exciting when the first result came through?" I asked. "It was," he agreed. "I shall never forget the thrill when I looked up the two key numbers and learnt that erythroblastosis fœtalis was four hundred times rarer than the average in the offspring of opium-smokers. I was about to ring up all the big maternity hospitals and suggest that they ordered some opium pipes straight away when I remembered that 99% of Chinese are rhesus-positive and that most opium-smokers are Chinese; hence this remarkable relationship. Since then I have been told hundreds of things by the machine, but many are a bit obvious (such as that carcinoma of the prostate is more common in the male), some are already known (like infective endocarditis being related to tooth extraction), and the rest are largely cryptic, like the opium-smoking sample. Most of these puzzles have turned out to be social medicine in disguise. For example, pulmonary tuberculosis is five times commoner in those without telephones merely means that a small income makes you more likely to get tuberculosis and less likely to get a telephone. The last result that came in is that rheumatic fever is three times commoner in those who sucked dummies in babyhood. You might think this revealed an important relationship between chronic rubber poisoning and an allergic response to streptococcal infections, but I'm not caught that way now and I'm pretty certain it's just that both rheumatic infections and dummy-sucking are commoner among the poor.

"Altogether," he ended with a sigh, "the machine has been rather useless so far and I fear I shall have to think after all if I want to discover anything." "On the contrary," I told him, "I consider you should send your results to THE LANCET forthwith. You have shown that if whenever A occurs B almost invariably happens too, this in no way proves that A causes B. If doctors and research-workers all realised this, the amount of nonsense published would be reduced by at least root sigma chi squared, and the paper shortage would be no more."

* * *

Last week, with cholera still in the news, came the coincidence of a gift of a book from my great-aunt whose uncle was a local pharmacist. Her uncle's book had a lock on the covers. I opened it carefully and out fluttered a four-page pamphlet headed: ANTI-CHOLERA TINCTURE: *Prepared only and sold by D. F. Cooke at the Medical Hall, 18, High Street, Whitechapel, London.* A delicately printed text followed:

> "The ingredients of which this medicine is composed having been eminently useful in India, in cases of Asiatic Cholera, a gentleman was induced to recommend it in this country, on the breaking out of that dreadful disease, and was astonished and pleased to witness the numerous instances in which it proved successful."

After a long discourse, including the assertion of never-failing cure in the English cholera and ending on a truly dramatic note that left today's advertisements cold, there came the customary list of testimonials from Merchants, Skippers, Gentlemen, and an
For instance:

> "Dear Sir, You must please let me have three more bottles of your Anti-Cholera Tincture. . . . demand for it this summer . . . has been so great could have sold almost any quantity. . . . A lad of was taken so bad a short time back with an at Cholera that he was drawn double with the gave him a dose of the Tincture, it relieved him and before the time to repeat it he appeared nearly I only had occasion to give him two doses. I am subject to violent attacks of bowel complaint, but dose always sets me to rights. You are quite to make what use you like of this. I remain, yo John Dickinson, Sen. Master of the *Zephyr.* Lincolnshire."

Another, dated Sept. 24, 1846, read:

> "Sir, I am very glad to have this opportunity of my testimony in favour of your Anti-Cholera not to say of its good in every instance of Spasm and Complaints; . . . When I was at St. Petersburg, I could disposed of a large quantity in a few hours, as, the bad state of the water there, the Bowel Complai very bad. . . . I expect to leave Hull shortly for A so you will not omit to send me a good supply. I yours respectfully, Thomas Popplewell."

In the book the pharmacist had written, in hi formed script, many formulæ for Liquid Horse B Cough Balls, Pick-me-up, Curious Essence, and so He had written his own index, so I looked up the C Tincture. Reduced to a four-ounce size it was:

℞

Gum. camphor. ..	..	dr. ii
Ol. menth. pip. ..	..	oz. ss
Tinct. opii ..	..	oz. i
Sp. vini rect. ..	ad	oz. iv

(Put into half-ounce bottles)

Not so mysterious after all! There is no indica dosage, but the text mentions "a few drops" first dose. It was sold in bottles at 1*s.* 1½*d.* and each, duty included.

* * *

Women doctors, it seems, have rarely been encou in this part of Canada before. The resistance uninoculated community is low. One of our first p refused any kind of anæsthetic while Alison put fo stitches in his arm. Astonishment at her seen render him slightly numb. They parted with n congratulations and the end-results were very factory. Things have not always gone so sm in the surgery since then. One day I was interv a patient while Alison scrubbed up. When she en ready for action the much impressed French-Ca seized her hand and kissed it fervently. You co explain that that sort of thing simply holds things u

* * *

Speaking of tattoos, among the seafarers (not, I Merchant Navy personnel) who pass in and out door the most striking example I have seen was ad the epigastrium of a wiry A.B. back from a tr South America. In conversation before my exa tion began, as often happens nowadays, the quest grub cropped up. "It's all right down there," he "Not like this hæmorrhagic country, where a man get a bellyful." I made some non-committal reply asked him to do the usual—down with the trouser up with the shirt. He obliged with alacrity an played, neatly printed across the appropriate spac single word EMPTY.

Then there was the young fireman who was c reluctant to display his chest. After a little persu however, his shirt came off. Written in blue ove nipple was WATER, over the other MILK. I asked wh this was his own idea, or the suggestion of some practitioner of the art. "Neither," he answered, an attempt at a rueful grin, "I got very drunk, an mates had it done." What worried him was not permanent reminder of a fall from grace, but the exp tion he would have to make to his betrothed after fast-approaching wedding.

Letters to the Editor

SOCIAL MEDICINE

Sir,—I have been interested to read the recent corre- ndence, initiated by Dr. Beryl Harding, which has peared in your columns on the subject of social workers. Hospitaller of the Order of St. John of Jerusalem I uld like to draw attention to the work which has been ne, for many years, in this field by members of the John Ambulance Brigade—more particularly by women of the nursing divisions.

In a letter to the *Times* of Oct. 24, Miss M. E. Johnston, retary of the public-health section of the Royal College Nursing, mentions the following fields in which the vice of voluntary workers would be of value : “ Atten- nce upon doctors at immunisation clinics. dentists dental clinics, the weighing of children, and the raction and filing of record cards.” These and many er services have been fulfilled by members of the gade. They have also helped in following up cases, ncipally ex-Service patients for the Ministry of nsions ; and in order to acquaint those concerned with ir readiness to extend this assistance the brigade ued a leaflet to all hospital matrons and almoners, ne two years ago, indicating the types of duties they re willing to undertake.

Furthermore the brigade has a nursing aid service, nned in conjunction with the Queen's Institute of trict Nursing, and available to any district nurse hing to avail herself of it. This provides many oppor- nities of contact with sick members of the community d of putting those in need of treatment, or advice, in ch with the proper authorities.

It is difficult to foresee the exact working of the new lth services ; but, as a voluntary organisation, the gade welcomes any indication from public or profes- nal bodies that their services are acceptable. Under new Act voluntary organisations concerned with bulance services have been asked to act as the agents local authorities, and to assume increased responsi- lities. Official indication that such coöperation will be eptable in other spheres would do much to draw sh recruits to the ranks of the brigade and encourage se who are already endeavouring to live up to the tto of the Order—“ *Pro utilitate hominum.*”

t John's Gate, Clerkenwell,
London, E.C.1.

ALFRED WEBB-JOHNSON
Hospitaller.

PRESENT STATUS OF DISC SURGERY

Sir,—I should like to comment on your leading article Nov. 1, concerning fusion of the spine after inter- rtebral-disc operations.

Many successful lumbosacral fusions, using a simple bee technique, have been done in the past for low ckache due to lumbosacral arthritis. These patients esent with stiffness of the lower lumbar spine, and diologically show a diminished L5-S1 disc space with arginal sclerosis and often peripheral osteophytes. is condition can now be recognised as an adaptive ange of the joint surfaces in response to the degenera- on and resulting mechanical inadequacy of the inter- ning disc. Nature has, in fact, compensated by the rmation of a fibrous ankylosis which is, in some cases, perfect and painful.

If we now consider bone grafting in general, it must be reed that success is more constantly achieved with the ired than the single bones of the limbs, and this we cribe to the splinting action of the intact partner bone. pplying this idea to extra-articular arthrodesis of the p, we can explain why any variety of graft spanning e joint usually consolidates successfully when applied the fibrous ankylosis of the healed tuberculous hip, d often fails alone with a relatively mobile joint, as in steo-arthritis. The less movement there is before opera- on, the less strain there will be on the graft and thus e greater the chance of successful consolidation.

This conception may explain the varied experiences ith spinal fusion after removal of the intervertebral sc. Abnormal mobility of the lumbosacral junction, s a result of the degeneration of the disc, can usually be emonstrated at these operations. This will allow the great forces present at this level, as Falconer states, to hinder or prevent successful fusion by graft. If this argument is correct no modification of technique would materially improve the results.

It would seem, therefore, that the aim should be to hasten the natural adaptive changes at this joint and remove the whole disc as thoroughly as possible, as advocated by Falconer and Dandy. A fibrous ankylosis between the bodies of the vertebræ will develop, and will in many cases be adequate and painless. Other patients may complain of persistent backache and these will be similar to the type of case described at first in this letter. Here mobility of the junction has markedly decreased as gradual approximation and adaptation of the vertebræ have occurred. Fusion can now be done with the knowledge that the anterior ankylosis, although perhaps incomplete, will mechanically protect the posterior graft from undue strain.

As a parallel example, Guri[1] has stated recently that in tuberculosis of the spine fusion fails to prevent mechanical collapse of the vertebræ. but when this has occurred the healed case with a painful fibrous ankylosis can be grafted quite successfully.

I suggest, therefore, on theoretical grounds that primary posterior fusion of the spine by graft after removal of an intervertebral disc is a potentially unsound mechanical procedure, and that alterations of technique can never endow it with universal success. Efforts at achieving anterior vertebral ankylosis, either fibrous or bony, should receive attention. If this fails, late posterior fusion should be done.

David Lewis Northern Hospital.
Liverpool.

G. V. OSBORNE.

MENTAL HEALTH AND WORLD CITIZENSHIP

Sir,—Some of your readers will be familiar with this title, which is the general theme selected for the International Conference on Mental Hygiene due to assemble in London in August, 1948, as part of a rather larger Congress on Mental Health. This theme has been chosen deliberately in view of the present state of world affairs, in the belief that many of us in medicine—not only in psychiatry—along with our colleagues the psychologists, sociologists, educationalists, and others, have an opportunity of learning to apply some of our understanding of individuals to the problems of group attitudes and international tensions. No doubt psychiatrists should be able to provide the central focus for much of the thinking that is necessary, but they certainly cannot do it alone.

This general theme of Mental Health and World Citizenship has been broken down in a tentative way into various subjects for the different days of the congress: World Citizenship and Good Group Relations ; The Individual and Society ; Family Problems and Psychological Disturbance ; Industrial Relations ; Planning and Training for Mental Health. There are in London discussion groups or preparatory commissions composed of men and women from various allied professions, working each of them on one of these days' topics. In some 14 or 15 other countries there are already groups—in some cases, as in the United States, a great many—working on exactly the same topics. Their material as they produce it will be sent in to the central commissions in London, who hope to put it together and send out a monthly summary of all these various points of view to the other groups throughout the world.

This plan of preparatory action has been made because international conferences are often somewhat sterile, and we hope that in this case we shall be able to get a good deal of the work of the congress accomplished before the meeting next August. At that meeting we actually want to exchange ideas and bring each other up to date in these matters. We hope that out of the work of these various preparatory commissions, which are of course on a national basis, and from the work of a residential International Group which we hope will meet before and after the conference, we shall be able to clarify many of the points of agreement and disagreement. It should be possible to delineate many of the subjects which demand continuing research and inquiry in this medico-sociological field ; and we hope also to be able to arrive at

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1. Guri, J. P. *J. Bone Jt Surg.* 1947, 29, 136.

some points of agreement, however simple these may be, which could be of assistance to those two important functional organisations of the United Nations, the World Health Organisation and UNESCO, in the tasks to which their constitutions have committed them.

In this country there are a number of groups being planned, but there are not yet so many as there might be. As chairman of the organising committee of the congress, I am writing now in the belief that many of your readers will feel that this provides them with an opportunity for getting together with colleagues from their own and other disciplines to try to study these topics and see what contribution can be made towards the solution of some of these major problems.

Usually when one talks in any gathering about the general purposes of the congress, about our intention to experiment in presenting group opinions rather than individual communications at the meetings, and about our desire to adventure out of our normal field of work into this wider region, one meets with general approval. It is, however, far from easy in these busy days to get men and women to settle down to serious discussion and to formulate their ideas on paper for the benefit of other people: but this is what we want. Certainly in every academic centre in this country there should be sufficient people with concern for the sanity and balance of society to provide separate discussion groups for each of the five topics; and equally, there are many more isolated areas where perhaps the inter-professional nature of the group might be more limited but yet there are people who could get together and produce much that would be of real value.

Careful studies of much more limited subjects coming within the general field of interest of the main topics would also be welcomed. It is hoped that it may be possible to publish, fully or in summarised form in the documents of the congress, such of them as are specially useful.

I hope that this letter may be taken as an invitation of a somewhat urgent kind to those who feel a concern about these matters to do something, and to get in touch with Professor Flugel (the chairman of the programme committee) or with the programme secretary at the office of the International Congress on Mental Health, 19, Manchester Street, London, W.1.

London, W.1. J. R. REES.

TREATMENT OF BOILS

SIR,—With reference to Dr. Foot's letter in your issue of Nov. 1, I should like to suggest that a more reasonable approach to the problem would be on the lines indicated by Hobbs, Carruthers, and Gough in their recent article in THE LANCET (Oct. 18) on the treatment of sycosis barbæ.

It is now established that *Staph. pyogenes* is almost unique amongst pathogenic bacteria in its ability to live on the intact skin, specially in such regions as the anterior nares, eyes, and external auditory meatus. When a boil develops, the surrounding skin becomes infected with cocci, which incidentally are not affected by the use of systemic penicillin. It is natural for the fingers to investigate such a lesion, and they may readily carry the infection to other parts of the body, including the nose, where the cocci may persist for long periods.[1] In cases of recurrent boils some such site for the carriage of infection can almost always be found, and, in so far as I have been able to compare such strains with those from an actual lesion, they have usually appeared to be identical, and therefore equally virulent.

Treatment based on these considerations aims at the elimination of all pathogenic cocci from the surface of the body. With a first boil, the patient should be warned against contaminating his fingers, and the area round the lesion should be treated with penicillin cream and a dry or tulle-gras covering. The use of systemic penicillin will usually obviate the need for any form of wet dressing. If the local treatment is continued for a few days after complete healing, there should be little risk of further trouble unless the nose has been infected. In the chronic case, fresh lesions are treated on the same lines and the site of carriage is found by culture from wet swabs of nose, eyes, &c., which are best taken in the laboratory. Penicillin cream used to disinfect the nose, but if not successful fortnight should be replaced by some mild ointment to avoid the development of resistance cocci.

I have to admit that I have no experience of with manganese. But I should like to point out Dr. Foot makes no mention of the local treatment he is accustomed to use in furunculosis and which have been more effective than he thinks.

London Hospital. F. C. O. VAL

MEDICAL FILMS

SIR,—My committee would like your help in some comments on the recent Ministry of Health *Poliomyelitis 1947*.

First, we welcome the film as being successful aims of conveying information and arousing and so helping doctors to deal with the epidemic as an example of what the Ministry should initiate delay—a series of films, "Recent Advances for Practitioners." Such a series could be compared field of film with your leading articles or annot The great interest shown and the lively throughout the country at showings of *Polion* means that a series like this would evidently great welcome.

Secondly, we note that this film does not be name or names of the medical advisers responsib the information given. It is the policy of this to recommend that all scientific films should bea name of the technical adviser. This principle is ad in the publication of various papers issued by Go ment departments. May we ask you to lend your su to establishing it in the field of medical films?

Association of Scientific Workers,
15, Half Moon Street,
London, W.1.

J. D. CHAMB
Honorary Secre
Film Committ

RENAL CIRCULATION

SIR,—May I be allowed to correct a factual and remove an ambiguity, which is contained in report (Nov. 1) of the meeting of the section of mental medicine of the Royal Society of Medici Oct. 21? Both are contained in the statement attri to me. The correct statement is as follows:

> "There is considerable evidence that the gross h rhages which occur in the portal tracts, and are the lesion in dietetic massive necrosis of the liver, are swelling of the parenchymal cells impeding the lobular circulation and so damming back the blood portal tracts. The same dietetic measures when a to very young rats of 40–50 g. weight, produce no the necrosis in the liver but a hæmorrhagic necrosis cortex of the kidney. This is particularly so if the deficient in choline, and Dr. Baxter, working in Pr Best's laboratory in Toronto, has evidence that the c hæmorrhagic lesions in this condition are a seco phenomenon, secondary to circulatory disturbance quent on the gross swelling of the parenchymal cells. relevance of these observations to the discussion o renal circulation is that in those experiments we h type of cortical necrosis in which the circulatory impa is the result, rather than the cause, of the lesion."

University College Hospital,
London, W.C.1.

H. P. HIMSWOR

DIABETIC NEUROPATHY

SIR,—The annotation on Oct. 25 made no menti Charcot's joints. In the October issue of *Abstra World Medicine* (p. 403) is a report on 2 cases, bo males. The publication of these 2 cases and the ab of all mention of the condition from your more prehensive survey tempts me to report a case now my care in hospital.

My patient is an unmarried woman, a school teacher has been a mild diabetic for many years. Until she c hospital for the investigation of diarrhœa no neuro symptoms had been noticed. Some minor mental sym have appeared since she has been in hospital, with fe suggestive of myxœdema; but these have not respond thyroid therapy. The swelling and joint destructi ircot's disease appeared very insidiously in a leg already dlen as a result of venous thrombosis. There was very ht pain or vague aching in the left knee, but destruction hin the joint progressed rapidly until in a few weeks the e was completely disorganised. The nature of the lesion s confirmed by X-ray examination. When looked for, er evidences of neuritis were found: muscle tenderness, of tendon reflexes, and loss of vibration sense. Loss of aneous sensibility is not pronounced, and the limbs are of trophic ulceration. The Wassermann reaction is ative, and there are no signs of tabes, general paralysis, syringomyelia. Balancing of the diabetic condition and ministration of vitamin B_1 have done nothing to arrest the id advance of joint destruction.

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[1] Miles, A. A., Williams, R. E. O., Clayton-Cooper, B. *J. Path. Bact.* 1944, 56, 513.

have not succeeded in finding other reports of cases this. I have not previously seen Charcot's disease h diabetes and would be interested to know if the ociation is as uncommon as I believe it to be.

ymouth. T. H. G. SHORE.

MASS RADIOGRAPHY IN FACTORIES

IR,—May I correct a false impression which may e been caused by a statement in your report (Nov. 1, 676) of the mass-radiography service started by the d Motor Company? According to the report, this 'said to be the first installed by a factory." This n had a mass-radiography unit installed in its surgery Sept. 12, 1941, and it has been fully functioning ever ce.

J. V. MANNING
kington Brothers Ltd., St. Helens, Lancs. Medical Officer.

AMŒBIASIS IN CEYLON

IR,—In his article (Oct. 25) Dr. Parkinson makes two ements that particularly call for comment.

iscussing the efficacy of sulphonamides in the treatnt of bacillary dysentery he says that "it has become custom in many hospitals overseas to use these gs as a diagnostic test in cases of dysentery. . . ." asten to point out that this practice, which is efensible in the presence of laboratory facilities, was ainly not the custom in R.A.M.C. hospitals in the ldle East, where a great deal of bacillary dysentery s seen and where there was no dearth of amœbic entery. It was early appreciated that not all cases bacillary dysentery responded to sulphonamides; did these refractory cases respond to anti-amœbic atment. They could therefore not be considered issed amœbics."

r. Parkinson has rightly emphasised, as have others ore him, the importance of adequate treatment for te amœbiasis before it has had the chance to become psing; but a false and very dangerous sense of urity will be engendered if the follow-up is too short. his 42 cases, 15 were reviewed after an interval of two four months, with no evidence of relapse on sigmoidopic inspection and examination of three stools. No ntion is made of whether the stools were fluid and ained after purgation. I consider this important many an apparent cure has broken down with a little gation. I wonder what the stools of the 4 cases t had had further diarrhœa would have revealed if mined during the periods of diarrhœa.

r. Parkinson writes that "the results, both immediate l remote, of this treatment have been impressive. . . ." ely the immediate results are no better than those ally obtained with many different schemes of treatnt relying on combinations of emetine, carbarsone, l emetine bismuth iodide without sulphonamide. ere is no evidence that the addition of sulphonamide the standard "combined" forms of treatment for te amœbiasis, as opposed to chronic relapsing œbiasis, offers any immediate advantage. Remote ults are not given by Dr. Parkinson; two to four nths cannot be considered remote in a condition at is well known for its late relapses. My disagreent with Dr. Parkinson is not that he has neglected follow up his cases for a long period—that was probably possible under Service conditions—but that on the sis of a follow-up inadequate both in method and ration he has recommended a line of treatment.

It is my practice to readmit patients for purgation and amination of six fresh liquid stools, and for sigmoidoscopy with scraping of any suspicious areas, at the end of six weeks, three months, six months, and one year. This I believe to be justified by the importance of prompt treatment for relapses; it is equally important for the chance it offers of appraising the form of treatment.

I would like to end with a special plea for protracted and thorough follow-up, without which our knowledge of therapy must remain incomplete.

Chase Farm Hospital,
Enfield, Middx.
G. RIDDELL ROYSTON.

SEPTIC FINGER

SIR,—Your leading article on Oct. 25, and the three papers published in that issue, raise many important points. So often is a new form of treatment (like penicillin) hailed and used as a panacea, that two of your statements should be plastered up all over the land: "Penicillin is not a substitute for properly planned surgery"; and "No kind of chemotherapy can supplant the evacuation of pus."

It is most gratifying to see that surgeons and others dealing with infected fingers are at last beginning to realise the importance of the relief of tension at the outset of treatment. In my opinion, the dangerous increase of tension associated with these infections is probably responsible for more damage than the infection itself. I feel that the statement about pulp infections applies equally well to the whole hand: "Once tension has been relieved by suitable incisions . . . only meddling will prevent healing in a reasonable time." Might I add to this—provided proper attention is paid to ensuring adequate drainage and active movement from the beginning. With regard to the "hockey-stick" skin incision, advocated by Bolton and others, I would question the necessity for dividing all the fibrous septa, and also the need for two lateral incisions for this purpose. I feel that neither practice is necessary as a routine measure, that they might often be dangerous in opening up uninfected tissues, and that they cause unnecessary damage and deformity to the finger. I agree with Cruickshank and Harrison that minimal skin incision alone is necessary, and pus should be sought for and let out by Hilton's method, to avoid damage to deeper structures. With careful supervision of after-treatment it is quite simple and safe to enlarge the drainage opening if it is inadequate or if pocketing occurs. Excision of infected bone before separation of sequestra is dangerous and meddlesome surgery, as also is early excision of sloughing tissue, even under a cloak of penicillin. Neither will be necessary if early incision with relief of tension and adequate aftercare are carried out. When patients are seen late on and some necrosis of soft tissue or bone has already occurred, it is wiser and safer to let the dead tissue separate off before attempting to remove it.

Bolton and his associates inveigh against hot soaking with early movement, and I am amazed to see that your editorial backs them up. I have employed this form of treatment for the past seventeen years, and I have never seen any but a perfect functional result, with rapid healing. Admittedly the skin becomes sodden after some hours' soaking, but this does no harm whatsoever and is never a reason for stopping. The benefits that accrue in the shape of an improved blood-supply and the relief of pain, allowing of a great increase in active movement, greatly facilitate the escape of pus, promote rapid healing, and prevent residual stiffness. Secondary infection can be avoided with reasonable precautions.

I would strongly deprecate splinting even for a few days. There is no need for the physiotherapist later on to try to get rid of residual stiffness, since this can be prevented from the start. Short-wave diathermy as a form of heat, applied for ten minutes daily with supervision of movement later on—"once contact has been established"—is a very poor substitute for active movement from the outset. When the patient is told that it all depends on him, it is surprising how hard he will work to get normally mobile fingers or hand. And how much better for his morale than letting him feel it is all being done for him! More self-help means fewer stiff fingers.

Hypertonic dressings are devoid of any virtue or value and should be discarded. They neither increase the blood-supply, promote free drainage, nor facilitate movement. Penicillin, by three-hourly intramuscular injection, may be a useful adjunct to treatment, especially with bone involvement. But it is not a substitute for good surgery, and only too often its use has been the reason for bad surgery, or none at all. As regards tendon-sheath infections, I am most surprised that Cruickshank and Harrison had one stiff finger and another needing amputation, out of 13 cases. I feel that these would probably not have occurred if they had added hot soaking with active movements right from the start to their otherwise admirable régime. Prevention is better and safer than rehabilitation for stiff fingers, and it is quite possible even over 55 years of age. They suggest that the use of penicillin should reduce the incidence of secondary tendon-sheath infections. The adoption of sound surgical principles will achieve this end with much more certainty and will allow the penicillin to penetrate through and around the infected area, by relieving the tension and restoring the circulation. Drainage is not necessary, either by means of 'Vaseline' gauze or rubber drains, if the incision is properly placed and hot soaking with active movement is adopted from the beginning.

Webster explains that some of his patients refused injections of penicillin in beeswax and oil, because of local reactions, but these people recovered as quickly as others who continued with the injections. Surely this seriously detracts from the value of penicillin in beeswax and oil for these infections, as well as emphasising the possible danger of injecting masses of insoluble wax and oil into patients' muscles.

Local injection of penicillin around the incision or into the nail-fold would appear to have nothing at all to commend it. It would not diffuse so widely as penicillin in the blood-stream, provided the circulation of blood and tissue fluids is made possible by the relief of tension. On the contrary, it would tend to cause further increase of tension with great increase of pain (as found by Webster), and the risk of more tissue necrosis. The method advocated by Whitwell (Nov. 1) does not seem to be any better, and it is definitely less certain than the relief of tension together with hot soaking and active movements. In my experience it is never necessary to remove the whole nail, and doing so leaves a raw tender area which is extremely touchy for weeks. It may rarely be necessary to remove part of one side of the nail to improve drainage, and the rest may slough off later on. But by this time the new nail has grown down beneath, for some of the distance at least, and the exposed area beyond is no longer raw and tender.

Undoubtedly many cases will resolve without suppuration if treated early with systemic penicillin, provided there is an adequate circulation in the infected area for the drug to reach it. But in many cases an adequate circulation cannot be maintained without early incision to relieve tension, which is a far safer way of discouraging further spread of infection.

A septic finger with a "slough in the tissues by the time that treatment is started" should surely be labelled "too late" instead of "early." Would it not be possible to catch cases even earlier and avoid necrosis altogether, since it is possible to catch them "so early"?

Mount Vernon Hospital, Northwood. ALAN SHORTER.

A BOOK REVIEW

SIR,—In your footnote to my letter published in your issue of Nov. 8 you say, referring to the influence of maternal rubella in the ætiology of congenital cataract: "This important contemporary discovery is not, however, accorded a place in the sections on Cataract, Diseases of the Lens, or the Development of the Eye," but you mentioned at the beginning of the footnote that I was right in saying that the subject was mentioned on p. 54 of the book in question. The first words on p. 54 are: "Chapter VI. Development of the Eye and its Adnexa." I submit, Sir, that you have followed in the steps of your reviewer in that you have made an untrue statement.

London, W.1. J. H. DOGGART.

*** This error was introduced in compressing our reviewer's rejoinder. Mr. Doggart seems to win on points—if only points of detail.—ED. L.

GAUCHER'S DISEASE WITHOUT SPLENC

SIR,—With reference to the article by Dr. (Oct. 18) and the remarks of Dr. G. A. Matthews (the following brief report may be of interest.

Recently I have performed the post-mortem of an infant, aged 3 months, who suffered from hepatoma. The spleen was normal in size (16·1 g. in It had a peculiar pallid appearance and the capsule slightly roughened. On the section the malpighian not discernible and the pulp had the appearance of a honeycomb. In histological sections the pulp was f be packed with large pale cells, about 25 μ in diameter. nuclei were small, hyperchromatic, and in most cells The cytoplasm was colourless in the hæmatoxylin-eosin except for a very fine network of mainly radially fibrils which consisted of rows of tiny granules. In stains the cells appeared pale blue. The cytoplasm stain in frozen sections with Herxheimer's Sudan IV and it was pale brownish-yellow in the Smith-Dietrich No anisotropic substances were found in these cells examined in polarised light. The chemical analysis lipoids in this spleen is being carried out in association Dr. E. Hickmans. The Klenck-Chargaff method of extraction is being used and all that can be said at the time is that the bulk appeared in the ethereal fr which cerebrosides are expected. Only minimal traces of latter are present in normal spleens.

Although the final diagnosis depends on the identi of the lipoid as kerasin the findings strongly Gaucher's disease without splenomegaly.

Pathology Department,
Children's Hospital, Birmingham. H. S. BAA

THE BARBITURATES

SIR,—Your leading article of Oct. 18 was of value to the vast number of doctors who barbiturates regularly.

A further point that should be stressed is the before prescribing barbiturates in cases of anxiety and other functional disorders, of excluding disease. Sir Adolphe Abrahams et al.[1] recently out in an article on acute porphyria the harm may be done by barbiturates, which, in his case, possibly have led to the death of the patient. barbiturates may mask important symptoms and Perhaps the following case will help to clarify this

A married woman, aged 40, was admitted to a home in 1943, with the diagnosis of anxiety state. 1946 she was discharged, improved but not cured. all the time she was on barbiturates. Even after her she was still taking 'Sodium Amytal' gr. 6 and gr. 10 within 24 hours. Her symptoms were still the —mental instability, lack of decisive power, coördination of speech, general weakness, and hung

Her husband, a colleague, brought her to me in 1946, for the exclusion of organic disease as the cause mental symptoms. Investigation revealed a true glycæmia, which had been masked for years by barbitur Since recognition of this condition she has had no barbitur Her nervous instability and anxiety disappear immedi after taking sugar. She is fit again to look after her affairs. The blood-sugar, after 50 g. of glucose, showed a at $2^{1}/_{4}$ and $3^{1}/_{4}$ hours to 65 mg. and 60 mg. per 100 ml this stage, the mental symptoms were severe.

London, W.1. LEO RA

ALOPECIA AREATA TREATED WITH THORIU

SIR,—In his paper of Oct. 4 Dr. Feeny has bro forward some valuable observations. It seems, how that one or two points in the assessment of the re and of the value of treatment have not received attention they deserve. The first is the time factor. tendency for alopecia areata to spontaneous recove well known, though growth may often be delayed mo or even years. It seems likely that some at least of success could be accounted for by spontaneous regro Secondly, little is said of the importance of the psy therapeutic effect on the patient of a new treatm

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1. Abrahams, A., Gavey, C. J., Maclagan, N. F. *Brit. me* Aug. 30, p. 327.

cially with radioactive substances. At least an osphere of encouragement and hope is to be expected h a new procedure. Lastly, the author gives no hint aving considered the possibility that radio-inactive nts and varnishes might produce regrowth of hair as effectively and as quickly as thorium-X in alcohol varnish. Shortly after the appearance of Corsi's er (*Lancet*, 1934, ii, 346) we agreed to try painting s of alopecia in the scalp in equal halves—the one f with thorium-X in alcohol, the other half with the hol vehicle alone. We found in a series of cases that hair grew as quickly and as well in the part which received no thorium, and there was no detectable erence in the response in the two adjacent areas. In ot of one series of 30 cases, thorium-X seemed to e a retarding effect on hair growth, as new hair eared on the untreated halves of the patches some ks earlier than on the sides which had received rium-X.

e realise the difficulties of adequate control of results linical trials, but we do not feel that the evidence n in his paper warrants the conclusion drawn by Feeny that the hair regrew solely, or even chiefly, ause of the thorium used. We both use thorium-X ularly, but no longer for treating alopecia.

ford. ALICE CARLETON.
bridge. C. H. WHITTLE.

Obituary

WILLIAM HENRY KAUNTZE

C.M.G., M.D. MANC., M.B. LOND., F.R.C.P.

r. W. H. Kauntze, medical adviser to the Secretary State for the Colonies, died at Woking on Nov. 4.

orn in Manchester in 1887, the son of Mr. W. G. untze, he was educated at Manchester University also took a London medical degree. After qualifying 1911 he acted as house-surgeon at Manchester Royal rmary and later as resident medical officer at Salford rmary. Shortly before the outbreak of the first world war he entered the Colonial Medical Service, and he served as a medical officer in Nigeria till he was posted to the East Coast when the West African troops were moved there in 1916. With the rank of major he served in the field with distinction, and in 1919 he was appointed senior bacteriologist and deputy director of laboratory services in Kenya. On leave in England he attended the first post-war course in tropical medicine at the London School of Hygiene, taking his D.P.H. in 1921. This enthusiasm for his work was characteristic, and Dr. N. P. Jewell, who collaborated with him in *A ndbook of Tropical Diseases* (1931) writes: "Kauntze died assiduously, keeping up to date by avid reading medical literature, and he had a splendid knowledge his profession. In Kenya, he became very popular, h for his great medical ability and his ready willingness help in trouble."

Lafayette

In 1932 Kauntze was made director of medical services Uganda, and he held this post for nearly ten years. ring this period he interested himself in tropical thology and published a number of papers on dysenteric ccines and their application to the treatment and evention of bacillary dysentery. In 1941 he was called to England to become assistant medical adviser the Colonial Office, and towards the end of 1944 he s appointed chief medical adviser to the Secretary of ate.

After the end of the late war he travelled widely by , visiting Africa, the West Indies, and the Far East. e undertook these fatiguing journeys at the cost of eat pain and discomfort, for he was already a sick an. In his later years he became a sincere student of cial medicine in the tropics, and in 1946 he summarised his views in a valuable article in the *Practitioner*. Clear in ideas and in expression, he was an excellent chairman, and in this capacity served on many committees. Sir Philip Manson-Bahr speaks of his "gentle and particularly attractive character. Kind and considerate to all around him, he loved the service to which he had devoted his life, and no trouble was too much for him in order to improve the conditions of service for his officers."

"A year or two before the war," writes Sir Wilson Jameson, "I had the privilege of travelling through part of Uganda with Dr. and Mrs. Kauntze and of spending some little time with them in their delightful home on the shores of Lake Victoria. I knew Dr. Kauntze before then, but I got to know him much better during my visit to his own territory. He was a first-class director of medical services, and as soon as wartime conditions permitted his release from Uganda, he joined the headquarters staff of the Colonial Office. Ultimately, as chief medical adviser, he was able to press forward with some of the plans on which he had set his heart—the expansion and improvement of the colonial medical schools, the creation of a research organisation, the development of a more preventive outlook in the Service generally. He travelled extensively throughout the colonies, and his wide knowledge was invaluable in the conferences that have been held in connexion with the establishment of a World Health Organisation. He was the most unassuming of men and he never spared himself. His work always took first place. At the meeting of the Interim Commission of the World Health Organisation at Geneva last Easter, when he knew his illness was mortal, his one desire was to complete the task he had set himself. Kauntze has died just when he was most needed by the Service in which he spent his professional life. But his good influence will be felt for years to come. We at the Ministry of Health have lost a very helpful and lovable colleague."

Dr. Kauntze married in 1919 Miss Edith Johnston, of Cape Town, and they had one daughter. He was appointed C.M.G. in 1937, and he was elected F.R.C.P. in 1945. Recently he was made a knight of the Order of St. John of Jerusalem.

Public Health

Poliomyelitis and Polioencephalitis

THE decline in notifications has continued. Those for the week ended Nov. 1 were: poliomyelitis 221 (251) and polioencephalitis 22 (29). The decline of prevalence is, however, much less steep than was the rise; and it now seems probable that for the remainder of the year incidence will remain at a much higher level than is usual in winter.

Infectious Disease in England and Wales

WEEK ENDED NOV. 1

Notifications.—Smallpox, 0; scarlet fever, 1529; whooping-cough, 1037; diphtheria, 178; paratyphoid, 15; typhoid, 4; measles (excluding rubella), 2052; pneumonia (primary or influenzal), 502; cerebrospinal fever, 39; poliomyelitis, 221; polioencephalitis, 22; encephalitis lethargica, 0; dysentery, 126; puerperal pyrexia, 100; ophthalmia neonatorum, 41, relapsing fever, 1. No case of cholera, plague, or typhus was notified during the week.

Deaths.—In 126 great towns there were no deaths from enteric fever or measles, 1 (0) from scarlet fever, 3 (0) from diphtheria, 4 (1) from whooping-cough, 51 (3) from diarrhœa and enteritis under two years, and 16 (2) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 203 (corresponding to a rate of 26 per thousand total births), including 34 in London.

THE British Standard for Film Strip and Film Slides has been revised. Copies are obtainable, price 2s., from the sales department, British Standards Institution, 24, Victoria Street, London, S.W.1.

Notes and News

EMPIRE MEDICAL ADVISORY BUREAU

THE council of the British Medical Association have made a timely and friendly gesture in setting up this bureau to help doctors from overseas who are visiting this country. A committee of management has already been appointed, and this week applications are invited (in our advertisement columns) for the position of director. When the bureau is in action visitors will be able to turn to it for information about postgraduate study and about suitable lodgings and hotels, as well as for letters of introduction to their British colleagues, both specialists and general practitioners. But it will not be bound by academic and professional limits. To the stranger everyday life in this country must often seem bewildering and intricate; his ration book is in a mysterious code, tickets for the ballet are hard to come by, and he is uncertain where the Derby is run. With all these problems the bureau will lend a helping hand. In short the new director's job will be to enable his visiting colleagues to feel at home and find their way around.

THE SURGEON AND THE ID

A SUCCESSFUL analysis, they say, must be founded on a good "transference" between psycho-analyst and patient. But neurotics, who are as chancy—or as predetermined—in their likings as anybody else, may form their transferences with quite the wrong people. The frustrate young man in Mary Renault's latest book, *Return to Night*,[1] chooses a surgeon. Luckily for him she has read some psychology, and when not being pompous about her work (a weakness not entirely confined to surgeons, after all) is a mature and pleasant person. The young man has been hamstrung for any part in real life by his deep attachment to his mother and by the love and hate she bears him.

Here, then, are materials for a psychological study of two people whose love for each other is hampered by disparity of years (the surgeon is much the older), old bondage, unfamiliar crises, and purely practical obstructions—ample material, little of which is wasted. But the discontented Miss Renault throws in all sorts of extras—underground caves, fighting drunks, calumny, runaway horses, and finally an unlikely premarital experience for the frigid mother. What do we want with these Jane Eyre-ish accessories? Her characters, caught in their inward web, are living at many levels; their conversations are haunted with overtones; they are forever blundering and trespassing, healing, and restoring. But, into this personal adventure, drama keeps breaking so destructively that Miss Renault has to summarise whole phases; and indeed at her tenth chapter, in a few pages of bald exposition, reduces her own carefully wrought mystery to dust. Her trouble is that she doesn't know how well she writes. The book, however, has been awarded the Metro-Goldwyn-Mayer prize of £40,000 as the outstanding novel of the year, and will shortly be filmed. No doubt the caves and so forth will prove a Metro-goldmine.

BY WOMEN FOR WOMEN

SMALL and intimate, staffed entirely by women, the Marie Curie Hospital occupies a Victorian house in Fitzjohn's Avenue, Hampstead. The original hospital, founded in 1929, for the treatment of women with cancer, by the London Association of the Medical Women's Federation, was destroyed by a bomb in 1944, and this second building was opened in May, 1946, with 11 beds. On Oct. 22 when H.R.H. the Duchess of Gloucester opened the new nurses' home, Lady Moran, the chairman of the board of management, was able to announce that there are now some 50–60 beds in action, and that, when times allow, it is hoped to build a new hospital on the old site which will bring the full complement of beds up to 100. Fortunately the Helen Chambers research laboratory was undamaged. Since 1944, when an appeal was launched after the bombing, the hospital has received donations to the value of £120,000 from the public, and has been able to acquire, besides the new hospital building, two new houses to receive nurses and domestic staff, and another house in Fitzjohn's Avenue which will be used by ambulatory and convalescent patients, thus sparing beds in the main hospital.

The new nurses' home, also a Victorian building, same friendly and intimate quality as the rooms, of various shapes and sizes, with a unexpected differences of structure, decoration, eq and outlook, gain fresh individuality from the taste owners; nothing could be less institutional or The whole building is well warmed, and there are kitchens, a roomy pantry where the sisters can make do their ironing, a large comfortable sitting-room, pleasant garden.

Sir William Douglas, secretary of the Ministry of who replied to the Duchess of Gloucester's good the future of the hospital and of the new nurses' advised all donors to give at once, since money given the appointed day will be used for the individual on which it is bestowed. Alderman Mrs. R. S. G. the mayor of Hampstead, spoke of the hope of discoveries in the research department of the ho

CHRISTMAS SEALS

THE National Association for the Prevention of Tub has growing commitments: the number of Colonial scholarships for doctors and other health workers has increased, and last July a conference held in London attended by over a thousand delegates. For the contin of its work the association looks largely to proceeds the sale of its Christmas seals, from which source £250,000 has been obtained in the last ten years. This the seals, presented as in previous years by the Can Tuberculosis Association, depict in cheerful colours a te oxen bringing home the Yule log. The seals may be ob at a cost of 4*s*. per sheet of 100, from the Duchess of P Chairman N.A.P.T., Tavistock House North, T Square, London, W.C.1.

EARTH-EATING

IT is hard to see why the idea of earth-eating repulsion, whereas the prospect of eating a dead animal unobjectionable—pleasant, indeed. Patients will chalk or kaolin without demur when earth in such prescribed by the physician; and minerals derived earth, such as salt, iron, and mercury, rouse no distaste offered in food or medicaments: and what is a barium but geophagy? No doubt the mother's horrified convi that earth-eating is "dirty" makes a strong impression the young child; and the association of pica with *disorders and with parasitic infestations* later heightens disgust.

Yet in many parts of the world, as Robertson[1] poi out, earth is eaten either for medicinal reasons or as a ferti rite. He quotes Dr. Leonhart Ranwolf, who in the sixte century noted that the women of Tripoli ate an earth ca *jusabar*. Sir *George Watt found the same* practices in In in 1908. A comestible clay, found near Koluth, is sold in t bazaars to improve the complexion. The edible earth commonly eaten is said to be a light yellow ochre, ca *multani mitti*, which is taken in doses of about gr. 5–30 relieve acidity of the stomach. Other edible earths are *Sang Basri*, imported *from the Persian* Gulf and used in to preparations; a sweet-scented earth called *Sausrastra mitti* given as an astringent for internal bleeding; and the g stone, made from fine fuller's earth, compressed into th form of a large egg and scented and gilded, a little of which scraped off and taken in water as a remedy for many disorder Potter's earth *for eating* is sold in the Calcutta bazaar partly baked saucer-shaped chips about 2 in. in diamet Robertson considers that most of the earths eaten in Ind are fuller's earth containing the clay mineral montmorilloni as well as some silica.

The "Samian stone" mentioned by Pliny, betw A.D. *23 and 79, is thought to have been* a compact for of kaolinite such as lithomarge. Chaucer mentions " armoniac," or Armenian earth, which was used as an antid for poison, and for stanching wounds. This early reputati of adsorbent earths received scientific confirmation as late as 1914, when J. A. Lloyd reported that the fi *particles of fuller's earth would remove* alkaloids from so tion; and the next year B. Fantus noted that fuller's ear was beneficial in cases of morphine, nicotine, and ipecacuan ning, and even—though to a lesser extent—in poisoning strychnine and aconitine. Some fuller's earths are more tive than others; and of English earths, those from hill, Surrey, and from the neighbourhood of Bath are the t adsorbent.

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[1] London: Longmans, Green. Pp. 356. 10*s*. 6*d*.

[1] Robertson, R. H. S. *Discovery*, 1947, 8, 213.

he two main types of clay used in medicine—fuller's h and kaolin—are often thought to be identical but in fact quite distinct both mineralogically and in physical erties.

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[1] London: Longmans, Green. Pp. 356. 10s. 6d.

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The "Samian stone" mentioned by Pliny, betw A.D. 23 and 79, is thought to have been a compact form of kaolinite such as lithomarge. Chaucer mentions "bo armoniac," or Armenian earth, which was used as an antid for poison, and for stanching wounds. This early reputati of adsorbent earths received scientific confirmation only as late as 1914, when J. A. Lloyd reported that the fi particles of fuller's earth would remove alkaloids from s tion; and the next year B. Fantus noted that fuller's earth was beneficial in cases of morphine, nicotine, and ipecacuan

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[1] London: Longmans, Green. Pp. 356. 10s. 6d.

[1] Robertson, R. H. S. *Discovery*, 1947, 8, 213.

PATHOLOGY OF SUDDEN DEATH *

KEITH SIMPSON
M.D. Lond.
CTURER IN FORENSIC MEDICINE, GUY'S HOSPITAL, LONDON

This review of the more common pathology of sudden ath is based on an analysis of my own medicolegal se-records of 15,000 necropsies, ranging from simple tural deaths to violent wilful killing, and covering all es from birth to that of a man who claimed 108 years a slight exaggeration into which he had been flattered r press attentions.

The proportion of deaths from natural causes was %, roughly two-thirds, a reminder of the vast amount ordinary morbid anatomy passing through the hands the forensic pathologist. Among these 15,000 natural aths were 6267 (41%) in which death took place ddenly, if not instantaneously, on collapse, an unexcted event precipitating death within a few hours of parently good health. This group I have extracted r study, and I make no apology for concentrating on e principal common disorders rather than the rarer more diverting diseases. I have excluded the hazards birth, such as atelectasis of the lung, and developmental fects which could not properly be included within the rin of disease, for these are problems in other fields.

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The field covered is indicated in the accompanying table. It is a striking feature of the complete table that, among the common natural causes of sudden death, the failings of the coronary or cerebral arteries alone account for more than 56%. These, unlike the failings of the aorta or of heart valves, rest on the ravages of disease or of what Clifford Allbutt has called the "qualities of tissues carried away by the stealthy hours" for which medicine has no known treatment—a sobering thought which might well stimulate new interest in the pathogenesis of arterial sclerosis.

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Ten years ago, in an Erasmus Wilson lecture, I discussed the pathology of the fatal syndrome of acute adrenal insufficiency, finding examples of the diseases recognised to erase the functioning adrenal rapidly enough to cause death within a few hours (Simpson 1937). The most common is undoubtedly bilateral spontaneous hæmorrhage; and, whereas those hæmorrhages which occur after infancy are still recognised as being largely the result of meningococcal or streptococcal septicæmia (the former in cerebrospinal fever as the Waterhouse-Friderichsen syndrome). those which arise in the few days or weeks after birth have subsequently been recognised as commonly due to erythroblastosis fœtalis and not to the exaggerated hyperæmia of the androgenic zone in the postnatal period. Acute caseous tuberculosis and metastatic deposits of malignant growth comprise most of the remainder. Willis (1934) drew attention to the frequency of massive bilateral metastases in the suprarenal glands, especially from growths of the bronchus and breast. Many observers have confirmed his figure of some 9–10% for the frequency of adrenal involvement in all cases of metastatic cancer, and bilateral involvement is as common as unilateral.

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Hyaline change—fatty atrophy of the medial muscle, mucinoid and hyaline degeneration of the connective tissue, and fragmentation of the elastin—is more common in men (65% males and 35% females in Shennan's original series), and, like all vascular ruptures, is aggravated by hypertension.

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Cause of death	No. of cases	Pathological analysis
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Acute adrenal insufficiency	15	
Allergic shock ..	4	
Aneurysm (aortic) rupture	148	Syphilis .. 80% Atheroma 20%
Aorta rupture (other than aneurysm)	160	Hyaline .. 60% Atheroma 30% Syphilis .. 10%
Asphyxia (natural causes)	140	(cf. unnatural causes .. 93)
Cerebral embolism ..	26	
,, hæmorrhage	806	Cerebral .. 75% Pontine .. 14% Cerebellar 11%
Subarachnoid hæmorrhage	268	Developmental aneurysms 78%
Cerebrospinal fever..	50	
Coronary embolism	10	
,, hypoplasia	11	
,, occlusion	638	Ostial occlusion (syph.) 7%
,, rupture ..	7	
,, thrombosis	988	
Heart: infarction ..	517	
,, : rupture ..	264	
,, : hypertensive failure	484	
,, : valvular disease	472	Rheumatic 79% Syphilitic 21% (Aort. sten. 36% Aort. insuf. 28% Mitr. sten. 20% Mitr. insuf. 4% Compound 12%)
Hæmoptysis (various causes)	35	
Hæmatemesis (various causes)	73	
Influenzal pneumonia	222	
Pneumothorax ..	9	
Pulmonary embolism	317	Recent injury 25%
Senility	577	

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* A lecture delivered to the Royal College of Surgeons on July 29, 1947.

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The first number of a new quarterly, the *Journal of Clinical Pathology*, has appeared this month. Edited for the Association of Clinical Pathologists by Dr. A. Gordon Signy, the journal is published by the British Medical Association. The annual subscription is 25*s.*, and single numbers are obtainable for 7*s.* 6*d.*

Appointments

PHILPS, SEYMOUR, F.R.C.S.: asst. ophthalmic surgeon, St. Bartholomew's Hospital, London.
ROTH, MARTIN, M.D. Lond., M.R.C.P.: senior psychiatrist, Crichton Royal Mental Hospital, Dumfries.
SIGNY, A. G., M.B. Lond.: pathologist, group laboratory, St. Mary Abbots Hospital, Kensington.
STUART, R. D., D.SC., M.D. Aberd., D.P.H.: bacteriologist, Glasgow Royal Infirmary.
USBORNE, MARY, M.B. Lond., M.R.C.P., D.C.H.: house-physician, Hospital for Sick Children, Great Ormond Street, London.

The London Hospital:

AYOUB, J. E. M., B.M. Oxfd, F.R.C.S.: asst. ophthalmic surgeon.
CHALLIS, J. H. T., M.R.C.S., D.A.: senior anæsthetist.
FOX, G. P., M.A. Camb., M.R.C.S., D.A.: asst. anæsthetist.
LISTER, ARTHUR, M.B. Camb., F.R.C.S.: senior ophthalmic surgeon.

Births, Marriages, and Deaths

BIRTHS

CHAPMAN.—On Nov. 5, at Chipping Norton, the wife of Dr. John Chapman—a son.
CRAIG.—On Nov. 1, at York, the wife of Mr. A. J. Craig, F.R.C.S.—a son.
EMBLETON.—On Nov. 7, at Wokingham, the wife of Dr. J. J. A. Embleton—a son.
FOSTER-CARTER.—On Nov. 7, in London, the wife of Dr. A. F. Foster-Carter—a son.
HARTLEY.—On Nov. 6, at Loughborough, the wife of Dr. P. L. M. Hartley—a son.
MCGOWAN.—On Nov. 4, at Bristol, the wife of Dr. G. K. McGowan—a daughter.
MOIR.—On Nov. 4, at Woking, the wife of Dr. J. H. Moir—a son.
MOORE.—On Nov. 3, the wife of Dr. T. S. Moore—a son.
SIMMONS.—On Nov. 1, at Andover, the wife of Dr. A. B. Simmons—a daughter.
WICKES.—On Nov. 2, at Plaxtol, Kent, the wife of Dr. I. G. Wickes—a daughter.
WRIGHT.—On Nov. 2, the wife of Dr. H. B. Wright—a son.

MARRIAGES

CARTER—GRANTHAM.—On Nov. 1, in London, Frederick Stephen Carter, M.B., to Nym Grantham.
FINCH—FELDMAN.—On Nov. 4, in London, Bernard Finch, M.R.C.S., to Patricia Feldman.
FLANAGAN—PAYNE.—On Nov. 7, in London, Michael Brendan Flanagan, M.B., to Vera Doreen Payne.
VINCENT—VENTOR.—On Nov. 8, at Transkei, S. Africa, S. E. Vincent, M.R.C.S., to Joyce Ventor.
WOLFSON—ESCHELBACHER.—On Oct. 29, in London, Leslie Joseph Wolfson, M.B., to Nancy Eschelbacher.

DEATHS

BARNES.—On Nov. 1, at Colyton, Devon, Henry John Barnes, M.R.C.P.E., lieut.-colonel R.A.M.C. retd., aged 89.
ROBERTS.—On Nov. 7, at Folkestone, Hugh Treharne Llewellyn Roberts, M.A. Camb., L.R.C.P.E., barrister at law, aged 80.
STRICKLAND.—On Nov. 3, at St. Helier, Jersey, Cyril Strickland, M.A., M.D. Camb., aged 66.
WHITE.—On Nov. 9, John Richard White, L.R.C.P.E., aged 89.
WILLIAMS.—On Oct. 29, at Killiney, Herbert Armstrong Williams, D.S.O., lieut.-colonel I.M.S. retd., aged 72.

Diary of the Week

NOV. 16 TO 22

Monday, 17th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
6.15 P.M. Mr. Terence Cawthorne: Aural Vertigo.
ROYAL COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGISTS, 58 Anne Street, W.1
5 P.M. Mr. K. V. Bailey: Treatment of Prolapse in the bearing Age.
HUNTERIAN SOCIETY
8.30 P.M. (Apothecaries' Hall, Black Friars Lane, E.C.4) Franklin Bicknell, Dr. Kenneth McFadyean, S Drummond, F.R.S., Mr. Magnus Pyke, PH.D.: T Present Diet is Undermining the Health of the

Tuesday, 18th

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.1
5 P.M. Dr. E. R. Boland: Administration of Medicine. Croonian lecture.)
ROYAL COLLEGE OF SURGEONS
6.15 P.M. Mr. J. C. Hogg: Non-malignant Strictures Œsophagus.
ROYAL COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGISTS
5 P.M. Prof. R. J. Kellar: Toxæmia of Pregnancy.
SOCIETY OF APOTHECARIES, Black Friars Lane, E.C.4
5 P.M. Prof. B. W. Windeyer: Radiotherapy in Cancer Mouth.
INSTITUTE OF DERMATOLOGY, 5, Lisle Street, W.C.2
5 P.M. Dr. M. Sydney Thomson: Parasitic Affectio and Vegetable.
INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn W.C.1
2.15 P.M. Dr. E. H. R. Harries: Respiratory Tract in Infe Diseases.
EUGENICS SOCIETY
5.30 P.M. (Burlington House, Piccadilly, W.1.) Mr. G. C. Bertram, PH.D.: Eugenics, Population Trends, and World's Resources.

Wednesday, 19th

ROYAL COLLEGE OF SURGEONS
6.15 P.M. Mr. C. P. Wilson: Carcinoma of the Œsophagus.
ROYAL COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGISTS
5 P.M. Mr. Charles Read: Choice of Treatment in C the Cervix.
SOCIETY OF APOTHECARIES
5 P.M. Dr. Eliot Slater: Physical Treatment in Mental
INSTITUTE OF DERMATOLOGY
5 P.M. Dr. C. W. McKenny: X-ray Technique.
ROYAL MICROSCOPICAL SOCIETY
5.30 P.M. (B.M.A. House, Tavistock Square, W.C.1.) R. D. Passey, Dr. L. Dmochowski, Prof. W. T. A F.R.S., Dr. R. Reed: Electron Microscope Stud Tissues from High- and Low-breast-cancer Strains of
ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Po Place, W.1
3.30 P.M. Mr. L. Z. Cosin: Modern Methods in the Care of the Aged.
BRITISH PSYCHO-ANALYTICAL SOCIETY
8 P.M. (1, Wimpole Street, W.1.) Prof. C. H. Wadding F.R.S.: Science and Belief. (Ernest Jones lecture.)
ROYAL FACULTY OF PHYSICIANS AND SURGEONS, 242, St. Vinc Street, Glasgow
5 P.M. Prof. John Morley: Abdominal Pain as an Aid to Dia nosis in Abdominal Disease. (John Burns lecture.)

Thursday, 20th

ROYAL COLLEGE OF PHYSICIANS
5 P.M. Dr. Boland: Administration of Medicine. (Sec Croonian lecture.)
ROYAL COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGISTS
5 P.M. Prof. H. L. Sheehan: Pathology of Obstetric Shock.
ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE
7.30 P.M. (London School of Hygiene, Keppel Street, W.C.1 Laboratory demonstrations.
HONYMAN GILLESPIE LECTURE
4.30 P.M. (Edinburgh Royal Infirmary.) Mr. J. N. J. Hartley Story of a Museum.

Friday, 21st

ROYAL COLLEGE OF SURGEONS
5 P.M. Dr. I. Harvey Flack: Lawson Tait. (Thomas Vicar lecture.)
6.15 P.M. Mr. J. Pennybacker: Brain Abscess in Relation to Diseases of the Ear, Nose, and Throat.
ROYAL COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGISTS
5 P.M. Dr. Geoffrey Marshall: Pregnancy Associated with Pul monary Tuberculosis.
ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
8 P.M. Prof. James Miller, Prof. Chassar Moir: Centenary of the Use of Anæsthesia in Obstetric Practice by J. Y. Simps Short communications.
8.30 P.M. *Radiology.* Prof. Elis Berven (Stockholm): Radio logical Treatment of Malignant Tumours in Radium hemmet.
SOCIETY OF APOTHECARIES
5 P.M. Prof. L. J. Witts: Diseases of the *Blood*.
FACULTY OF RADIOLOGISTS
2.15 P.M. (Royal College of Surgeons, Lincoln's Inn Fields, W.C.2.) *Therapy.* Professor Berven, Miss M. C. Tod, Dr. Frank Ellis: Carcinoma of the Vulva.
LONDON CHEST HOSPITAL, Victoria Park, E.2
5 P.M. Mr. V. C. Thompson: Mediastinal Tumours.
LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY
8.30 P.M. Prof. H. J. Seddon: A History of Scrofula.

PATHOLOGY OF SUDDEN DEATH *

KEITH SIMPSON
M.D. Lond.
CTURER IN FORENSIC MEDICINE, GUY'S HOSPITAL, LONDON

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Roth, Martin, M.D. Lond., M.R.C.P.: senior psychiatrist, Crichton Royal Mental Hospital, Dumfries.
Signy, A. G., M.B. Lond.: pathologist, group laboratory, St. Mary Abbots Hospital, Kensington.
Stuart, R. D., D.Sc., M.D. Aberd., D.P.H.: bacteriologist, Glasgow Royal Infirmary.
Usborne, Mary, M.B. Lond., M.R.C.P., D.C.H.: house-physician, Hospital for Sick Children, Great Ormond Street, London.

The London Hospital:

Ayoub, J. E. M., B.M. Oxfd, F.R.C.S.: asst. ophthalmic surgeon.
Challis, J. H. T., M.R.C.S., D.A.: senior anæsthetist.
Fox, G. P., M.A. Camb., M.R.C.S., D.A.: asst. anæsthetist.
Lister, Arthur, M.B. Camb., F.R.C.S.: senior ophthalmic surgeon.

Births, Marriages, and Deaths

BIRTHS

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McGowan.—On Nov. 4, at Bristol, the wife of Dr. G. K. McGowan—a daughter.
Moir.—On Nov. 4, at Woking, the wife of Dr. J. H. Moir—a son.
Moore.—On Nov. 3, the wife of Dr. T. S. Moore—a son.
Simmons.—On Nov. 1, at Andover, the wife of Dr. A. B. Simmons—a daughter.
Wickes.—On Nov. 2, at Plaxtol, Kent, the wife of Dr. I. G. Wickes—a daughter.
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Roberts.—On Nov. 7, at Folkestone, Hugh Treharne Llewellyn Roberts, M.A. Camb., L.R.C.P.E., barrister at law, aged 80.
Strickland.—On Nov. 3, at St. Helier, Jersey, Cyril Strickland, M.A., M.D. Camb., aged 66.
White.—On Nov. 9, John Richard White, L.R.C.P.E., aged 89.
Williams.—On Oct. 29, at Killiney, Herbert Armstrong Williams, D.S.O., lieut.-colonel I.M.S. retd., aged 72.

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5 P.M. Mr. K. V. Bailey: Treatment of Prolapse in bearing Age.
Hunterian Society
8.30 P.M. (Apothecaries' Hall, Black Friars Lane, E.C Franklin Bicknell, Dr. Kenneth McFadyean, Drummond, F.R.S., Mr. Magnus Pyke, PH.D.: Present Diet is Undermining the Health of the

Tuesday, 18th

Royal College of Physicians, Pall Mall East, S.W.1
5 P.M. Dr. E. R. Boland: Administration of Medicine. Croonian lecture.)
Royal College of Surgeons
6.15 P.M. Mr. J. C. Hogg: Non-malignant Strictures Œsophagus.
Royal College of Obstetricians and Gynæcologists
5 P.M. Prof. R. J. Kellar: Toxæmia of Pregnancy.
Society of Apothecaries, Black Friars Lane, E.C.4
5 P.M. Prof. B. W. Windeyer: Radiotherapy in Cancer Mouth.
Institute of Dermatology, 5, Lisle Street, W.C.2
5 P.M. Dr. M. Sydney Thomson: Parasitic Affect and Vegetable.
Institute of Laryngology and Otology, 330, Gray's Inn W.C.1
2.15 P.M. Dr. E. H. R. Harries: Respiratory Tract in Diseases.
Eugenics Society
5.30 P.M. (Burlington House, Piccadilly, W.1.) Mr. G. Bertram, PH.D.: Eugenics, Population Trends, World's Resources.

Wednesday, 19th

Royal College of Surgeons
6.15 P.M. Mr. C. P. Wilson: Carcinoma of the Œsophagus.
Royal College of Obstetricians and Gynæcologists
5 P.M. Mr. Charles Read: Choice of Treatment in Ca the Cervix.
Society of Apothecaries
5 P.M. Dr. Eliot Slater: Physical Treatment in Mental
Institute of Dermatology
5 P.M. Dr. C. W. McKenny: X-ray Technique.
Royal Microscopical Society
5.30 P.M. (B.M.A. House, Tavistock Square, W.C.1.) R. D. Passey, Dr. L. Dmochowski, Prof. W. T. F.R.S., Dr. R. Reed: Electron Microscope Tissues from High- and Low-breast-cancer Strains of
Royal Institute of Public Health and Hygiene, 28, Place, W.1
3.30 P.M. Mr. L. Z. Cosin: Modern Methods in the Care Aged.
British Psycho-Analytical Society
8 P.M. (1, Wimpole Street, W.1.) Prof. C. H. Wadd F.R.S.: Science and Belief. (Ernest Jones lecture.)
Royal Faculty of Physicians and Surgeons, 242, St. V Street, Glasgow
5 P.M. Prof. John Morley: Abdominal Pain as an Aid to nosis in Abdominal Disease. (John Burns lecture.)

Thursday, 20th

Royal College of Physicians
5 P.M. Dr. Boland: Administration of Medicine. (Se Croonian lecture.)
Royal College of Obstetricians and Gynæcologists
5 P.M. Prof. H. L. Sheehan: Pathology of Obstetric Shock.
Royal Society of Tropical Medicine and Hygiene
7.30 P.M. (London School of Hygiene, Keppel Street, W.C.1 Laboratory demonstrations.
Honyman Gillespie Lecture
4.30 P.M. (Edinburgh Royal Infirmary.) Mr. J. N. J. Hartl Story of a Museum.

Friday, 21st

Royal College of Surgeons
5 P.M. Dr. I. Harvey Flack: Lawson Tait. (Thomas Vic lecture.)
6.15 P.M. Mr. J. Pennybacker: Brain Abscess in Relation Diseases of the Ear, Nose, and Throat.
Royal College of Obstetricians and Gynæcologists
5 P.M. Dr. Geoffrey Marshall: Pregnancy Associated with P monary Tuberculosis.
Royal Society of Medicine, 1, Wimpole Street, W.1
8 P.M. Prof. James Miller, Prof. Chassar Moir: Centenary of the Use of Anæsthesia in Obstetric Practice by J. Y. Simp Short communications.
8.30 P.M. *Radiology.* Prof. Elis Berven (Stockholm): Rad logical Treatment of Malignant Tumours in Radi hemmet.
Society of Apothecaries
5 P.M. Prof. L. J. Witts: Diseases of the Blood.
Faculty of Radiologists
2.15 P.M. (Royal College of Surgeons, Lincoln's Inn Fi W.C.2.) *Therapy.* Professor Berven, Miss M. C. Dr. Frank Ellis: Carcinoma of the Vulva.
London Chest Hospital, Victoria Park, E.2
5 P.M. Mr. V. C. Thompson: Mediastinal Tumours.
Leeds and West Riding Medico-Chirurgical Society
8.30 P.M. Prof. H. J. Seddon: A History of Scrofula.

PATHOLOGY OF SUDDEN DEATH [*]

KEITH SIMPSON

M.D. Lond.

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THIS review of the more common pathology of sudden ath is based on an analysis of my own medicolegal se-records of 15,000 necropsies, ranging from simple tural deaths to violent wilful killing, and covering all es from birth to that of a man who claimed 108 years a slight exaggeration into which he had been flattered press attentions.

The proportion of deaths from natural causes was %, roughly two-thirds, a reminder of the vast amount ordinary morbid anatomy passing through the hands the forensic pathologist. Among these 15,000 natural aths were 6267 (41%) in which death took place ddenly, if not instantaneously, on collapse, an unexcted event precipitating death within a few hours of parently good health. This group I have extracted r study, and I make no apology for concentrating on e principal common disorders rather than the rarer more diverting diseases. I have excluded the hazards birth, such as atelectasis of the lung, and developmental fects which could not properly be included within the bit of disease, for these are problems in other fields.

Cause of Death.—A personal factor must enter into e wording of the cause of death. Where, for instance, nility, hypertension, and coronary occlusion by heroma exist together at death, as is common enough, is reasonable to assume that all three have contributed death. The heading used for such cases has depended the relative contribution assessed for each disease, d in such a matter I have to ask you to trust to my aluation, right or wrong. As age increases, its contribution to the decompensation of a heart which has eld hypertension at bay for many years must gradually ncrease also; it must become increasingly reasonable to ay that senility is the cause of such a death. However, his is a human whim, not measurable, which makes roader statistics of this kind unsuitable for mathematical iceties.

The field covered is indicated in the accompanying able. It is a striking feature of the complete table that, among the common natural causes of sudden death, the failings of the coronary or cerebral arteries alone account for more than 56%. These, unlike the failings of the aorta or of heart valves, rest on the ravages of disease or of what Clifford Allbutt has called the "qualities of tissues carried away by the stealthy hours" for which medicine has no known treatment—a sobering thought which might well stimulate new interest in the pathogenesis of arterial sclerosis.

ACUTE ADRENAL INSUFFICIENCY

Ten years ago, in an Erasmus Wilson lecture, I discussed the pathology of the fatal syndrome of acute adrenal insufficiency, finding examples of the diseases recognised to erase the functioning adrenal rapidly enough to cause death within a few hours (Simpson 1937). The most common is undoubtedly bilateral spontaneous hæmorrhage; and, whereas those hæmorrhages which occur after infancy are still recognised as being largely the result of meningococcal or streptococcal septicæmia (the former in cerebrospinal fever as the Waterhouse-Friderichsen syndrome), those which arise in the few days or weeks after birth have subsequently been recognised as commonly due to erythroblastosis fœtalis and not to the exaggerated hyperæmia of the androgenic zone in the postnatal period. Acute caseous tuberculosis and metastatic deposits of malignant growth comprise most of the remainder. Willis (1934) drew attention to the frequency of massive bilateral metastases in the suprarenal glands, especially from growths of the bronchus and breast. Many observers have confirmed his figure of some 9–10% for the frequency of adrenal involvement in all cases of metastatic cancer, and bilateral involvement is as common as unilateral.

RUPTURE OF AORTA WITHOUT ANEURYSM

Aortic rupture is as common without aneurysm as with it—indeed, increasingly more common—and the stimulus of Shennan's monograph (1934) has led to a more critical examination of many ruptures which might at first sight appear to result from the atheroma that is likely to be present (whatever the cause of rupture) after the age of 40.

Hyaline change—fatty atrophy of the medial muscle, mucinoid and hyaline degeneration of the connective tissue, and fragmentation of the elastin—is more common in men (65% males and 35% females in Shennan's original series), and, like all vascular ruptures, is aggravated by hypertension.

The ascending aorta gives way more often than any other part; in about four-fifths of my own 160 cases the burst took place between the aortic valve and the origin of the innominate artery. Hyaline degeneration was responsible for 60% of these.

The reporting of dissecting aneurysm has lagged behind that of rupture without aneurysm simply because though some degree of dissection is almost invariable—as a rule between the media and adventitia—it is usually short, being cut short by rupture into the pericardium. Nevertheless some remarkably long dissections have been recorded, and I have on many occasions traced the

ANALYSIS OF MORE COMMON NATURAL CAUSES OF SUDDEN DEATH

Cause of death	No. of cases	Pathological analysis
Abortion (natural) ..	10	
Acute adrenal insufficiency	15	
Allergic shock ..	4	
Aneurysm (aortic) rupture	143	Syphilis .. 80% Atheroma 20%
Aorta rupture (other than aneurysm)	160	Hyaline .. 60% Atheroma 30% Syphilis .. 10%
Asphyxia (natural causes)	140	(of unnatural causes .. 93)
Cerebral embolism ..	26	
,, hæmorrhage	806	Cerebral .. 75% Pontine .. 14% Cerebellar 11%
Subarachnoid hæmorrhage	268	Developmental aneurysms 78%
Cerebrospinal fever..	50	
Coronary embolism	10	
,, hypoplasia	11	
,, occlusion	638	Ostial occlusion (syph.) 7%
,, rupture ..	7	
,, thrombosis	988	
Heart: infarction .	517	
,, : rupture .	264	
,, : hypertensive failure	484	
,, : valvular disease	472	Rheumatic 79% Syphilitic 21% (Aort sten. 36% Aort. insuf. 28% Mitr. sten. 20% Mitr. insuf. 4% Compound 12%)
Hæmoptysis (various causes)	36	
Hæmatemesis (various causes)	73	
Influenzal pneumonia	222	
Pneumothorax .	9	
Pulmonary embolism	317	Recent injury 25%
Senility	577	

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[*] A lecture delivered to the Royal College of Surgeons on July 29, 1947.

course of a rupture which has begun in the aorta and proceeded as far as the upper thighs.

"Twin-bore" malformation of the aorta, with two intima-lined channels, is an interesting condition which illustrates the possibility of healing, and an example of healing of the primary split, included in the present series, has already been reported by Post (1941).

SUBARACHNOID HÆMORRHAGE

Far the commonest natural cause of subarachnoid hæmorrhage is rupture of a developmental aneurysm on the circle of Willis or infrequently on one of its cortical branches. Magee (1943) refers to Symonds's paper of 1924, in which attention was drawn to the frequency of the condition when seriously looked for, and reports the finding of 43 aneurysms in 58 necropsies for subarachnoid hæmorrhage, solitary in all but 5 cases, and on the front half of the circle of Willis as often as on the back half. In my own series 78% had such an origin. Nothing short of stereoscopic dissecting-glasses will provide adequate sight for some of the minute aneurysms. When no dilatation can be found, perfusion is the only sure method of locating the leak.

The use of the word "congenital" for such aneurysms is unfortunate, for they are not present at birth; it is the microscopic anatomy of the cerebral vessels whose development is responsible, and "developmental" is preferable.

Glynn (1940) and Carmichael (1946) have both drawn attention to the important defects of elastin in the internal lamina in the cerebral vessels as distinct from those in the media which occur almost as commonly in many other parts of the body. Of the other factors which contribute to rupture we cannot discount a rise in blood-pressure either in the form of hypertension or from exertion. Some cases in the present series have occurred during moments of maintained tension—e.g., a young garage hand lying under a car, tightening a nut with a spanner, suddenly cried "Oh my head" and collapsed unconscious. He was dead when a doctor arrived four or five minutes later.

A word of caution should be given on the interpretation of these aneurysms later in life. There may be deposits of fat and lipoids in their walls, and some degree of atheroma may, with increasing years, be developing in the circle of Willis. It must not be lightly assumed that saccular aneurysms in such company are of a different pathology; they are likely to be identical in origin. Atheroma of the cerebral vessels leads to a different form of dilatation, not saccular but bulbous, fusiform, and occurring along the course of affected vessels rather than from the stems of their branches.

CORONARY-ARTERY DISEASE

In coronary occlusion lies a cause, perhaps the only natural cause apart from senility, of *instantaneous* death. Coronary occlusion resulting from ostial syphilis, atheroma of the course of the vessel, or thrombosis in addition, rarely rupture, accounted for no less than 26% of the total of sudden deaths; and infarction or rupture, depending on coronary disease, for a further 12% of this series. It is remarkable that this disease should have come into proper recognition only as late as 1910 or 1912, mainly through Herrick and Mackenzie, for it undoubtedly existed in the time of the famous clinico-pathological observers of the 1820–60 period—Addison, Wilks, Bright, Gull, and Hodgkin, to mention only one group at a famous London hospital. In the Gordon museum of Guy's Hospital there were displayed specimens of "myomalacia cordis"—arising from coronary-artery disease no less than from softened infarcts. Rupture was also shown—an event which, except for trauma, I have not seen in nearly 20,000 necropsies unless through an infarct or infarct scar.

Since the sex-frequency and distribution of coronary thrombosis in a series of my own cases has already been reported (Simpson 1939), I shall deal here only with its immediate pathogenesis. Numerous observers, notably Winternitz et al. (1938) and Nelson (1942), have drawn attention to the frequency of subintimal hæmorrhage as a factor in the genesis of thrombosis; the key to the lesion is the vascularisation of the normally avascular intima. When atheroma develops, the new sinusoidal capillaries which develop with the disease are most liable to rupture. Rupture is likely during violent exercise or on direct trauma, and the diffusion of thromboplastic substances is a likely consequence of subintimal hæmorrhage, especially if the diseased intima is ruptured. Any interruption of the smooth flow of blood by obstruction of the lumen is naturally likely to foster the development of thrombi, especially during periods of rest or after collapse from any cause.

As regards trauma causing the development of thrombosis, this conception of the pathogenesis is of great importance. Warburg's (1938) review of 197 cases of non-penetrating injuries of the chest included some in which trauma was associated with coronary thrombosis in a manner which would satisfy searching criticism, though naturally it did not provide exact scientific proof. Stern (1945) describes similar cases whose pathogenesis has been equally critically tested.

ASPHYXIA IN INFANTS

The problem of causation in asphyxial deaths in infancy must be handled with the greatest care; its solution is largely a matter of technique. There is no doubt that bronchitis or bronchiolitis, a common cause of infant death, can develop in as short a time as 12–18 hours (Hubble and Osborn 1941), the child appearing normal when fed, placed in a cot or bed, and dying overnight from the accumulation in sleep of mucopus in the air passages. Thelin (1942), of Zurich, claimed that out of 30 cases he examined because the suddenness of death had precluded certification, or even raised suspicion, he could demonstrate blocking of the lumen by inflammatory secretions in 20. Unfortunately his criteria were not sufficiently critical. During any asphyxiation the lungs became congested and excess mucus, œdema fluid, and even blood will accumulate in the air passages. Only microscopy can detect whether pus also lies in this material. Worse, vomiting may complicate the issue, resulting from asphyxia and adding yet another fluid to that already in the air passages. It is at this point that a serious error commonly arises: the death is attributed to the inhalation of vomit, when in fact the vomit is no more than a reflexion of a state of asphyxia already present. Of Thelin's series of 30 cases 7 (23%) died of suffocation. It is likely that microscopy of the fluid in the air passages would have increased the proportion of cases ascribed to suffocation. In the 233 cases of asphyxia in infants extracted for this survey no less than 93 (40%) were the result of accidental suffocation. The application of more strict criteria virtually doubles the number, excluding as non-inflammatory many air-passage fluids that might incautiously be described from their naked-eye appearance as inflammatory.

Thelin also gave a flicker of life to one now virtually dead bogy, status lymphaticus, when he attributed death to this "state" in 3 of his 30 cases. The status lymphaticus is no more than a status, and if we admit, however unwillingly, the possibility (Campbell 1938), that such subjects may die more readily than others of some trivial cause, that does not excuse the failure to find that cause. We should be no more at liberty to say that a person died of flat-feet or a dwarf stature or some other status.

(References at foot of next page)

THE INTRACELLULAR MODE OF ACTION OF THE SULPHONAMIDE DERIVATIVES

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FOLLOWING early observations by Colebrook and Kenny (1936), Colebrook et al. (1936), and Finklestone-Sayliss et al. (1937) that, in the conditions of in-vitro laboratory experiments, the sulphonamides are not immediately lethal to bacteria, Wolff and Julius (1939) showed that *p*-aminobenzenesulphonamide acts on bacteria only when they are multiplying.

From the growth curves presented by these authors it is apparent that active inhibition by sulphonamide only becomes manifest when the organisms enter the logarithmic phase of growth. Soon after this work appeared, the same conclusion was reached by two of us in these laboratories, as already recorded by O'Meara (1942). Hobby et al. (1942), Hobby and Dawson (1944), and Bigger (1944a and b) subsequently showed that penicillin acts best on rapidly growing bacteria, thus extending the original observation of Fleming (1929) that penicillin is lethal to staphylococci only when they are growing. There is, however, no reason to believe that the sulphonamides and penicillin act on the metabolism of micro-organisms in the same way.

The growth phases of bacteria in a culture may be recorded by counting the number of organisms per c.cm. of culture at intervals during growth and plotting the logarithms of the numbers so found against the corresponding time intervals. A "typical" result is shown in fig. 1; the logarithmic phase of growth appears as a straight line, since during this phase the organisms are increasing numerically in a geometrical progression. But, even at the height of the logarithmic phase not all the organisms in the culture are multiplying at the maximal rate. Thus Wilson (1922) has shown that some of them are dying, and Hirsch (1933) found that multiplication took place in spurts. It follows that some are out of step with the majority, either not having yet reached the logarithmic phase or having passed beyond it.

BACTERIA IN LOGARITHMIC PHASE OF GROWTH ARE SUSCEPTIBLE TO SULPHONAMIDES

That it is bacteria in the logarithmic phase of growth which are susceptible to sulphonamides is shown conclusively with logarithmic-phase cultures. These are prepared by subculturing the organisms, when they are at the height of the logarithmic phase of growth in an ordinary culture, into media so adjusted that growth in the subculture continues in the logarithmic phase without interruption. In these conditions the sulphonamides are immediately lethal to bacteria. A logarithmic-phase inoculum is introduced into a control medium and into the same medium with a suitable concentration of added sulphonamide derivative, and bacterial counts are made immediately and at intervals. Growth continues in the control in the logarithmic phase, whereas in the presence of the sulphonamide derivative the culture becomes sterile within an hour. We have used *Bact. coli* with urine as the culture medium and *Strep. pyogenes* with meat-extract-peptone broth to which were added 0·2% glucose and 0·1% sodium bicarbonate. Both the urine and the broth were sterilised by filtration. In all experiments the media were warmed to incubator temperature before inoculation. Bacterial counts were made by the usual cultural methods immediately after inoculation of the media, and at hourly intervals thereafter, for 8 hours as a rule, and finally at 24 hours.

In fig. 2 growth of *Bact. coli* in urine and in urine containing sulphapyridine 40 mg. per 100 c.cm. are compared. The inoculum is from an ordinary 24-hour culture which has passed the logarithmic phase. It will be seen that a 30-fold increase in numbers takes place in the presence of sulphapyridine before the compound begins to act. Sterility is only achieved somewhere between 8 and 24 hours after inoculation.

In fig. 3 the results of using a comparable inoculum of *Bact. coli* in the logarithmic phase of growth are shown. The growth of the control continues geometrically, whereas in the urine containing sulphapyridine sterility is established within an hour.

The corresponding results for *Strep. pyogenes* in the appropriate medium and in the same medium with sulphapyridine 20 mg. per 100 c.cm. added are shown in figs. 4 and 5.

To obtain results as perfect as those shown in figs. 3 and 5 it is necessary to determine exactly, by trial, the period of incubation which brings the preliminary culture to the height of the logarithmic phase. If the inoculum is withdrawn too early or too late, the number of organisms which have not reached the logarithmic phase, or which have passed it, is too great to permit a perfect result. It is also necessary to use a small inoculum of not more than about 100 organisms per c.cm.

Fig. 6 shows the result likely to be obtained if the *inoculum is not fully in the logarithmic phase of growth.* The same type of result is obtained by using too large an inoculum, even though it be taken from the height of the logarithmic phase.

IN SEPTICÆMIA BACTERIA ARE IN THE LOGARITHMIC PHASE

The technique of obtaining logarithmic growth *from* the moment of inoculation may be used to determine whether bacteria causing infection are growing in the logarithmic phase or not. Experimental pneumococcal septicæmia in the mouse lends itself to such investigation, since the organisms are present in the blood-stream of the animal in large numbers shortly before death. Blood is taken from the heart of such animals and is inoculated into the medium used for growing streptococci, or into a similar medium, with 5% added rabbit serum, the medium being warmed to 37°C before inoculation. Bacterial counts are done immediately and at intervals. It is difficult to judge the optimal period for withdrawal of the blood, but most successful cultures start to proliferate immediately without an initial stationary period. They are often not quite in the logarithmic phase though very near it. The results may be interpreted as showing that the great majority of the organisms are in the logarithmic phase, and allowance has to be made for the imperfections inevitable in an experiment of this kind.

DR. KEITH SIMPSON: REFERENCES

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The type of result obtained is shown in fig. 7 in conjunction with a control for which the inoculum was derived from an 18-hour laboratory culture of the same organism as that causing septicæmia in the mouse.

NATURE OF THE CHANGES DURING LOGARITHMIC PHASE OF GROWTH

Bacteria in the logarithmic phase of growth are causing extremely rapid chemical and physical changes in their internal and external environment. They are engaged in fission of those materials in the medium most suited to providing both energy for growth and essential growth requirements. They are assimilating the products of fission, many of which are chemically highly reactive. The physical and chemical changes in bacterial cultures most nearly concerned with the speed of bacterial growth are those related to the sources from which energy for growth is derived. Most pathogenic bacteria utilise the fermentable substances in the media, particularly fermentable carbohydrate such as glucose, if it is present even in traces, as their chief source of energy in the early stages of growth. At the same time there is a fall in pH due to the production of acid, mainly lactic acid, from the sugar. The oxidation-reduction potential of the medium also falls, at first slowly but during the logarithmic phase of growth very rapidly. Hewitt (1936), among others, has studied the redox potentials of cultures of many pathogens. In general their behaviour is similar to that described though differing in detail and degree.

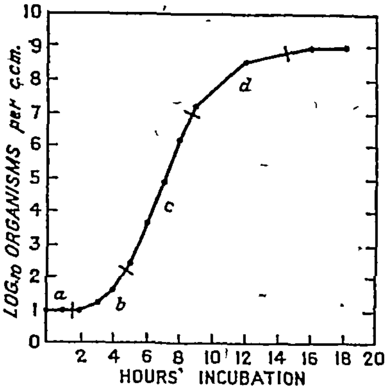
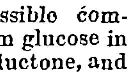


Fig. 1—A typical curve of bacterial growth: (a) initial stationary period; (b) lag phase; (c) logarithmic phase; (d) phase of negative growth acceleration.

As has been previously noted (O'Meara et al. 1944), the rapid development of reducing conditions in the medium must be due to the formation of a substance of great reducing intensity. A sulphydryl compound of the general formula R—SH suggests itself as an obvious possibility, but is ruled out by the fact that not all bacterial cultures which provide the reduction give a positive nitroprusside reaction, as they would be expected to do if sulphydryl were responsible. Another type of compound must therefore be sought; and, in view of its probable formation from carbohydrate, a dienol compound containing the group



$$\begin{array}{cc} -\mathrm{C} = & \mathrm{C}- \\ | & | \\ \mathrm{OH} & \mathrm{OH} \end{array}$$

suggests itself for consideration. The possible compounds of this type likely to be derived from glucose in bacterial cultures are ascorbic acid, glucoreductone, and dihydroxyacetone.

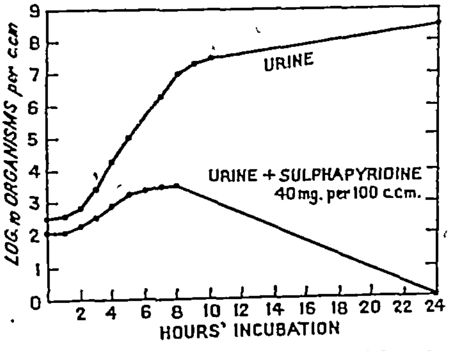


Fig. 2—Growth of *Bact. coli* in urine and in urine containing sulphapyridine. Ordinary inoculum.

PRODUCTION OF A DIENOL COMPOUND BY BACTERIA DURING GROWTH

The production of a dienol compound by the commo pathogens during growth on ordinary laboratory medi is readily shown by the test described by Fearon Kawerau (1943). The organisms are inoculated heavil on to nutrient agar slopes and tested at intervals by wasl ing the growth to the bottom of the slope with abo 1 c.cm. of a saturated aqueous *o*-dinitrobenzene solutio and then adding a drop of 20% caustic-soda Table I shows that all the organisms tested gave a positiv result for the production of a dienol compound, shown by the development of a purple colour, strongest results being obtained early in growth wi such organisms as *Bact. coli*, *Bact. aerogenes*, and *Stap aureus*, which grow vigorously in these circumstances.

Production of ascorbic acid in bacterial cultures h been shown by Büsing and Peters (1940), using *Chrom bact. prodigiosum*. The dienol compound produced b the pathogens does not, however, appear to be ascorb *acid, since it repeatedly failed to give the dihydr* ascorbic-acid test of Fearon and Kawerau (1943), whi is specific for ascorbic acid. The compound produce by bacteria is therefore either glucoreductone or dih droxyacetone. Of these, the former is the more probabl When media of the type used in these experiments a heated for a few minutes in boiling water they w reduce methylene-blue. The pathogens inoculated in media so heated start to grow more readily than unheated media. Hence it is probable that the reduci substance available f immediat utilisation b the orga nisms. It ha been show by O'Mear (1937) th the *concen* tration of th meat extrac prepare freshly fro meat decide the rate which reduc tion will place when the media are heated. There is good reaso to believe that it is the free sugar content of the extrac which determines its reducing power. Moreover, th media are alkaline, and it has been shown by von Eul and Klussmann (1933) and von Euler and Martius (1933 that glucoreductone is readily formed when a such as glucose is heated with alkali. The media use in the experiments recorded in table I gave a *o*-dinitrobenzene test after they had been heated some minutes in boiling water. *Taking all these fac* into consideration it is highly probable that th dienol compound formed by bacteria during growth glucoreductone.

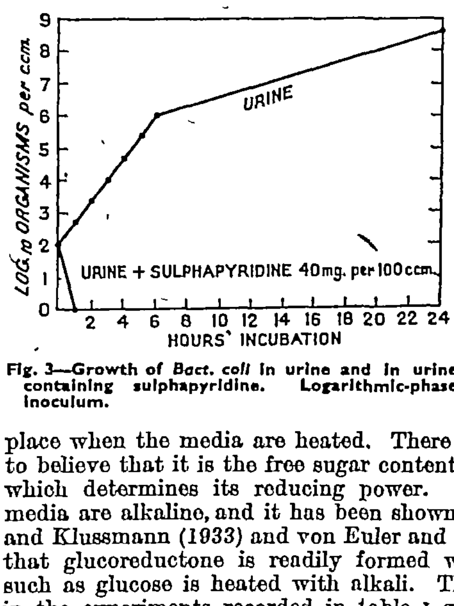


Fig. 3—Growth of *Bact. coli* in urine and in urine containing sulphapyridine. Logarithmic-phase inoculum.

CHEMICAL INTERACTIONS OF *p*-AMINOBENZOIC ACID AN SULPHONAMIDE DERIVATIVES WITH GLUCOREDUCTONE

Highly reactive aldehydic compounds, such as gluco reductone, $CH_2OH.CO.CHO$, form condensation pro very readily with *p*-aminobenzene derivatives. Gluc reductone may be prepared in solution by methods such as the following modified from von Euler and Marti (1933):

> 20 c.cm. of 10% glucose solution is heated with 1 c.cm. of 20% caustic soda at 77°C for 10 min. The solution turns brown. After heating, 1 c.cm. of glacial acetic acid is added and the mixture is cooled.

This solution may be used to prepare condensation products of reductone and the *p*-aminobenzene derivatives. Thus, by saturating the acid solution with *p*-aminobenzoic acid a yellow colour is produced, and a heap of yellow crystals soon begins to be deposited on the unaltered *p*-aminobenzoic acid at the bottom of the tube. The yellow crystals are repeatedly washed with acidulated water until free from *p*-aminobenzoic acid. These crystals are a compound of *p*-aminobenzoic acid and glucoreductone. They are insoluble in water, in which they give a fluorescent suspension, but go into solution with ease on the addition of a trace of alkali, to give a yellow solution in which the compound rapidly undergoes hydrolysis, even at room temperature, to give a colourless solution. After hydrolysis a positive dinitrobenzene test indicating the presence of reductone and a positive Ehrlich reaction indicating the presence of *p*-aminobenzoic acid are given by the solution.

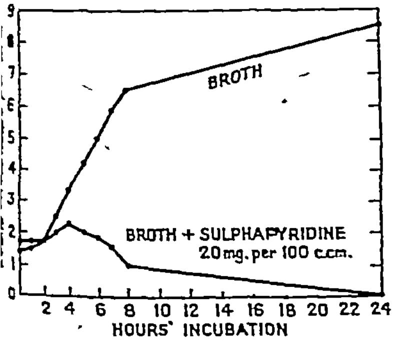


Fig. 4—Growth of *Strep. pyogenes* in broth and in broth containing sulphapyridine. Ordinary inoculum.

The sulphapyridine and sulphathiazole derivatives of reductone have also been isolated. The sulphanilamide reductone compound, owing to its solubility, has not been obtained free from sulphanilamide. Both ascorbic acid and dihydroxyacetone form yellow solutions with *p*-aminobenzoic acid and the sulphonamides. The condensation reactions are slow, and the products of condensation have not been isolated. In referring further to the compounds formed with reductone we shall use the contractions R-P.A.B. for that derived from *p*-aminobenzoic acid, and R-S.A., R-S.P., and R-S.T. for those derived from sulphanilamide, sulphapyridine, and sulphathiazole respectively. Some of their properties are summarised in table II.

The chemical characteristics of these compounds will be the subject of further investigation, but certain properties emerge from this study which correlate well with the observed biological behaviour of *p*-aminobenzoic acid and the sulphonamides (Stamp 1939, Green 1940, Woods 1940, Fildes 1940, Rubbo and Gillespie 1940, 1942).

The extreme ease with which reductone condenses with *p*-aminobenzoic acid to form R-P.A.B. and the ease with which this compound dissolves and undergoes hydrolysis within the biological range of pH suggest that the function of *p*-aminobenzoic acid in bacterial metabolism is to stabilise and temporarily to conserve for use of the cell the extremely active chemical substance glucoreductone formed by breakdown of carbohydrate. Glucoreductone is likely to be an essential source of energy for growth and of carbon for assimilation. It is, at the same time, likely to prove toxic to the cell, by reason of its chemical reactivity, if it is allowed to accumulate in the environment. Moreover, it will be lost by spontaneous oxidation unless stabilised. The oxidation takes place rapidly and is catalysed by copper, which was shown by O'Meara (1937) to have a deleterious effect on the reducing power of bacteriological media and on the maintenance of a low potential by bacteria.

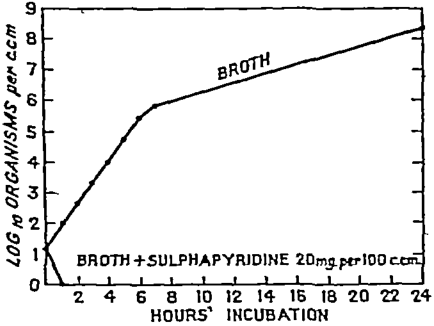


Fig. 5—Growth of *Strep. pyogenes* in broth and in broth containing sulphapyridine. Logarithmic-phase inoculum.

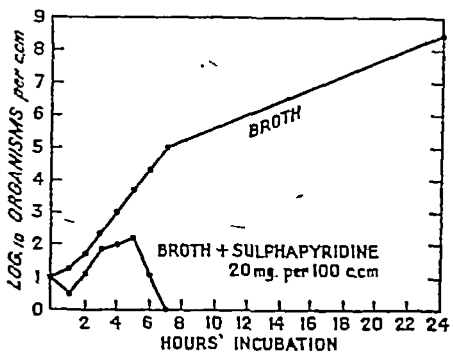


Fig. 6—Growth of *Strep. pyogenes* in broth and in broth containing sulphapyridine. Inoculum not quite in logarithmic phase.

In normal metabolism, therefore, bacteria utilising carbohydrate as a source of energy for growth probably form R-P.A.B. with the reductone which they produce. They then utilise the reductone as required, setting it free from R-P.A.B. Anything which interferes with the production of R-P.A.B. or destroys reductone or diverts it from normal utilisation by the bacteria will disorganise normal metabolism. The production and assimilation of reductone may be interfered with in several ways. By the addition to cultures of substances of similar chemical structure to *p*-aminobenzoic acid with an amino group in the para position, such as the sulphonamides, it is to be expected that reductone will be diverted to form condensation products unable to be used by the bacterial cell. Some compounds will be more active than others, and their activity may be expected to be related to the readiness with which they form derivatives with reductone and the firmness of their combination with reductone or their tendency to combine with reductone in a way different from that which leads to the formation of R-P.A.B. The three sulphonamide compounds which we have studied are, in ascending order of antibacterial activity, sulphanilamide, sulphapyridine, and sulphathiazole. With reductone sulphanilamide forms the least stable and most readily hydrolysable compound. The compound formed with sulphathiazole is most stable, the sulphapyridine compound being more stable than that with sulphanilamide and slightly less than that with sulphathiazole. These findings are in agreement with the antibacterial activity of the substances.

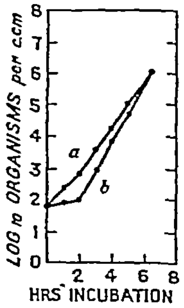


Fig. 7—Growth of pneumococcus: (*a*) inoculum from mouse septicæmia; (*b*) inoculum from ordinary 18-hr. culture.

It also follows that *p*-aminobenzoic acid should be able to inhibit the action of the sulphonamide derivatives. Its power of inhibition should be greatest with sulphanilamide, less with sulphapyridine, and least with sulphathiazole, in view of the stability of their reductone derivatives. This is also in accordance with the observed experimental facts of the inhibitory action of *p*-aminobenzoic acid on the sulphonamide derivatives (Medical Research Council 1945).

Another way in which the utilisation of reductone could be interfered with is by oxidation. In this connexion attention may be drawn to the finding of McLeod this view it is shown that growing bacteria assimilate *p*-aminobenzoic acid and sulphonamides added to their environment.

This view of the mode of intracellular action of the sulphonamide derivatives is compatible both with their known relationship to *p*-aminobenzoic acid and the observations which show that their activity is enhanced by oxygen.

Our thanks are due to Prof. W. R. Fearon and Dr. E. Kawerau for helpful suggestions in the search for the dienol derivative. One of us (H. G. N.) was in receipt of a grant from the Sarah Purser Medical Research Fund.

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STAPHYLOCOCCAL PNEUMONIA IN CHILDHOOD

PATHOLOGICAL CONSIDERATIONS

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PRIMARY staphylococcal pneumonia ranks among the gravest forms of staphylococcal infection in childhood. It occurs in epidemic and sporadic forms; but, though both forms appear to have been recognised more often in recent years, neither is common.

We have observed 55 necropsy cases of staphylococcal pneumonia in children, all under the age of 7 years, two-thirds of them being less than 6 months old, at the Royal Hospital for Sick Children, Glasgow. In addition one of us (K. J. G.) investigated in a maternity nursery an outbreak of staphylococcal infection which included 16 cases of pneumonia. Together these cases form a larger series than any of which we have knowledge, and for this reason and because penicillin is now generally available it seems timely to direct attention to the pathology of staphylococcal pneumonia.

Epidemic Form.—Epidemic staphylococcal pneumonia is often associated with an outbreak of virus influenza, which predisposes to secondary invasion by pyogenic organisms.

Fraenkel (1904) was apparently the first to isolate staphylococcus in pure culture from the lung and pleura o pneumonia patient. Habbe (1929) found staphylococcus a secondary invader more often in influenzal than in oth types of pneumonia. Chickering and Park (1919), Tyt et al. (1919), and Patrick (1919) record staphylococcal pne monia after clinical influenza in young soldiers. Wollenm and Finland (1943) described necropsy findings in 8 ol people.

In young infants staphylococcal pneumonia may a be met with in epidemic form apart from influenza other virus infection, as in the nursery outbreak report by Smith (1935). Cohen (1938) remarks on "the wa like incidence of staphylococcus pulmonary infecti and its propensity for infants in particular."

Sporadic Form.—Staphylococcal primary pneumo in its sporadic form appears to be predominantly children's disease, and according to Macgregor (Scott Scientific Advisory Committee 1947) it is commoner the neonatal period than at any other time of life.

Lyon (1922), on bacteriological examination of sputu lung puncture, blood, and empyema fluid during life, fo *Staph. aureus* to be the causal agent in 3 out of 31 case bronchopneumonia in infants and children. From necro material Menten et al. (1932) isolated *Staph. aureus* in of 131 cases of pneumonia in children. Out of 6 cases Reim (1933) had 1 in an infant, and another single case is quo by Cass (1940) in a paper on staphylococcal infections the newborn. Macgregor (1936) described 10 sporadic ca of staphylococcal pneumonia in children, and Kanof et (1939) had 37 cases in children, but of these only 25 w primary. Gaspar (1941) examined post mortem 144 ca of pneumonia, in 38 of which staphylococcus was the p dominant or only organism. Of these, 20 were under one y of age and 8 between the second and tenth years. Clem and Weens (1942) had 6 examples in early infancy.

Staphylococcal empyema, since it often complicat staphylococcal pneumonia, is also essentially a lesion the younger age-groups.

Kanof et al. (1939) found it in their infantile cases often that they considered it to be an integral part rat than a complication of the disease. Cohen (1938) attribu this to the smaller bulk of lung tissue between the ple and the bronchi in children's lungs than is the case in adul In their series of 33 children, Ladd and Swan (1943) show that the incidence of staphylococcal empyema was great in the first year and indeed in the first three months of li They regarded age as the most important factor in progno with a sharp dividing line at the age of four months; 12 patients below this age 8 died, whereas there was only death in patients older than four months.

HOSPITAL CASES

Pathology

The 55 hospital cases consisted of 45 in which pulmona consolidation was the outstanding feature and 10 which the pneumonia was associated with suppurati bronchitis and bronchiolitis; in 2 it was accompani by acute bronchiectasis, and in 3 by pulmonary absce

The consolidation varied from a dark red hæmorrhag pneumonia, simulating lobar pneumonia both in appea ance and distribution, to a diffuse grey pneumonia wi suppurative softening which sometimes amounted a localised abscess. The simple hæmorrhagic lobar-li pneumonia was present in 10 cases, and in all of the the duration of illness had not exceeded two day When the illness had lasted longer it was common find early suppurative change in a lobe which ha obviously been wholly hæmorrhagic at the onset, whi red consolidation, clearly more recent, bordered th suppurative areas or affected adjacent parts of oth lobes. Fibrinous pleurisy was present in 16, and emp ema in 26, of our cases. As a rule the empyema w unilateral and had produced partial collapse of lung pyopneumothorax was present only in 1 case. Thoug the empyema pus was usually thick and yellow, som it was watery and brownish-red. In contra- on to its frequency in pyæmic staphylococcal nias, purulent pericarditis occurred only twice the series; no metastatic abscesses were found in organs.

roscopically the appearance of the lungs varied in ce with the macroscopic findings. Where the n on inspection was mainly hæmorrhagic con- on, microscopical examination showed groups of packed with red blood-cells as in an infarction. consolidation was not, however, so confluent as the eye appearance had suggested, and the alveoli the margins of the hæmorrhagic areas were often with eosinophilic fibrin-free œdema fluid containing alveolar phagocytes and small groups of gram- e cocci. Nor was this spreading œdema limited the hæmorrhagic pneumonias; it could be seen es at the periphery of well-established areas of tion or in otherwise healthy contiguous lung.

ter a virulent staphylococcal infection had lasted days, the microscopical appearances were com- There were numerous abscesses, some in relation nchi and often with well-defined pyogenic mem- and clumps of staphylococci. These suppurative were separated by consolidated hæmorrhagic or tous lung. Where pus existed in the smaller air els, there was usually a well-established bronchitis bronchiolitis, with extensive cellular infiltration and ction of the bronchiolar walls, amounting in some to acute bronchiectasis. Nevertheless the bronchial often remained intact even to the ciliated epithelium, te pus in the lumen.

ology

ph. aureus was isolated at necropsy from all cases the R.H.S.C. series; in a few instances the organism also been obtained during life from pleural pus throat and nasal swabs. The positive necropsy res totalled 119. Single specimens were examined 24 cases, and two, three, and four specimens from remainder. Pus—e.g., from pleura, lung abscess, bronchus—was cultured; where there was no obvious cultures were made by puncturing consolidated of lung after searing the pleural surface. A few swabs were cultured post mortem and these mostly ded *Staph. aureus*. This organism was isolated from cases of pericarditis.

rom the great majority of specimens cultured the hylococcus was pure. Sometimes, however, material ained by lung puncture or from bronchial exudate wed a combined staphylococcal and coliform flora ect films gave valuable information about the nature the infection), and for this reason we often used ssium tellurite in a dilution of 1/100,000 to suppress form contaminants (Medical Research Council 1940). Most of the strains of *Staph. aureus* from sporadic epidemic cases were deeply pigmented and non- olytic on fresh blood-agar plates. In earlier cases ulase tests were not performed, but with these eptions all other strains were strongly coagulase- tive; those tested for penicillin sensitivity were ally inhibited to about the same degree as the Oxford dard staphylococcus. Specific phages for typing e not available to us.

SICK NURSERY OUTBREAK

One of us (K. J. G.) had personal experience of a small demic of staphylococcal infection in the sick nursery a maternity hospital, where a series of neonatal ths, chiefly among small premature infants, occurred the winter of 1943–44 while mild clinical influenza present among the mothers and the nurses. The ants affected were as a rule healthy at birth. After days of normal progress they suddenly collapsed, quickly became dehydrated and cyanosed, and died within 24–48 hours, without localising symptoms.

Bacteriological and Necropsy Findings

Material for bacteriological examination was obtained before death from some infants and from the whole 44 coming to necropsy. Since the clinical findings gave no clue to the nature of the disease, and since infections in premature infants are often atypical, a fairly comprehensive bacteriological investigation was necessary. Throat and nasal swabs and lung punctures were cultured on routine media to exclude the common respiratory pathogens, and mice were inoculated for pneumococci. Rectal swabs were examined, but no intestinal pathogen was isolated. Blood and spleen cultures were taken to exclude septicæmia. Pneumococci and hæmolytic streptococci were rarely recovered, and *Staph. aureus* was the only pathogen which recurred constantly throughout the investigation, having been isolated from 27 of 31 throat swabs, 40 of 54 lung punctures, and from almost half the 50 combined blood and spleen cultures.

Prof. C. H. Browning kindly performed mouse-virulence tests on several strains from the nursery outbreak; these were only moderately lethal to mice.

At necropsy lesions were confined to the respiratory tract. Of the 44 babies examined, 24 showed only slight hypostatic congestion of the lungs, sometimes with a few petechial hæmorrhages or patchy atelectasis. Pneumonia was present in 16, being localised in 4 and diffuse in 12. Of the 12 diffuse pneumonias 6 were hæmorrhagic and 1 had also multiple abscesses; the remaining 5 were ordinary non-suppurative bronchopneumonias. Multiple small lung abscesses without obvious pneumonic consolidation were present in the other 4 cases.

A more or less heavy growth of *Staph. aureus* was obtained from 10 of the 12 diffusely consolidated lungs, and from 3 of the cases with lung abscesses only. In some instances *Staph. aureus* was isolated also from other sources, such as throat swabs or blood or spleen cultures. No case showed empyema or fibrinous pleurisy; the bronchial tree throughout the series was free from inflammatory change and exudate.

Microscopically the pneumonic lungs showed areas of hæmorrhagic and of suppurative pneumonia with purulent bronchitis and bronchiolitis. Though there was considerable confluence of the pneumonic areas, the condition had clearly begun as bronchopneumonia. Acute vesicular emphysema separated the consolidated portions of lung. A feature of these neonatal lungs was the presence in the alveoli of large clumps of gram-positive cocci. Many of the infected alveoli had merely intense capillary congestion without inflammatory cellular infiltration or exudate, but suppuration with masses of cocci was the rule in the bronchi.

Source of Infection

It is impossible to say whether the staphylococcus alone was responsible for this epidemic, or whether it was associated with a mild type of virus influenza. An attempt was made, however, to trace the source of the staphylococci. No increased antecedent or concurrent incidence of staphylococcal infection, such as mastitis, was reported among the mothers, and the normal infants were free from pemphigus and other staphylococcal manifestations. Attention was then directed to the nurses, from whom multiple throat and nasal swabs were cultured. Of a total of 75 swabs 12 were positive for staphylococci, a figure which compares favourably with others reported in mass investigations of throat and nasal swabs in adults. Thus Gillespie et al. (1939) recorded a nasal carrier-rate of 33·4% in 159 students, and Miles et al. (1944) found relatively large numbers of staphylococci in the nares of 40–50% of over 1000 normal adults.

To exclude milk as a vehicle of infection, prepared feeds were examined and they were found to be sterile. An exogenous source of infection thus appeared improbable, and the staphylococcal lung lesions were evidently endogenous, due to a downward spread of organisms present in the upper respiratory tract. Most of these infants were nasal carriers of staphylococci, and it is well-known that feeble premature children are ill adapted to combat such infection.

DISCUSSION

In this children's hospital the bacteriology of respiratory disease has always received considerable attention, and we have found that the incidence of staphylococcal pneumonia has increased within recent years. This view is endorsed by Cohen in America. Similarly, Bracken (1941) noted a sharp rise in the percentage of staphylococcal pneumonia in adults in the last of the five-year periods he investigated in Pittsburgh. In Edinburgh also, Macgregor (1936), who recorded 10 cases of staphylococcal pneumonia in children within a year, remarked that the occurrence of so many sporadic cases in so short a time possibly indicated a phase of increased staphylococcal virulence.

Since small children swallow sputum, it is not available for bacteriological examination, and the incidence of staphylococcal pneumonia during life is difficult to assess. For this reason most of the published records are based on necropsy findings or on the culture of empyema fluid.

On comparing the necropsy records of this hospital in 1926–35 with those of the following decade, it is noted that, of 2300 consecutive necropsies in 1926–35, primary pulmonary staphylococcal infection was diagnosed in 3 cases only, whereas of 2877 consecutive necropsies in 1936–45, it was diagnosed in 55 cases. In both decades the proportion of necropsies to deaths has been more or less uniform, and thus there is a factual basis for the view that staphylococcal pneumonia has recently increased in this hospital.

Analysis of the bacteriologically investigated empyemata, of which we have complete records since 1928, yields supporting evidence. Care has been taken to exclude empyemata arising in the course of a staphylococcal pyæmia. Blacklock and Guthrie (1933) found that, of 46 fatal cases in which empyema complicated the pneumonia, 41 were pneumococcal, 4 streptococcal, and only 1 staphylococcal. Of 219 empyemata in 1931–45, all occurring in the course of respiratory infections, 10·5% were due to *Staph. aureus* alone. Like other workers (Riley 1944), we have noted in this hospital that, since the routine use of sulphonamides in pneumonia, the number of empyemata due to sulphonamide-sensitive organisms has diminished; on the other hand, there has been an increase, both relative and absolute, in staphylococcal empyemata.

We wish to emphasise the rapidly fatal character of the disease, whether sporadic or epidemic, in young children. Among our hospital cases the whole duration of illness in one child of 15 months was thirty hours; three children of 4 weeks, 1 year, and 4 years died thirty-six hours after onset; and six had an illness lasting not longer than two days. These children had apparently been previously healthy, and it was usually severe dyspnœa which first attracted attention, or sometimes the onset was accompanied by rigor, cough, and vomiting. In the nursery epidemic, affecting weakly and premature infants, sudden collapse was the most arresting feature, and death often occurred too quickly for localising signs to develop. The report on neonatal deaths due to infection (Scottish Scientific Advisory Committee 1947) emphasises that in maternity hospitals infection among infants, especially in the premature group, may appear and run its course without being recognised either as a cause of sickness or deat as an unwitting source of spread, because of highly elusive signs and symptoms.

Some writers regard the child's age as the fa which determines the type of lung lesion. Gaspar (1 in his series of 28 cases (20 of them under a year found that the staphylococcal pneumonias seen in first ten days of life appeared as lobular or lobar solidations, dark red and hæmorrhagic on section. similarity between early staphylococcal pneumonia pneumococcal pneumonia in the stage of red hepatisa is emphasised also by Smith (1935) and Genni (1943). Ladd and Swan (1943) contrasted the exud hæmorrhagic reaction frequent in infancy with staphylococcal abscesses which they saw more ofte older children. Analysis of our material has sh that the pulmonary lesion was related not to the of the child so much as to the duration of the ill since infants only a few days old sometimes live week or more after the onset and came to necr with suppurative lung lesions. Hæmorrhagic p monia, then, was in our experience the character finding in staphylococcal pulmonary infections of s duration, and it was often associated with sprea alveolar œdema.

Hæmorrhagic pneumonia with œdema is likewise earliest acute pulmonary lesion of human virus influe and it is also an experimental finding. McCordock Muckenfuss (1933) found, in rabbits given intratrac injections of vaccine virus, that the earliest gross ch was an exudative lesion consisting of œdema coagulated albuminous fluid and flakes of fibrin in alveoli. Alveolar hæmorrhage with focal nec developed rapidly in the most acute cases where st virus was used. True lobar and lobular pneum could not be induced by injection of virus alone, were produced together with bronchial and peribronc abscesses when pyogenic cocci were introduced the virus. This suppurative process developed slowly and thus corresponded to the lung lesions w we saw in staphylococcal pneumonia of longer durat

The bacteriological findings support the view acute staphylococcal pneumonia in children is a bronchogenic infection, either endogenous or exogen probably the former as a rule, though only in 3 of hospital series was there a definite history of an a cedent nasal discharge. This is a surprisingly s number, but in the nursery epidemic *Staph. aureus* isolated on direct plating from nasopharyngeal sw of about 90% of sick babies, whereas in a control se of 50 healthy premature infants nearly 65% w positive. Smith (1935) also found a high nasal stap lococcal carrier-rate among infants of a matern hospital in which a staphylococcal epidemic had brol out. Cruickshank (1946) refers to the high incide (80–100%) of nasal carriers of *Staph. aureus* in the f few weeks of life, and thinks that the nose is the reserv from which endogenous infection spreads, since " newborn infant is ill adapted to cope with bacte invasion." In 6 of our cases, however, the staphy coccal pneumonia appeared to be a hospital (exogeno infection. These children were all infants under months of age, 5 having been admitted to hospi because of failure to thrive or of continuous vomiti and 1 because of coliform pyuria. On admission evidence of respiratory disease could be detected, a the infants seemed to improve for some days, when sudden rise in temperature heralded the onset of pn monia. Death took place within a few days, a necropsy revealed extensive pulmonary consolidation.

In view of the pronounced sensitivity to penicil of most strains of *Staph. aureus*, it appears that in su urgent cases penicillin would offer the best chance controlling the infection. Our observations on t pathology and bacteriology of staphylococcal pneumonia in children show that even in the earliest stages there is an extensive loss of aerating lung surface, so that penicillin, if it is to be effective, must be given early and in adequate dosage.

Diagnosis, particularly in the sporadic cases, is difficult. Considerable experience has convinced us of the uncertainty of lung puncture and the unreliability of throat swabs in the bacteriological diagnosis of pneumonia in childhood; and to await the results of bacteriological examination is to lose valuable time. In our opinion there is a prima-facie case for the exhibition of penicillin, with or without sulphonamides, empirically in all grave pneumonias in childhood, or when sudden dyspnœa or rise in temperature complicates a postnasal or upper respiratory infection in infants. Diagnostic difficulties are less in the epidemic form of the disease—for example, in maternity nurseries—and under these conditions penicillin may be used prophylactically.

The feasibility of administering penicillin by mouth has simplified its use in childhood. Buchanan (1946), working in this hospital, found that 4000 units of penicillin per lb. of expected body-weight daily, given in feeds to children under six months of age, yielded blood-penicillin levels comparable with those obtained with three-hourly injections of similar amounts. There is no objection to increasing this dose, and the 10,000-unit tablets manufactured by Burroughs Wellcome & Co. dissolve readily in feeds and are convenient in use. Further work has shown that these results can be obtained with certainty only in premature children and in infants in the first month of life, and though up to the age of six months most children absorb penicillin by mouth there is a proportion, increasing with age, which do not. Therefore in children over the age of a month it is prudent in grave illness to give three-hourly injections of penicillin in a dosage of not less than 4000 or 5000 units per lb. of body-weight daily. Older children tolerate the continuous intramuscular drip reasonably well.

The rapid spread of pulmonary œdema in acute cases suggests that oxygen should not be omitted from the therapy, and the delay in establishing bacteriological diagnosis is an argument in favour of combining penicillin with sulphonamides. A further reason for this combined treatment is the tendency for penicillin-insensitive organisms to appear during the course of penicillin therapy. Coliform replacement was known to occur in war wounds infected originally with staphylococci (Thomson 1944), and we have met with a pure coliform flora at necropsy, both in films and in cultures from multiple specimens, in bacteriologically proved staphylococcal pneumonias treated with penicillin.

A typical alteration in flora was seen in a male infant aged 4 weeks who developed bronchopneumonia with much cyanosis and dyspnœa and from whose sputum *Staph. aureus* was isolated on Feb. 28, 1946.

Penicillin by mouth, in a dosage of 9000 units six times a day, was begun on that day and was continued for ten days without improvement. Sulphadiazine was then given in an initial dose of 0·5 g. followed by 0·25 g. four-hourly. On March 11 thick muco-pus aspirated from the pharynx gave a pure coliform growth, insensitive to penicillin.

The child died that night, and at necropsy both lungs showed diffuse consolidation, with early suppurative softening and pus-filled bronchioles. A film of lung-puncture material showed coliform bacilli, and culture of this and of bronchial pus produced a pure coliform growth of ordinary fæcal type.

Such replacement has been recorded by Southwell (1946) during the treatment of bronchiectasis with inhaled penicillin, where after the elimination of penicillin-sensitive organisms from the sputum a luxuriant growth of coliform bacilli developed. It must be noted, however, that pneumonia in the neonatal period may be due solely to coliform bacilli (Macgregor 1947), which is another reason for combining penicillin with sulphonamides.

SUMMARY

Staphylococcal pneumonia appears to be becoming more common.

A grave disease with a high mortality, particularly in infants, this infection occurs both in sporadic and epidemic forms, and in epidemics is often secondary to virus infection, particularly influenza.

Pathological changes in children vary according to the duration of the disease. The earliest stage is a hæmorrhagic exudative reaction simulating the red hepatisation of lobar pneumonia, and this is particularly likely to be found in infants.

Premature babies have a poor resistance to the staphylococcus, and in lung infection death may take place with minimal pulmonary reaction, though the lungs contain abundant cocci.

The early exhibition of penicillin in adequate dosage combined with sulphonamides is recommended.

We wish to thank the clinical staff of the Royal Hospital for Sick Children, Glasgow, and of the Sick Nursery, Royal Maternity Hospital, Glasgow, for access to the clinical records.

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THE CHRONIC PARETIC

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ATTENTION has often been drawn to the large proportion of patients with general paresis who, after artificial fever treatment, survive as chronic inmates of a mental hospital. Thus Lomholt (1944) wrote: “The malarial treatment has created a category of patients which was not known before, namely the defect-cured or stationary paralytics who fill our asylums in great numbers and are a burden to their families and to society.” An early survey by Meagher (1929) of the results of malaria therapy suggested that about a third of the treated patients became chronic hospital inmates. Jossmann (1931), in a survey of 2200 patients, found 25% retained in hospital after treatment, and Moore et al. (1943) a somewhat higher proportion.

Few accounts of the condition of such patients with arrested or slowly progressive paralysis have, however, appeared. The extensive report by Lomholt on a series of Danish cases is an exception. It is therefore considered justifiable to present a summary of the condition of 42 such patients in Friern Hospital (see table).

CONDITION OF CHRONIC PARETICS BEFORE AND AFTER TREATMENT

Case no.	Age on admission (yr.)	Date of admission	Before treatment							Treatment					After treatment (1942)						
				Cerebrospinal fluid						Malaria‡		Arsenic		Colloidal sulphur		Cerebrospinal fluid					
			Blood W.R., yr.,§ and result	Yr.§	Protein (mg. per 100 c.cm.)	Cells per c.mm.	W.R.	Lange	Clinical findings	Yr.§	No. of rigors	Drug	Total dose (g.)	No. of injections	Blood W.R.	Protein (mg. per 100 c.cm.)	Cells per c.mm.	W.R.	Lange	Mental state	Working capacity
1	51	1930	+30+	..	++	+	+15+	5555443210	Gr, dem, GPI	*2*	5	T	12	2	+30+	20	Nor	+2	Nor	Dem	Not
2	42	1936	+30+	..	..*	40	+	5554321100	Dem, GPI	..	6	T	12	..	+10	20	,,	—	,,	Par, dem	,,
3	30	1930	+30+	..	++	++	+30+	5555542100	,,	..	12	..	..	11	+30+	30	,,	+6	,,	Gr, dem	Goo
4	51	1938	+30+	..	70	++	+30	5555544321	,,	..	..	T	6	..	+15	20	,,	—	,,	Slight dem	Not
5	31	1921	..	*1*	++	+	+40+	..	,,	*3*	12	NK	2·7	..	+6	20	,,	—	,,	Dem, sch	,,
6	30	1931	*6*+30	*6*	90	++	+30+	5555543210	Dem, TP	*6*	10	T	12	..	+30	20	,,	+2	3322100000	Slight dem	So
7	54	1934	+30+	..	+	+	+6	5554432100	Gr, dem, GPI	..	12	T	12	12	+	20	,,	—	Nor	Gr	Not
8	53	1939	..	..	125	+++	+30+	5555554321	Dem	..	..	T	22	..	+30+	40	,,	+2	2221100000	Dem	So
9	41	1923	*2*+30+	*2*	++	++	+40+	..	Dep, dem, TP	*2*	12	NK	2·7	15	+7·5	20	,,	—	Nor	Childish	Goo
10	38	1928	+40	..	++	+	+++	5555543210	Gr, dem, TP	..	12	NK	2·7	12	—	20	,,	—	,,	Gr, dem	So
11	42	1924	..	..	+++	++	+40	..	Gr, dem, GPI	..	12	NK	2·7	13	—	20	,,	—	,,	Dem, sch	Not
12	57	1932	+30+	..	..	..	..	..	,,	..	6	..	..	6	—	30	,,	—	,,	Gr, dem	Goo
13	47	1924	*6* −	..	..	..	..	..	Dem, GPI	*1*	12	NK	2·7	4	—	30	,,	—	,,	Sch	Not
14	36	1930	+30+	..	++	++	+15	5555543210	Par, dem	..	12	NK	2·1	12	+6	20	,,	—	,,	Dem	Goo
15	48	1923	*7* −	*1*	++	++	+40+	..	Gr, dem, GPI	*1*	12	NK	2·7	..	—	25	,,	,,	,,	Gr, dem	Not
16	20	1924	*10*+30+	*10*	+	++	+15	5544321100	Gr, GPI	*10*	12	T	12	..	+6	Lumbar puncture refused				,,	,,
17	32	1936	++++	..	75*	25	++++	5555555321	Par, dem, TP	..	9	T	12	..	—	,,	,,	,,	,,	,,	,,
18	32	1919	*7*+20+	*3*	Nor	Nor	—	..	Par, hem	..	..	..	..	..	—	20†	Nor	—	Nor	No gross dem	Goo
19	31	1925	+40+	..	++	++	+40+	..	Dem	*2*	12	NK NAB	2·7 1·8	..	—	20†	,,	—	,,	,,	,,
20	62	1929	+40+	..	++	Nor	+40+	5555555321	Dem, GPI	..	12	NK T	2·7 25·5	14	—	Lumbar puncture refused				,,	,,
21	25	1912	*13*+40+	*13*	+†	+	+4	..	Par	*13*	8	NK	2·7	12	—	30	Nor	—	Nor	,,	,,
22	32	1917	*15*+30+	*8*	++	++	..	5555432100	Par, GPI	*9*	10	NK T	2·7 12	..	—	20	,,	—	,,	Dem	Som
23	47	1932	+30+	..	++	++	+30	5555432100	Gr, dem, GPI	..	10	T	12	..	—	20	,,	—	,,	No gross dem	Goo
24	31	1915	*7* −	*7*	..	..	—	..	Gr, confused	..	..	..	..	..	—	Lumbar puncture refused				,,	,,
25	50	1934	++	..	50*	++	+30	5555554321	Gr, dem	..	12	T	12	..	+30+	20	Nor	—	Nor	Gr	Som
26	50	1925	+40+	..	..	..	+40+	..	Dem	*1*	12	NK	2·7	..	+10	40	,,	—	,,	Euphoric, dem	Goo
27	39	1934	+30+	..	+	+	+15	5555543210	Gr, dem, GPI	..	12	T	24	7	+30	+	Red cells	—	,,	Destructive, dem	Non
28	30	1929	+++	..	130*	196	++	5555544322	Dem, GPI	..	10	T	+	..	+6	20	Nor	—	,,	No gross dem	Goo
29	36	1928	+40	..	++	+	+40	..	Gr, dem, GPI	..	6	NK	2·7	4	—	30	,,	—	,,	Euphoric, dem	,,
30	37	1930	+30+	..	++	+++	+30+	5555543210	Dem, GPI	..	12	NK	1·05	12	+30+	60	4	+30+	5433210000	Dem	Som
31	43	1931	+30+	..	++	++	+15	5555443210	Sch, dem, GPI	..	8	T	12	..	+30+	20	Nor	—	Nor	,,	Goo
32	50	1931	+30+	..	+	+	+30+	5555443210	Gr, dem, TP	..	10	T	12	..	+30+	20	,,	—	,,	Euphoric	,,
33	35	1933	+30+	..	+++	18	++	4333333310	Gr, dem, GPI	*1*	12	T	12	8	+30+	60	,,	—	0011221100	Dem	,,
34	49	1931	+30+	..	..	..	..	..	Dem, GPI	..	12	..	..	..	+30+	70	40	+15	4433221000	Gr	None
35	32	1935	+30+	*1*	+	..	+15	4432110000	Manic	*1*	12	T	24	11	+30+	50	Nor	+15	2221110000	Dem, sch	,,
36	42	1928	+40+	..	++	+	+40+	5555543210	Gr, dem, GPI	..	12	NK NAB	2·7 1·25	..	+6	35	,,	—	Nor	,,	,,
37	14	1927	+40+	..	+	+	+8	5554432100	Dem, GPI	..	..	..	..	..	+30+	20	,,	—	,,	Dem	Some
38	46	1931	+30+	..	+	+	+30+	5555543210	Gr, dem, TP	*1*	8	T	4	9	+30+	20	,,	—	,,	No gross dem	,,
39	43	1931	+30	..	..	..	..	..	Gr, dem, GPI	..	11	T	20	5	+30	20	,,	—	,,	Gr, dem	None
40	46	1936	+30+	..	+	+	+6	0012321000	Par, dep	..	10	T	12	..	+30+	20	,,	—	,,	Dem	Some
41	35	1923	+	*1*	++	++	+40+	..	Dep	*2*	12	NK	2·7	..	+	30	,,	—	,,	,,	Good
42	31	1937	+30+	..	70	++	+30+	5555543100	Gr, dem, GPI	..	12	T	12	..	+30+	25	,,	—	,,	Dem, sch	None

* Excess globulin present. † No excess globulin. ‡ Benign tertian strain was used in all cases except nos. 2, 3, 5, 15, 27, 28, and 42, where there is no record of the strain. § No. of years after admission, where not same year, is shown in italics.

NAB, 'Novarsenobillon'; NK, 'Neokharsivan'; T, 'Tryparsamide'; Nor, normal; GPI, general paralysis of the insane; TP, taboparesis; hem, hemiplegia; gr, grandiose; dem, demented; dep, depressed; par, paranoid; sch, schizophrenic.

For explanation of numerical results of Wassermann reaction (W.R.) see Mann and Partner (1936).

It might be thought that, with the reduced incidence syphilis and the more extensive use of penicillin, the ults of fever therapy in general paresis would become little practical interest. However, the late war brought steep increase in the number of fresh cases of syphilis, d the early reports on the use of penicillin in neuro- philis are disappointing, probably because the blood- ain barrier presents a formidable obstacle to therapy Neymann et al. 1945). So for some time to come the ults of artificial fever treatment are likely to be of terest to the psychiatrist and syphilologist.

MATERIAL

The 42 patients were all inpatients in Friern Hospital. he average period which had elapsed after treatment 11¹/₂ years, the range 6–18 years. In most cases the ebrospinal fluid (C.S.F.) was normal or almost so, but C.S.F. Wassermann reactions showed a slight change. r colloidal-gold curves started with figures of 2 3, one with 4, and in case 30 twelve years after treat- nt, a patient who could still do a little work in the ital, there was a typically paretic curve with a very ngly positive C.S.F. Wassermann test. In 25 cases blood Wassermann reaction was positive.

As regards the mental picture, 12 patients were gran- and demented, 13 had simple dementia, 3 were ndiose without gross dementia, 2 were depressed, were schizophrenic, and 8, though kept in hospital, not appear grossly deteriorated. The number ed as schizophrenic and paranoid before treat- nt was 7, and 6 after treatment, which supports mholt's view that the incidence of the so-called rstmann psychosis—i.e., schizophrenia developing as result of malaria therapy—is rare.

Of the 42 patients 17 were good workers, 9 were fair rkers, 15 did no work, and 1 was destructive. A good ny of them displayed an almost pathological appetite r manual work, such as scrubbing, sweeping, cleaning, d scouring. They were expansive cheerful inde- tigable workers who would gladly work an extra- dinary number of hours without reward. Fixation at is nearly hypomanic level is common in the treated es of general paresis.

DISCUSSION

Lomholt's picture of mental hospitals with a dense opulation of paretics, their disease arrested by malaria, somewhat overdrawn. Despite the tendency for ch cases to accumulate with the years, they still form London but a small group compared with the great cumulation of cases of chronic schizophrenia which England is a far more serious social problem.

The earlier estimates (Jones 1926, Lilly and Hopkins 927), which attributed 10% of admissions to mental ospitals to syphilis, are either inaccurate or refer to period when the incidence of syphilis was higher Hilliard and Kirman 1941). From my personal observa- ions on admissions to London observation wards in 940–42, less than 2% are due to syphilis. In some ountries where syphilis is more common than in Britain —Simpson (1935) reported 500,000 fresh cases yearly U.S.A.—the problem may be more serious, but it is ifficult to understand how in a country like Denmark, here fresh cases of syphilis before the late war had eached the phenomenally low level of 400 a year, the ental hospitals can be choked with paretics. In fact, hronic paretics in England occupy only a small proportion of the total accommodation, and some of them ppreciably more than earn their keep.

It has been seriously suggested to me that fever therapy should be withheld from the more obviously demented paretics since, even at the best, after treatment they would merely be a burden on the community for years to come. This attitude seems indefensible, because (1) even the most experienced clinician may underestimate the degree of recovery which is possible, and (2) it is clear that the size of the burden thus imposed on the community has been grossly overrated.

It remains true, however, as Nicol and Hutton (1944) showed, that general paralysis is eminently curable, and that the best results are obtained in the treatment of relations of patients with positive C.S.F. but no clinical signs. Each chronic paretic represents a lost opportunity of early diagnosis and cure. It is to be hoped that, with the general recognition by syphilologists of the need for surveillance of the C.S.F., the results of fever therapy will become increasingly favourable and the chronic paretic correspondingly rare.

SUMMARY

A series of 42 cases of chronic paresis who have remained in Friern Hospital for 6–18 years is reviewed.

The average period after treatment was 11¹/₂ years.

Of the 42 patients 24 were doing some work in hospital, and some were very good workers, though in 25 cases the blood Wassermann reaction was still positive, and in 7 the C.S.F. Wassermann reaction still showed slight changes.

Chronic paretics do not represent a heavy burden on the community and should become much fewer with the routine use of lumbar puncture by venereologists, followed where necessary by prophylactic fever treatment or suitable chemotherapy.

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TRANSPLANTATION OF TERES MAJOR AND LATISSIMUS DORSI

FOR LOSS OF EXTERNAL ROTATION AT SHOULDER

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The teres major muscle does not seem to have been used often for transplantation, though Boppe (1944) substituted it for a paralysed serratus anticus. In 1934 L'Episcopo described six cases of obstetrical palsy in which he had transplanted the insertion of teres major from the front to the back of the humerus. The paralysis of the external rotators was complicated by an adduction and internal-rotation contracture, and the tendon transference had to be preceded by division of all the contracted tendons on the front of the joint, as described by Fairbank (1913) and Sever (1925). L'Episcopo could not find any previous reference to this tendon transplantation.

The operation described here differs in some respects from that suggested by L'Episcopo, and it may have important applications in the reconstructive surgery of the many brachial-plexus lesions sustained in the war.

L'Episcopo placed the patient prone, with the arm abducted, and his incision was parallel to the lower border

CONDITION OF CHRONIC PARETICS BEFORE AND AFTER TREATMENT

Case no.	Age on admission (yr.)	Date of admission	Before treatment							Treatment					After treatment (1942)						
			Blood W.R., yr.,§ and result	Cerebrospinal fluid					Clinical findings	Malaria‡		Arsenic		Colloidal sulphur	Blood W.R.	Cerebrospinal fluid				Mental state	Working capacity
				Yr.§	Protein (mg. per 100 c.cm.)	Cells per c.mm.	W.R.	Lange		Yr.§	No. of rigors	Drug	Total dose (g.)	No. of injections		Protein (mg. per 100 c.cm.)	Cells per c.mm.	W.R.	Lange		
1	51	1930	+30+	..	++	+	+15+	5555443210	Gr, dem, GPI	2	5	T	12	2	+30+	20	Nor	+2	Nor	Dem	No
2	42	1936	+30+	..	..*	40	+	5554321100	Dem, GPI	..	6	T	12	..	+10	20	"	−	"	Par, dem	"
3	30	1930	+30+	..	++	++	+30+	5555542100	"	..	12	..	..	11	+30+	30	"	+6	"	Gr, dem	Go
4	51	1938	+30+	..	70	++	+30	5555544321	"	..	..	T	6	..	+15	20	"	−	"	Slight dem	No
5	31	1921	..	*1*	++	+	+40+	..	"	*3*	12	NK	2·7	..	+6	20	"	−	"	Dem, sch	"
6	30	1931	*6*+30	*6*	90	++	+30+	5555543210	Dem, TP	*6*	10	T	12	..	+30	20	"	+2	3322100000	Slight dem	So
7	54	1934	+30+	..	+	+	+6	5554432100	Gr, dem, GPI	..	12	T	12	12	+	20	"	−	Nor	Gr	No
8	53	1939	..	..	125	+++	+30+	5555554321	Dem	..	..	T	22	..	+30+	40	"	+2	2221100000	Dem	So
9	41	1923	*2*+30+	*2*	++	++	+40+	..	Dep, dem, TP	*2*	12	NK	2·7	15	+7·5	20	"	−	Nor	Childish	Go
10	38	1928	+40	..	++	+	+++	5555543210	Gr, dem, TP	..	12	NK	2·7	12	−	20	"	−	"	Gr, dem	So
11	42	1924	..	..	+++	++	+40	..	Gr, dem, GPI	..	12	NK	2·7	13	−	20	"	−	"	Dem, sch	No
12	57	1932	+30+	..	..	..	..	..	"	..	6	..	..	6	−	30	"	−	"	Gr, dem	Go
13	47	1924	*6* −	..	..	..	..	..	Dem, GPI	*1*	12	NK	2·7	4	−	30	"	−	"	Sch	No
14	36	1930	+30+	..	++	++	+15	5555543210	Par, dem	..	12	NK	2·1	12	+6	20	"	−	"	Dem	Go
15	48	1923	*7* −	*1*	++	++	+40+	..	Gr, dem, GPI	*1*	12	NK	2·7	..	−	25	"	"	"	Gr, dem	No
16	20	1924	*10*+30+	*10*	+	++	+15	5544321100	Gr, GPI	*10*	12	T	12	..	+6	Lumbar puncture refused				"	"
17	32	1930	++++	..	75*	25	++++	5555555321	Par, dem, TP	..	9	T	12	..	−	"	"	"	"	"	"
18	32	1919	*7*+20+	*3*	Nor	Nor	−	..	Par, hem	..	..	..	..	..	−	20†	Nor	−	Nor	No gross dem	Go
19	31	1925	+40+	..	++	++	+40+	..	Dem	*2*	12	NK NAB	2·7 1·8	..	−	20†	"	−	"	"	"
20	62	1929	+40+	..	++	Nor	+40+	5555555321	Dem, GPI	..	12	NK T	2·7 25·5	14	−	Lumbar puncture refused				"	"
21	25	1912	*13*+40+	*13*	+†	+	+4	..	Par	*13*	8	NK	2·7	12	−	30	Nor	−	Nor	"	"
22	32	1917	*15*+30+	*8*	++	++	..	5555432100	Par, GPI	*9*	10	NK T	2·7 12	..	−	20	"	−	"	Dem	Son
23	47	1932	+30+	..	++	++	+30	5555432100	Gr, dem, GPI	..	10	T	12	..	−	20	"	−	"	No gross dem	Go
24	31	1915	*7* −	*7*	..	..	−	..	Gr, confused	..	..	..	..	..	−	Lumbar puncture refused				"	"
25	50	1934	++	..	50*	++	+30	5555554321	Gr, dem	..	12	T	12	..	+30+	20	Nor	−	Nor	Gr	Son
26	50	1925	+40+	..	..	..	+40+	..	Dem	*1*	12	NK	2·7	..	+10	40	"	−	"	Euphoric, dem	Goo
27	30	1934	+30+	..	+	+	+15	5555543210	Gr, dem, GPI	..	12	T	24	7	+30	+	Red cells	−	"	Destructive, dem	Non
28	30	1929	+++	..	130*	106	++	5555544322	Dem, GPI	..	10	T	+	..	+6	20	Nor	−	"	No gross dem	Goo
29	36	1923	+40	..	++	+	+40	..	Gr, dem, GPI	..	6	NK	2·7	4	−	30	"	−	"	Euphoric, dem	"
30	37	1930	+30+	..	++	+++	+30+	5555543210	Dem, GPI	..	12	NK	1·05	12	+30+	60	4	+30+	5433210000	Dem	Som
31	43	1931	+30+	..	++	++	+15	5555443210	Sch, dem, GPI	..	8	T	12	..	+30+	20	Nor	−	Nor	"	Goo
32	50	1931	+30+	..	+	+	+30+	5555443210	Gr, dem, TP	..	10	T	12	..	+30+	20	"	−	"	Euphoric	"
33	35	1933	+30+	..	+++	18	++	4333333310	Gr, dem, GPI	*1*	12	T	12	8	+30+	60	"	−	0011221100	Dem	"
34	40	1931	+30+	..	..	..	..	..	Dem, GPI	..	12	..	..	..	+30+	70	40	+15	4433221000	Gr	Non
35	32	1935	+30+	*1*	+	..	+15	4432110000	Manic	*1*	12	T	24	11	+30+	50	Nor	+15	2221110000	Dem, sch	"
36	42	1928	+40+	..	++	+	+40+	5555543210	Gr, dem, GPI	..	12	NK NAB	2·7 1·25	..	+6	35	"	−	Nor	"	"
37	14	1927	+40+	..	+	+	+8	5554432100	Dem, GPI	..	..	..	..	..	+30+	20	"	−	"	Dem	Some
38	46	1931	+30+	..	+	+	+30+	5555543210	Gr, dem, TP	*1*	8	T	4	9	+30+	20	"	−	"	No gross dem	"
39	43	1931	+30	..	..	..	..	..	Gr, dem, GPI	..	11	T	20	6	+30	20	"	−	"	Gr, dem	None
40	46	1930	+30+	..	+	+	+6	0012321000	Par, dep	..	10	T	12	..	+30+	20	"	−	"	Dem	Some
41	35	1923	+	*1*	++	++	+40+	..	Dep	*2*	12	NK	2·7	..	+	30	"	−	"	"	Good
42	31	1937	+30+	..	70	++	+30+	5555543100	Gr, dem, GPI	..	12	T	12	..	+30+	25	"	−	"	Dem, sch	None

* Excess globulin present. † No excess globulin. ‡ Benign tertian strain was used in all cases except nos. 2, 3, 5, 15, 27, 23, and 42, where there is no record of the strain. § No. of years after admission, where not same year, is shown in italics.

NAB, 'Novarsenobillon'; NK, 'Neokharsivan'; T, 'Tryparsamide'; Nor, normal; GPI, general paralysis of the insane; TP, taboparesis; hem, hemiplegia; gr, grandiose; dem, demented; dep, depressed; par, paranoid; sch, schizophrenic.

For explanation of numerical results of Wassermann reaction (W.R.) see Mann and Partner (1930).

Preliminary Communication

IMMUNISATION OF THE MAMMALIAN EMBRYO

It is generally accepted that young mammals initially receive all their antibodies from the mother, though these are ultimately replaced by other antibodies formed by the gradual development of active immunisation. Some species obtain their maternal antibodies mainly through the placenta before birth, whereas other species —e.g., calves, lambs, kids, foals, and pigs—obtain all their antibodies through the colostrum after birth (Needham 1931, Marrack 1946, Rimington and Bickford 1947, McGirr 1947). Antibodies secreted in the colostrum, the titre of which equals or even exceeds that of the maternal serum (Mason et al. 1930), pass rapidly through the wall of the gut into the circulation of the newborn, with the result that the titre of their serum may equal or exceed that of the mother a few hours after the first feed.

In man, the rabbit, and the guineapig, which species obtain their maternal antibodies mainly through the placenta before birth, the young may acquire further antibodies through the colostrum after birth. Both homologous and heterologous antibodies can pass the placental barrier in these species. The current view is that these antibodies pass through the allantochorionic placenta, and that its permeability depends on the number of tissues intervening between the maternal and fœtal blood-streams. Thus in the ungulates, in which the greatest number of tissues intervene between the maternal and fœtal circulations, the placenta is impermeable to antibodies, whereas in anthropoids and rodents, in which none of the intervening maternal tissues persists and even the fœtal tissues may be reduced, the placenta is permeable to antibodies.

The histological identification of a clot of fibrin in the yolk sac cavity of many 8-, 9-, and 10-day embryos of wild rabbits, though this is probably an abnormality, led to the demonstration that fibrinogen, which clots in oxalated solution in the presence of thrombin, is a normal component of the yolk-sac fluid of the embryos of tame rabbits (Brambell and Mills 1946, 1947). It has since been shown by electrophoresis and the ultracentrifuge that albumin, α, β, and γ globulins, and fibrinogen are all present in the yolk-sac fluid in similar proportions to each other as in the maternal plasma. The presence of these plasma-proteins in the yolk-sac fluid of 7- and 8-day embryos, before the development of the embryonic vascular system, indicates that they are probably derived from the mother. Further evidence of this is the fact that Evans blue, injected into the maternal circulation, becomes selectively attached to the albumin fraction and passes into the yolk-sac fluid (Brambell, Hemmings, Kekwick, and McCarthy, not yet published).

The presence of globulins in the yolk-sac fluid and their known immunological significance suggested that antibodies might pass from the maternal circulation into the embryo through the bilaminar omphalopleur of the yolk-sac wall. We have shown that agglutinin for *Brucella abortus*, whether actively or passively acquired, passes freely from the maternal circulation into the yolk-sac cavities of rabbit embryos on the 7th and 8th days post coitum, before the formation of the allantochorionic placenta. The passage into the yolk-sac in a few hours of the agglutinin passively acquired by the mother, inoculated with immune serum, precludes the possibility of its formation in the embryo.

Agglutinin passes from the mother into the embryo also at later stages of gestation, after the 15th day post coitum, by which time the allantochorionic placenta is fully established and the yolk-sac cavity has been opened up to the uterine lumen by the disappearance of the bilaminar omphalopleur. It has not been possible to determine so far whether this passage at later stages of embryonic development is via the allantochorionic placenta or via the exposed yolk-sac splanchnópleur or both.

The bearing of these results on the current theory of placental permeability is obvious, since it is clear that agglutinins can, and do, pass into the rabbit embryo by a route other than the allantochorionic placenta. Evidently the passage of agglutinin through the embryonic membranes does not depend on the proximity of the maternal and fœtal circulations. Moreover there does not appear to be any morphological reason why the yolk-sac should not provide a possible route into the embryo for maternal globulins in other rodents also; but this is not true for man, in which it is precluded by complete isolation of the yolk-sac wall from the chorion by the exocoele. Some character of the embryonic membranes common to man and the rodents, other than hæmochorial placentation, may explain their similarity in permeability to antibodies.

This work forms part of a scheme of research on prenatal mortality financed by a grant from the Agricultural Research Council to one of us (F. W. R. B.).

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Reviews of Books

A Way of Life for the Handicapped Child

EIRENE COLLIS, M.L S.P., M.A.O.T. Foreword by SOMERVILLE HASTINGS, F.R.C.S. Introduction by WINTHROP M. PHELPS, M.D., F.A.C.S. London: Faber and Faber. 1947. Pp. 183. 10*s*. 6*d*.

THE title of this book is somewhat misleading, since it deals only with children handicapped by cerebral palsy, and not with those handicapped by other conditions such as rheumatic heart disease or poliomyelitis. It is a technical treatise, designed to enable the doctor, therapist, or teacher to understand the handicaps and how they may be overcome; and within these limits it is extremely valuable, though not easy reading. The arguments, and some of the sentences in which they are developed, demand close attention if they are to be understood, while some of the author's assumptions are of doubtful validity. Nor is the list of references complete, accurate, or well arranged; but these blemishes are inconsiderable when compared with the implicit evidence of wide reading, keen observation, and hard thought.

Mrs. Collis is a follower, in this field, of Prof. W. M. Phelps, of Baltimore, who has written the introduction to her book. Her practice differs from his chiefly in her reliance on physical education, while Phelps makes much additional use of splinting and of drugs. She recently indicated in these columns the ideas on which her treatment is based,[1] and she explains and expands them in this book. She deals with the attitude of the parents and the important part played by fear, love, and rage in the child, and she analyses the motor defects and their immediate causes and considers the associated sensory defects. Mental defect receives rather less attention than it deserves; in the past all sufferers from cerebral palsy were likely to be dubbed mentally defective and ineducable, while nowadays

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1. *Lancet*, Aug. 16, pp. 239, 248.

of the deltoid and to the long head of the triceps. The teres major was approached on the medial side of the triceps, which needed strong retraction laterally to expose the shaft of the humerus. If the first part of the operation is undertaken with the arm behind the patient's back—i.e., in adduction and *full internal* rotation—the muscle is easily exposed between the long and lateral heads of the triceps, as in Henry's (1945) approach to the back of the humerus. L'Episcopo attached the transplanted tendon to the bone just medial to the lateral head of the triceps, an insertion which does not give a good mechanical advantage. By passing the transplant through a longitudinal slit in the origin of the lateral head of the triceps, it can be inserted on the lateral aspect of the humerus if the arm is externally rotated but not abducted.

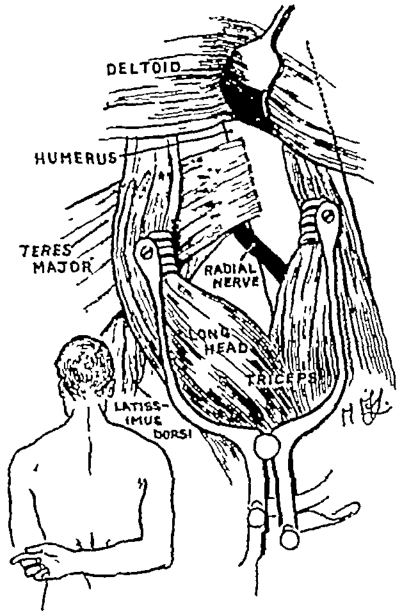

Fig. 1—Retraction of deltoid upwards and separation of long and lateral heads of triceps to expose teres major.

The other feature in which this operation differs from that of L'Episcopo is that both the latissimus dorsi and the teres major are transplanted.

CASE-RECORD

A man, aged 30, had been wounded by a shell splinter in the right side of the neck and below the angle of the right scapula on Jan. 23, 1944. The wound in the chest had caused a hæmothorax, but healing had been satisfactory except for some involvement of the latissimus dorsi in the scar. The neck wound had been complicated by a partial brachial-plexus paralysis affecting C5 and C6. The patient was admitted to the Wingfield-Morris Orthopædic Hospital on June 21, 1944, under the care of Prof. H. J. Seddon. The plexus was explored on July 19, and was found to be in continuity; *later considerable recovery took place, chiefly in the deltoid and biceps.*

On Oct. 8, 1946—nearly three years after the injury—the deltoid and biceps were working against gravity and weak resistance, but the external rotators of the humerus showed no more than a flicker of voluntary power. The patient's chief disability was the tendency of the arm to swing towards the chest when he lifted anything in the right hand. He was a gardener, so the inconvenience was considerable, and he was anxious to have any operation that might improve function.

Operation (Oct. 9, 1946).—With the patient prone and the arm in full internal rotation, the insertion of the teres major was exposed by a reversed S incision over the back of the upper third of the arm, *the posterior border of deltoid being* retracted upwards, and the long and lateral heads of the triceps separated (fig. 1). The radial nerve was identified *at the lower border* of the teres major, and, after a dissector had been introduced in front of the insertion of the muscle, the tendon was detached from the humerus. The latissimus *dorsi* was so intimately blended with the teres major at its lower margin that both muscles were taken together. A confusing anatomical anomaly was *a belly* of muscle running parallel to the upper part of the teres major but on a posterior plane. This muscle was inserted on the posteromedial aspect of the humerus medial to the *uppermost* fibres of origin of t lateral head of the *triceps.* The arm was externally rotat as much as possible, and the tendinous insertions of the ter major and latissimus dorsi were *passed* through a *slit* in t upper part of the lateral head of the triceps (fig. 2). Th *then ran deep to a longitudinal periosteal* band about 1 c wide and were finally fixed to the posterolateral aspe of the humerus with a mattress suture passed through dr holes.

After closure of the wound the arm was fixed in extern rotation with a strut passing from a plaster belt to a lo arm plaster.

After-treatment.—This position was maintained for fi weeks, and after the first three weeks voluntary and farac exercises were performed without abducting or internal rotating t humerus.

Progress.—(Nov. 14 t plaster w removed; t patient cou flex the should and elbo without t forearm swin ing inwar towards t abdomen an could put t hand to h mouth with eas By Dec. 16 t function of t transplant ha improved co siderably; the was no tendenc to interna rotation o the arm whe the elbow w flexed, and t patient coul actively exter ally rotate t humerus from a position of full internal rotation to abo 15° of external rotation. He was delighted with the resu and was convinced that it made the arm more useful.

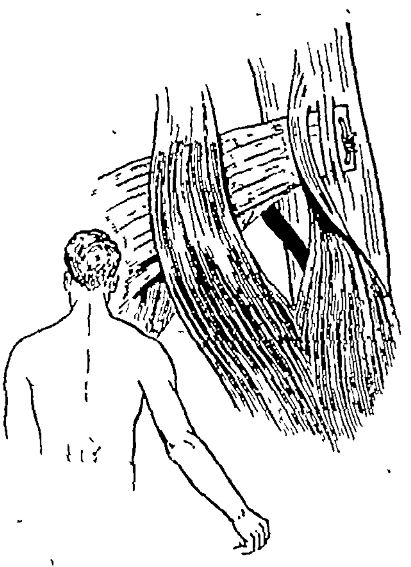

Fig. 2—Detached tendon of teres major and latissimus dorsi passed through slits in lateral head of triceps and periosteum, and sutured to humerus.

COMMENT

A high proportion of brachial-plexus injuries affec the upper roots or trunk of the plexus, and in suc palsies recovery is seldom so good in the external rotator as in the deltoid and elbow flexors. Thus a permanen paralysis or weakness of external rotation is common sequel of this injury, with the result tha the patient cannot lift any object without the forear *swinging in towards the trunk,* a disability whic is aggravated if the external rotators are *subjecte* to greater *stress* by abducting the arm.

SUMMARY

Transplantation of the teres major and latissimu dorsi to the outer side of *the humerus* is suggested t restore external rotation of the arm in certain injurie of the brachial plexus.

The operation is a modification of that described by L'Episcopo and *makes* use of Henry's approach to the back of the humerus.

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The Cardiac Burden

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there is a tendency to say that, apart from a few exceptions, they are all mentally normal. Neither statement fits the facts, though the modern view offers better safeguards for the child; certainly many intelligent children have missed both treatment and education because they were wrongly labelled mentally defective. One way of judging fitness for treatment is to try it for three months or even longer. Research on intelligence tests for these children is urgently needed.

Re-education is discussed in principle and in detail, and the parts played by physiotherapists and occupational and speech therapists are outlined. Rule-of-thumb treatment is useless; the therapists need to be highly intelligent well-trained people with analytical minds and human sympathies. The section on school work gives only meagre information, but there are useful lists and drawings of equipment, and descriptions of exercises and the methods of physical examination.

Although Mrs. Collis writes: "The book . . . has no bearing whatever on the politics, ethics, or administration of new cerebral-palsy schemes," she has been unable to resist a sketch of how the present organisation might be remoulded nearer to her heart's desire. She has wisely not tried to deal with the practical difficulties and complications. Her book will interest therapist, pædiatrician, neurologist, and orthopædic surgeon, but the practical politics of bettering our lamentable facilities for the treatment of cerebral palsy must be worked out in committee.

Diseases of Metabolism

(2nd ed.) GARFIELD G. DUNCAN, M.D., clinical professor of medicine, Jefferson Medical College, Philadelphia. London and Philadelphia: W. B. Saunders. 1947. Pp. 1045. 60s.

THE first edition of this book appeared in 1942 and represented the work of some fifteen contributors. The same authors are largely responsible for the new edition but are joined by six others. The chapters on disorders of thyroid metabolism and on diseases of the kidney are new and good, and though the book as a whole is very much as it was, some of the chapters have been largely rewritten. C. N. H. Long, for instance, has inserted a great deal of new matter into the chapter on carbohydrate metabolism, and this part now contains a clear summary of the biological systems of oxidising enzymes and the importance of the organic phosphates with high energy bonds. The preface notes that the disturbances in nutrition seen during and after the war have "further crystallized medical thinking in terms of total calories, protein, vitamins, minerals and fluid balance." Yet the new chapter on undernutrition, though somewhat longer than the old, will seem dull and academic to anyone who has had any experience of the real thing during the last five years; and the chapter on vitamins contains no mention of the obscure but interesting syndromes which emerged as clinical entities from the prison camps in the Far East. The chapter on mineral metabolism is little changed. The section on iodine, however, has been omitted and appears in expanded form in the new chapter by Winkler on thyroid diseases. Some will not accept all the statements about serum iodine, for those not at New Haven have found it difficult to make satisfactory determinations of iodine in serum; but present ideas about the treatment of thyrotoxicosis are clearly reviewed.

Preventive Medicine and Public Health

WILSON G. SMILLIE, M.D., professor of public health, Cornell University, New York. London: Macmillan. 1947. Pp. 607. 30s.

DR. SMILLIE defines preventive medicine as "those activities that are the direct responsibility of the individual," falling "for the most part upon the family health advisor." It is time that this distinction was made between public health—the old State medicine—which is the function of communities and in which the family doctor does not take an active part, and the prevention of diseases and preservation of the health of individuals, which are his province entirely. Dr. Smillie has little to say about communal hygiene, which is roughly synonymous with sanitation, but deals at length with the more technical medical service of guarding people fr diseases. Broadly, this is the approach to medicine through epidemiology, using that term in wide sense which is now general. Though Dr. Smilli approach tends to be from the pathological rather th the physiological angle—being concerned with t prevention of diseases rather than the maintenance a furtherance of health—this is none the less a m serviceable book. Since health and disease have boundaries, it will be useful to British as well as American doctors, though British students will recogn differences in practice on the two sides of the Atlant Being intended for students and for those in acti medical practice, its statements are dogmatic; lit is said of subjects about which professional epidem logists are still speculating. The book is fully up to d in most particulars, though there is no reference to t action of rubella in pregnancy producing developmen errors in the embryo, and we miss a chapter on geneti In the next edition Dr. Smillie might well mention t British control of rabies, for this is the only example a disease being exterminated by action designed for th purpose.

Bone and Bones—Fundamentals of Bone Biology

JOSEPH P. WEINMANN, M.D., College of Dentist University of Illinois; HARRY SICHER, M.D., Sch of Dentistry, Loyola University, Chicago. Lond H. Kimpton. 1947. Pp. 464. 50s.

OSTEOPHILES, whether clinicians, pathologists, ana mists, or physiologists, have long been looking an authoritative book on their subject, and this goes a fair way towards satisfying them. The are a pathologist and an anatomist, and their d viewpoints thus cover the normal and disordered m phology and morphogenesis of osseous tissue, bon and teeth. The chapter on osseous tissue is in some wa the most disappointing section: so much is left There is scant mention of the intracellular subst its character and formation (for all that it is the re *skeleton from which bone is built*), and *nothing about* t work on X-ray analysis and polarised light which h been so well reviewed by Dallemagne in the series French monographs, *Actualités Biochimiques*. In t section on bones as organs the mechanisms of growth a modelling are well set out, and there is a good account the functional adaptation of bones though not of t changes which occur from adult life to old age.

The rest of the book deals with the pathology of bon and here again there are serious omissions. Osteogenes imperfecta, osteopetrosis, achondroplasia, and heredita multiple exostosis are well described, but dyschondr plasia and the more localised developmental disturbanc are not mentioned. The chapter on adaptational deform ties of the skeleton could scarcely be better, in particul the sections on the changes in scoliosis and the alteratio in the jaw consequent on loss of teeth. The chapte on endocrine, hormonal, and metabolic changes a for the most part sound, but it is puzzling to find front hyperostosis considered as a benign tumour. Nothing said of bone changes in chronic renal failure, Milkman' syndrome, or polyostotic fibrous dysplasia. In th section on neoplasms the effects of tumours on th bones as organs is hardly considered, but the accoun of tumour histology is stimulating. The description o Paget's disease contains no reference to the recent wor on the vascular changes in this condition, nor to Wilton' interesting hypotheses—indeed, the important schoo of Scandinavian osteopathology is to a large exten ignored, though there are ample and well-arrang references to American, English, and German auth

Despite its disappointing omissions, this is an admira book which will be useful to a wide circle of readers.

Recent Advances in Pathology (5th ed. London: J. & Churchill. 1947. Pp. 363. 21s.).—Prof. Geoffrey Hadfie and Prof. L. P. Garrod have introduced an entirely ne chapter on the liver, discussing epidemic hepatitis and al the relationship of hepatic disease to dietary deficiencies the chapter on nephritis has been rewritten, and the chap ters on cancer research revised and rearranged. Addition have been made to the sections on inflammation, the site o antibody formation, and silicosis.

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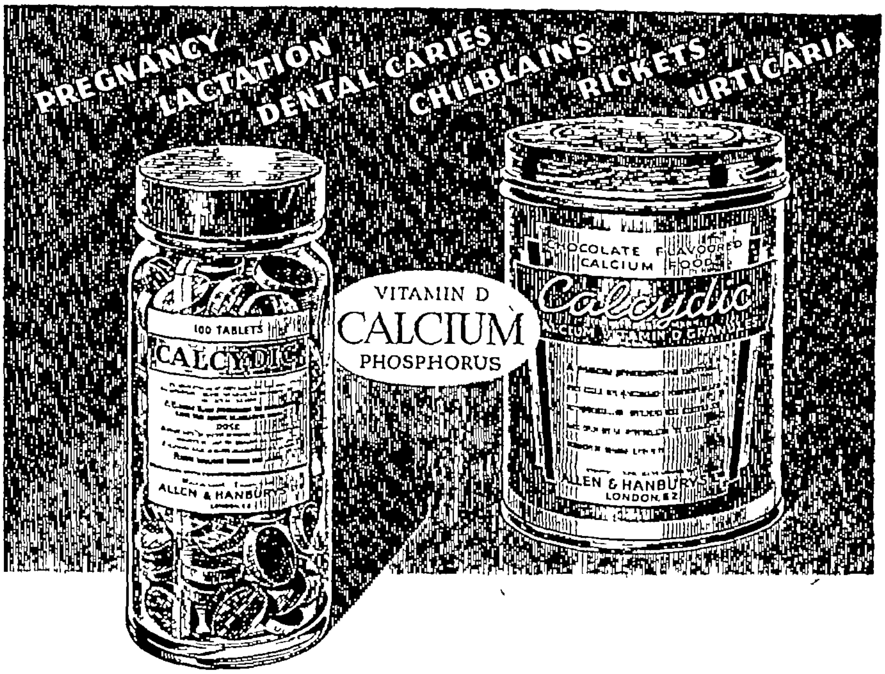

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THE LANCET

LONDON: SATURDAY, NOV. 22, 1947

Europe's Need

WHAT is the present state of continental Europe? w is the health of the people? There can be few ers in this country and fewer still in America could give a clear answer. No reliable opinion be offered without sufficient facts. The reports journalists who have travelled widely in Europe conflicting and often based on hearsay or superl impressions. Doctors returning from the tinent have usually been preoccupied with a e problem in a limited area, and so can give broad review. Public-health statistics, when ailable at all, have generally been collected r difficulties; and, since they have not always n correctly analysed, their interpretation is etimes open to doubt. It has thus been very d to get a satisfactory overall picture of the ent situation, and the International Committee the Red Cross is the more to be congratulated on mpting a general review.

Summarising information from its delegates in all opean countries except Norway, Sweden, Denk, Eire, Luxemburg, Switzerland, Portugal, and aria, the committee paints a gloomy picture.[1] re is still an appalling lack of elementary shelter the areas devastated by war. Essential clothing, especially footwear, is almost everywhere scarce. shortage of food for urban populations is in ral worse than a year ago, owing to the unbroken ession of poor harvests, and—although this is sufficiently stressed—through the sudden ending this year of the vast flow of foodstuffs imported UNRRA into Central and Southern Europe. It is surprising that in many countries the infant-tality rate and general death-rate are still above war levels. (The report claims that the general th rate is actually rising, but it gives no figures.) many towns children are now undersized as a lt of several years of underfeeding, and rickets undoubtedly common, though other vitamin ncies are notably rare. As might be expected, rrhœa and syphilis are still a serious problem many countries, though perhaps not "simply astrophic" as the report suggests. While there been no widespread epidemics of infectious ase, local outbreaks of enteric and diphtheria inue; and malaria, despite vigorous preventive sures, is still prevalent in Italy and the Balkans. haps the most remarkable feature of this post-r period, compared with that after the war of 14-18, has been the general absence of exanthe-tic typhus on an epidemic scale—a phenomenon unconnected with UNRRA's importation of over illion pounds of pure D.D.T. into Europe for the vention of this disease, besides large shipments for the control of malaria.[2] As for tuberculosis, which is without doubt the most important infection in Europe today, mortality figures leave little doubt that it has much increased in many places. At the same time, all such figures need very careful scrutiny. For example, the committee's statement that in the American zone (including the Berlin sector) the tuberculosis death-rate "rose from 20 per 10,000 inhabitants in April, 1946, to 37·5 in April, 1947" seems to be unjustified. For the population of a little over 17 million it would imply between 35,000 and 65,000 deaths in the year, whereas the number of deaths from tuberculosis notified over this period was about 11,000.[3] Also it is not clear why the report singles out Germany as one of the three countries (with Austria and Rumania) where the situation is "particularly disastrous" and pays little attention to Greece and Yugoslavia where the incidence is almost certainly higher. Some of the victims of aggression appear to be in more need of help than Germany, if only because they have suffered privation longer.

The survey ends with a summary of relief needs. No-one who has travelled in post-war Europe would question the continued need for the means of improving local food-production—tools, tractors, draught animals, fertilisers, and seed. Clothing and facilities for feeding children are also required, and (among the medical supplies) surgical instruments, dressings, penicillin, sulphonamides, arsenicals, and D.D.T. The primary need of infants is for dried milk, with sugar and farinaceous foods a very secondary requirement; and in this connexion it is to be hoped that the International Red Cross will consider the recent recommendations of F.A.O. and the World Health Organisation on relief for children.[4] Owing to the termination of UNRRA before its task was finished, the health of many thousands of people in Europe depends for the moment on the efforts of the International Red Cross and other relief agencies: there has been a gap in the larger measures of relief. But the damage of war has gone far deeper than was at first supposed, and the fundamental need is not so much relief as the means to recovery. We must hope that this will yet be met through the great American "investment in humanity" known as the Marshall plan.

Carotid Ligation

THE surgeon generally approaches ligation of the carotid arteries with a feeling of uncertainty; for, as JEFFERSON[5] has pointed out, the pattern of the circle of Willis is incomplete in 8% of normals, and this defect is particularly serious if both anterior cerebral arteries take origin from the same side of the arch. No great reliance is now placed on preoperative tests for the presence of such congenital anomalies. LAHEY and WARREN[6] conclude that the percutaneous compression test of MATAS "is of value only when positive in the production of symptoms." Protracted carotid compression each day, without incident, may yet be followed by postoperative catastrophe—perhaps because the vessel ligation induces temporary intracranial vasospasm. Lambert Rogers[7] holds that electro-encephalography, after temporary ligation, yields better information about the brain anoxia; and this, combined with dynamometer testing of the limb, should be an invariable prelude to final ligation. *But an electro-encephalograph is seldom at hand, and* there are many snags in interpretation. There may, moreover, be no local signs, cerebral ischæmia declaring itself later by epileptiform seizures, blackouts, or mental changes such as inability to concentrate, difficulty in remembering words, and even dementia. Ligation is best carried out under local anæsthesia, since a general anæsthetic may increase cerebral anoxia.[8] For the patient with carotid-vessel injury, however, general anæsthesia is a merciful procedure, for often he is dyspnœic and restless, and certainly he is anxious.

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[1] ealth Conditions among the Civilian Populations of Certain European Countries Affected by the War. No. 3, revised ition. Geneva: Comité International de la Croix Rouge. August, 1947.

[2] Sawyer, W. A. *Amer. J. publ. Hlth,* 1947, 37, 41.

[3] *Lancet,* July 26, p. 144.

[4] Report on Child Nutrition from the Food and Agriculture Organisation and the World Health Organisation (Interim Commission), Washington, D.C., July, 1947.

[5] Jefferson, G. *Proc. R. Soc. Med.* 1947, 40, 419.

[6] Lahey, F. H., Warren, K. W. *Surg. Gynec. Obstet.* 1947, 85, 281.

In support of his claim that common-carotid ligation is "safe" Lambert Rogers quotes figures from Jefferson, Olivecrona,[9] and Schorstein.[10] Schorstein has said that the danger is cerebral anoxia rather than thrombosis; and the first consideration, especially with emergency ligation, is attention to the general condition, any blood loss being corrected by rapid blood-transfusion. It is odd that Kocher regarded common-carotid ligation as a "death sentence for the old man" whereas so astute an observer as Mont Reid[11] thought such operations safer in the old than in the young. Most of their ligations, however, were for traumatic cases; and the greater optimism which prevails nowadays is perhaps due to the use of massive transfusions. For the ruptured intracranial aneurysm Jefferson[5 12] has long advocated common-carotid ligation, and experience suggests that such "Hunterian ligature" slows the blood-stream enough to cause clotting within the aneurysm sac. Lambert Rogers also favours this procedure, and quotes Magee's[13] review of 150 cases *in which there were 98 survivors from the first* hæmorrhage but 50 of these had a further hæmorrhage, from which 32 died. Such a simple measure seems preferable to applying clips to the neck of the friable aneurysm sac, or to Dandy's use of clips above and below the sac origin.[14] Jefferson, from an unrivalled personal experience, concludes that persistent pain is the danger-signal of the "alive" aneurysm, and this estimate can be confirmed by arteriography.

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7. Rogers, L. *Brit. J. Surg.* 1947, **35**, 51.
8. Lichtenstein, M. E. *Surg. Gynec. Obstet.* 1947, **85**, 165.
9. Olivecrona, H. *Acta chir. scand.* 1945, **91**, 353.
10. Schorstein, J. *Brit. J. Surg.* 1940, **28**, 50.
11. Reid, M. R. *Ann. Surg.* 1935, **102**, 926.
12. Jefferson, G. *Brit. J. Surg.* 1938, **26**, 267.
13. Magee, C. G. *Lancet*, 1943, **ii**, 497.
14. Dandy, W. Intracranial Aneurysms, Baltimore, 1944.
15. Parry, R., Rogers, L. *Brit. J. Surg.* 1939, **27**, 179.
16. Learmonth, J. R. *Proc. R. Soc. Med.* 1946, **39**, 483.
17. Learmonth, J. R. *Brit. J. Surg.* 1945, **32**, 321, and Associat
    of Surgeons' meeting, Oxford, July, 1947.
18. Shumacker, H. B. *Surg. Gynec. Obstet.* 1946, **83**, 625.
19. McDonald, C. A., Korb, M. *Arch. Neurol. Psychiat., Chic*
    1939, **42**, 298.

Drug-induced Statements

ENGLISH law does not allow an accused person's ions or admissions to be used against him they were freely and voluntarily made; the n of proof is on the prosecution to satisfy the that they were not induced by any promise of our or advantage, or by the use of fear or threats. or may loosen a man's tongue; the sheer fatigue long-continued questioning or the use of "third " methods may break down the reticence or ge the defence of persons detained by the e. The report of the Royal Commission on ce Powers and Procedure, published in 1929, con- and emphasised the rule that this kind of to obtain confessions is not tolerated in this try. In the United States it does not seem ain that their use will be prohibited—so long as they employed in a manner calculated to obtain truthful ts. Do the two Anglo-Saxon communities differ their views of fair play to the accused? If so, is difference due perhaps to the varying levels of ess in the enforcement of the law? Is it that in this country are content with the orthodox thods because our Scotland Yard and our local ective staffs manage to attain a reasonably high portion of convictions in cases of crime?

These questions are prompted by an interesting cle,[1] well documented with references to American e law, by Mr. LEON M. DESPRES, a member of the inois bar. Here is a detailed study of the so-called "truth drugs" or "lie-detectors." If it can be med as the experience of anæsthetists or obstet- ians that, under the influence of certain drugs, a tient will make spontaneous and revealing dis- sures, and if similar stimuli could succeed in cases amnesia where a man cannot recall his own name address, or in cases where the psychiatrist is seeking key to repressions, why not apply the like process defence of the community against the criminal? A year ago, says Mr. DESPRES, the prosecuting thorities in Cook County, Illinois, caused a psychia- ist to give a series of injections of sodium 'Pentothal' William Heirens, a 17-year-old boy arrested in an tempted burglary and suspected of some sensational rders. This elicited, it is said, an admission that had committed three murders and a number of rglaries later found to exceed five hundred. When is led to his written confession and his pleading ilty, the newspapers were bound to proclaim the ccess of the new "truth serum" in promoting the entification and conviction of a criminal. Nor need e "serum" be the monopoly of one side only. Dr. ROBERT E. HOUSE, whose writings on this subject are thoritative, recorded twenty years ago that a ysician injected scopolamine into two convicts in Dallas county gaol and established to his satisfaction at they were not guilty of the crimes charged. Dr. W. F. LORENZ,[2] writing in 1932 on Criminal Confessions under Narcosis, considered the use of drugs far more effective in clearing the innocent than n convicting the guilty. But in 1926 the supreme court of Missouri rejected a defendant's offer to support his innocence by testimony of statements made while under the influence of a drug. A doctor was ready to depose that the accused had, under the influence of a "truth-telling serum," denied his guilt. "We are not told," said the court sceptically, "from what well this serum is drawn or in what alembic its alleged truth-compelling powers are distilled. Its origin is as nebulous as its effect is uncertain. . . . The trial court . . . ruled correctly in excluding this clap-trap from the consideration of the jury." Mr. DESPRES thinks that this decision would be universally followed by other American judges today. "The unreliable nature of the statement and the suggestibility of the subject would make any court hesitate to disorganise a trial by allowing admission. . . . Although widely used by police, by employers, by insurance companies and others to detect deception, the 'lie detector' test has not yet established itself as sufficiently trustworthy to be admissible in evidence." One court has refused to admit the tests of a "lie-detector" even when both sides were ready to let them be put in.

Textbooks on both sides of the Atlantic deal with the forensic use of information obtained by using drugs to get statements which in themselves are inadmissible. It is unnecessary to remind medical practitioners that an injection against the will of the patient is an assault. Mr. DESPRES raises another question: if in the course of the proper medical use of a drug like sodium pentothal the physician hears a confession of crime, what is his duty? Mental patients include a proportion who are, in the legal sense, criminals as a result of mental ill health; the question is therefore by no means academic. The Hippocratic oath and the acceptance of professional secrecy give the answer. For the rest we may note his conclusion that, while the therapeutic use of sodium pentothal and related drugs must be encouraged, their injection into unconsenting criminal suspects is premature until society fully accepts the principle and practice that law-breakers are to be treated and corrected rather than punished, and that the aim of criminology should be the speedy cure and rehabilitation of the criminal without regard to traditional ideas of retribution and public punishment.

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[1] *Univ. Chicago Law Rev.* 1947, 14, 601.
[2] *Wis. med. J.* 1932, 31, 245.

Group Practice

IN the United States group practice has been developed on a scale unknown in this country. In their latest broadsheet[1] P.E.P. attribute its growth partly to the desire of doctors to provide a full service in undeveloped regions—particularly rural areas—and partly to their desire, by pooling resources, to provide a service within the means of their patients. A third motive has been the wish among doctors for coöperation and consultation; day-to-day consultations are supplemented by staff meetings and good record systems. Within the group financial competition is eliminated, though friction may still arise over the allocation of fees, and personalities may clash: some doctors are regarded as unsuitable for group work because they are uncoöperative by habit or temperament. Conditions in the U.S.A. are very different from those that will prevail in Britain with the new health service; but P.E P.'s report may be profitably studied for its lessons on the benefits and drawbacks of close integration in medical practice.

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[1] Medical Group Practice in the United States. *Planning*, Nov. 14 (no. 274). From P.E P., 16, Queen Anne's Gate, London, S.W.1. 2s (post free).

because the vessel ligation induces temporary intracranial vasospasm. Lambert Rogers[7] holds that electro-encephalography, after temporary ligation, yields better information about the brain anoxia; and this, *combined with dynamometer testing of the* limb, should be an invariable prelude to final ligation. But an electro-encephalograph is seldom at hand, and there are many snags in interpretation. There may, moreover, be no local signs, cerebral ischæmia declaring itself later by epileptiform seizures, blackouts, or mental changes such as inability to concentrate, difficulty in remembering words, and even dementia. Ligation is best carried out under local anæsthesia, since a general anæsthetic may increase cerebral anoxia.[8] For the patient with carotid-vessel injury, however, general anæsthesia is a merciful procedure, for often he is dyspnœic and restless, and certainly he is anxious.

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[7] Rogers, L. *Brit. J. Surg.* 1947, 35, 51.

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[13] Magee, C. G. *Lancet*, 1943, ii, 497.

[14] Dandy, W. Intracranial Aneurysms, Baltimore, 1944.

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[18] Shumacker, H. B. *Surg. Gynec. Obstet.* 1946, 83, 625.

[19] McDonald, C. A., Korb, M. *Arch. Neurol. Psychiat., Chic* 1939, 42, 298.

apposed through sucking, but when chewing starts the two move farther apart and snoring becomes possible with mouth-breathing. In adults muscle tone is an important controlling influence, irrespective of nasal airway. The position of the tongue is governed to some extent by the shape of the mandible; and it is also affected by sleeping on the back and by deglutition. Snoring ceases during the act of swallowing and is resumed only if the tongue returns to the critical position for palatal vibration. There may be a central reflex governing the tone of the glossopharyngeal musculature; and the fall in the production of adrenaline during sleep, with the resulting diminution of muscle tone, may explain some types of snoring. Minor nasal disorders leading to thickening of the mucosa are an important factor.

Mr. I. G. Robin, in an address on Nov. 7 to the section of laryngology of the Royal Society of Medicine, suggested that in treatment any anatomical intranasal obstruction should be removed, and any allergic condition corrected. The withdrawal or reduction of irritants such as tobacco, and attention to diet and habits in plethoric individuals help to prevent mouth-breathing. At night children who have acquired the habit can wear an orthodontic splint, or a strip of strapping across the corner of the mouth. In adults where loss of muscle tone is the important factor breathing or phonetic exercises may retrain neuromuscular control; or an orthodontic splint may prevent the tongue and palate assuming their critical relative positions. Anything to stop the snorer from rolling on to his back is useful: the old remedy of a cotton reel sewn into the back of the pyjamas has been suggested. The heroic method of injecting sclerosing solutions into the palate and fauces has been used, but it is hardly to be recommended.

TRICHOMONAS VAGINITIS

THE treatment of *Trichomonas vaginalis* vaginitis is often unsatisfactory owing to faulty diagnosis, inadequate prophylaxis, and improper application of whatever remedy is used. Reich, Button, and Nechtow[1] have reviewed in detail 153 cases out of 2080 examined for suspected infection, and their conclusions are instructive. Careful history-taking and examination may reveal certain characteristic features, such as an irritating vaginal discharge with secondary vulvitis and pruritus; sometimes bladder symptoms are present, suggesting urethritis and trigonitis; and in bad cases dyspareunia, spasm of the vulva, and a feeling of discomfort in the vagina are also complained of. Inspection of the vagina shows the characteristic thin yellow frothy discharge, which may be profuse. The vault of the vagina and the cervix are acutely inflamed, with pinpoint petechial patches which bleed on instrumentation; the cervix often shows coincident lesions such as erosions, polypi, and cysts. The clinical diagnosis is confirmed by passing an unlubricated speculum and taking a hanging drop of vaginal secretion from the posterior fornix with a long tapering glass tube and rubber suction bulb. The number of trichomonads present in a high-power field varies from less than 3 to more than 8. If the bladder is infected the hanging-drop examination is made from a centrifuged catheter-specimen of urine; a gram stain should be done to determine the presence of secondary infecting organisms.

An exact diagnosis having been made, Reich and his colleagues place the patient on a course of home treatment, after preliminary outpatient treatment. The latter involves cauterisation of any cervical erosion, removal of polypi, and cauterisation of cysts. The Skene's ducts, if infected, are fulgurated, and the vagina is dried and insufflated with powder containing 20% finely pulverised mild silver protein, 40% kaolin, and 40% β-lactose. The patient is then told to douche with a weak solution of vinegar (1 drachm to 1 pint): to insert every night a capsule containing the same mixture of silver protein, kaolin, and β-lactose; and to return for re-examination in a week. Certain important hygienic instructions are given: (1) the anus must be cleansed from before backwards; (2) the hands must be washed before any vaginal manipulation such as inserting tampons or pessaries; (3) the external genitalia must be washed before douching, and the douching apparatus must be sterilised: (4) intercourse must be regarded as a possible source of reinfection; and (5) the bath must be scrupulously clean. There is no doubt that the rectum, the mouth, and the penis are all possible sources of infection. Douching and the insertion of medicated pessaries must be continued during menstrual periods: every gynæcologist knows that infections of the lower genital tract tend to flare up after a period, and interruption of treatment may be one cause. Proved cases of trichomonas infection should attend for observation for six months. For this régime Reich claims 98% successes.

RESEARCH IN POLAND DURING THE OCCUPATION

SUBOPTIMAL conditions, whether they are social or technical, seldom defeat the keen observer or research-worker. During the late war many original observations were made, with primitive equipment, in prisoners' camps and in even more difficult circumstances. Recently published in an American journal are two papers based on work done in Poland in 1942 by Dr. Ludwik Fleck.

The first,[1] written with Zofia Murczynska, deals with the agglomeration, in shed blood, of the white corpuscles into small clumps of the same types. When the leucocyte layer from centrifugalised citrated blood was incubated at 37°C, and specimens were removed at short intervals and examined as thick films, it was found that after 3–5 hours leucocytes of the same type tended to agglutinate in small groups—i.e., each group consisted almost entirely of polymorphonuclear leucocytes, or lymphocytes, or some other variety. When he first described the phenomenon in 1942 Fleck called it "leukergy," and he now lays down certain standards whereby it can be estimated, taking into account the proportion of white cells in a preparation which are clumped and the average number of cells in each group. The lowest value is given to preparations showing only an occasional agglomeration of white cells with 3–4 cells in each clump, and the highest value is reserved for preparations showing almost all the white cells clumped in groups of 6–15. In acute inflammatory processes the leukergic value tended to rise with the leucocyte-count and the red-cell sedimentation-rate but the rise appeared to persist longer; and in animals injected with bacterial antigens it followed the same lines. The technique of estimation is not given in full detail, but the method suggests that the experimental error may be considerable. Nevertheless the observations are interesting, and possibly more extensive and controlled experiments would indicate relationships with allied phenomena.

In the second paper[2] Fleck describes the presence in the urine of typhus patients of a substance having the characters of a specific antigen of typhus rickettsiæ. This substance may appear in the first days of the disease and in amount sufficient to give a characteristic precipitin reaction with a typhus serum. Injected into rabbits, it may give rise to rickettsial, and also proteus OX19, agglutinins. By suitable treatment of the urine the antigen may be concentrated so that it can be used as a prophylactic; indeed by this means Fleck prepared enough antigen to immunise some 500 inmates of a concentration camp in Poland during the war when no other prophylactic was available, and though it was impossible to keep proper records there was some evidence of its value. The most important of these

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1. Reich, W. J., Button, H. L., Nechtow, M. J. *Surg. Gynec. Obstet.* 1947, 84, 891.

1. *Texas Rep. Biol. Med.* 1947, 5, 156.
2. *Ibid*, p. 168.

Annotations

TOWN PLANNING

THE success of town planning may be measured by the number of people saved from hospital. This view was put forward on Nov. 5 by Mr. Arthur Ling, senior planning officer in the L.C.C.'s architects department, in a lecture at the Royal Institute of Public Health and Hygiene. The purposes of town planning, he suggested, are to eradicate the environmental causes of sickness, and to create a harmonious and healthy background for an enjoyable life. Over four-fifths of the population live in urban areas, where, owing to the high value of land, sites have been intensively exploited. In 1936 10% of families in England and Wales were found to be overcrowded, while in some parts of Scotland the proportion was even higher: the figure for Clydebank was 44% and for Motherwell 40%. It is not sufficiently known that just before the late war no less than 60% of families in the County of London were sharing houses in non-structurally separated buildings; the sharing of accommodation, and notably of a kitchen, is the source of constant friction.

Hitherto the better properties have usually been sited on *high ground, while overcrowding* has been greatest on low ground. Owing to the larger cost of land on high ground local authorities have often been compelled to acquire for housing estates low-lying sites close to railways or industries. More open space is needed in towns; statistics prove that death-rates are highest where there is least open space. In the last fifty years cities have sprawled out into the countryside: the town has been taken to the country. Now the trend must be reversed and the country brought to the town. The key to redevelopment is a national policy for the redistribution of industry and population. Workers now commonly live far out from the centre of cities, but the industries which employ them remain at the centre. Workers thus have an excessive amount of travelling, with consequent expense, loss of time, tiredness, liability to infection, and tendency to a time-killing attitude of mind. Two-thirds of London Transport's traffic is accounted for by the movement of workers. During the late war Mr. Ernest Bevin, as Minister of Labour, estimated that if this travelling time could be halved production would rise by 10%. Staggering of hours, transfer of workers in multiple firms to branches near their homes, and improvements in the transport services would relieve the congestion. But the only real solution lies in planned decentralisation of industry to new towns, and in local decentralisation to the suburbs, whereby as many employees as possible would live near their place of work, and the flow of one-way traffic to and from towns at the start and end of the day would be superseded by a two-way flow. A more obvious defect in the present design of our towns is reflected in the figures for road accidents. Of 6000 fatal accidents in 1936–37, two-thirds happened in urban areas. Town roads were designed for horse traffic, and the value of new arterial roads has been nullified by ribbon development. Pedestrians should be segregated by the construction of by-passes, the reservation of certain roads for fast traffic, and eventually perhaps by the building of traffic lanes on different levels. Improvements in the main roads will make possible the formation of neighbourhoods or precincts; happy examples of precincts are to be found in the Temple, Lincoln's Inn Fields, and the colleges at Oxford and Cambridge. The concept of the neighbourhood has now been generally accepted. These should be as far as possible self-contained, and they should include community buildings. In planning health centres the usual proposal is that one centre, with 6–8 doctors, shall serve about 20,000 population. This does not fit in, however, w
the structure of the neighbourhood, with its 6000–10,
population; and Mr. Ling thought that centres serv
so large a group might be too remote from the everyc
activities of its users.

The town-dweller is constantly exposed to the din
traffic, with its subtle but serious effects on heal
Every transport vehicle should be tested for n
emission; and where noise cannot be eliminated
policy of segregation should be pursued. Thro
atmospheric pollution central London gets only half
much sunshine as Kew. Two-thirds of the pollut
is due to the domestic chimney. The nuisance could
controlled if households gave up their open fires
used smokeless fuel. Perhaps district heating mi
be developed; a great deal of heat now lost from
power stations could be distributed on this basis. L
winter's fuel crisis, with the resulting ban on the
of electricity, showed to what a large extent offices r
on artificial lighting. Daylight standards should
improved; and a new code has been prepared
the Ministry of Town and Country Planning. In t
as in other aspects of town planning, Mr. Ling conclud
the planners should work in close partnership with th
responsible for the health services.

REGIONAL ILEITIS

REGIONAL ileitis is a rare disorder, but, as Profes
Merke shows in his latest report,[1] it is not so rare that
can afford to forget it. Of the 9 cases he describes
had been submitted to operation on the mistaken di
nosis of acute or chronic appendicitis. Merke holds t
this error, and the usually long delay in diagnosis, wo
not be encountered if the condition were more genera
borne in mind. The duration of symptoms in his ca
varied from four weeks up to at least eleven years;
the symptoms were strikingly uniform, consisting
colicky pain and diarrhœa. Among the other *diagnos*
points are a consistently positive benzidine *test in*
fæces and, often, a positive indican test in the urin
the blood-sedimentation rate is increased. But diagno
hangs on the radiological findings: barium is delayed
the lower *ileum*, and advanced stenosis of the ile
close to the ileocæcal valve may be observe
sometimes an "ulcer crator" can be defined. Path
logically, the naked-eye appearance resembles that
tuberculosis; and Merke is indeed inclined *to rega*
this obscure lesion as tuberculous. In 5 of his 9 ca
there were manifestations of *tuberculosis* elsewhere
the body; and in 2 further cases *there was a history*
tuberculosis in the patients' households.

SNORING

SNORING, though a widespread habit, has had litt
attention from the medical profession; yet it is *oft*
a nuisance to the snorer himself, and it is *certainly*
nuisance to his associates, as many found during t
war *in the* community life of the Services. To so
extent it is a disorder of civilisation; apparently wolv
never snore, whereas the domestic dog does. It is al
a disorder of certain times of life: the child is often
snorer, the adolescent rarely; the practice is *common*
in late middle life and old age.

The noise is produced by vibration of the *soft* pala
and posterior *faucial pillars*, usually during inspiratio
through the mouth. A reservoir of air is formed *in th*
nasopharynx, and vibration occurs when a certain *relati*
position of the palate and tongue is reached. The dampin
effect is produced by the texture of the palatopharynge
musculature together with the thickness of the tissue
involved, of which the mucosa is the most *importan*
The normal resting position of the tongue and *so*
palate varies with age. In the babe the two structures a

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[1] Merke, F. *Schweiz. med. Wschr.* 1947, p. 761.

Reconstruction

HOSPITAL BUILDINGS OF TOMORROW

FROM A CORRESPONDENT

> "Si tous les perfectionnements de la technique moderne y ont été appliqués dans les installations de traitement, ils n'ont pas fait oublier l'élément psychologique si nécessaire au malade qui entre là dans une grande maison accueillante, disposée au milieu de la nature toujours vivante, au lieu d'avoir le sentiment d'être happé par une mécanique.
>
> "Au monstrueux entassement des malades dans des constructions éclipsant et blessant la nature, dont l'architecture semble vouloir frapper d'étonnement les populations, il semble préférable d'appliquer à de telles réalisations une conception plus humaine, plus française aussi."
>
> —A. LABOURIE, *Architect. française*, Oct.–Nov., 1945, p. 61.

WHEN are we going to evolve a really satisfying design for our greater hospitals ? Two at least of those in the metropolis are to be rebuilt as soon as conditions permit, and those responsible are already busy scheduling their requirements. Charing Cross is to go to Harrow, and St. George's—the old building looks remarkably distinguished in its new coat of cream paint—is to move to Tooting. And in several of the great cities of the provinces similar projects are afoot.

The tendency towards a functional simplicity of design seems to have set in strongly, and the trends of the 1930's come out clearly in the great rectangular blocks of the Queen Elizabeth at Birmingham and the St. Helier in Surrey. The Queen Elizabeth contains some 720 beds and St. Helier was planned for 862, but one cannot visit these hospitals without a feeling that something has been sacrificed ; well designed and well finished as they are, they lack something of repose and dignity. They do not settle happily into their surroundings, and one feels that in wintry English weather the cold winds must blow icily around the wards. There are still hospitals to be found, like St. Thomas's or King's College, which manage to express in their architecture a more satisfying tradition. Must we, in the interests of modernity and efficiency, expect to see more Queen Elizabeth's and St. Helier's or other variants on the Continental and American models ? To say this is certainly not to disparage the architects, for they have had to conform to current conceptions of what is required in hospital construction.

LOSSES

What exactly is it that has disappeared in the interests of utility ? First, there is the break with tradition. The traditional building for community life in this country, not only for hospitals but for colleges and schools, is the quadrangle or some modification of it. No-one can be familiar with the quadrangles and courts of Oxford and Cambridge without knowing that they possess qualities of repose and peacefulness for which height is no substitute. Mere height is barrack-like and forbidding. Does it matter ? Opinions will differ, but it is hard to imagine the student nurse of today acquiring much affection for the gaunt lines of her utility home. Perhaps it matters more than one would at first sight suppose that the hospital buildings should link themselves by an easy association to our famous schools and colleges.

Secondly, there is the loss of intimacy with lawns and trees with every story up from the ground. The sunlight on the foliage becomes less accessible, until the distant prospect of Birmingham chimneys or suburban London dormitories wholly replaces it. Compare with this the wide windows and garden outlook of some of the wards at King's College, or the London plane trees that glitter in the sunlight outside the wards of Queen Square ; even the hard-hearted must admit that perhaps there is something in it, and that perhaps patients do after all feel more comfortable and more at home down on the garden level. It is a factor in the attraction of the cottage hospitals that so often the wards are at the garden level.

Thirdly, there is the loss of quiet. Steel construction is admittedly responsible for difficulty in controlling noise, and despite every effort to apply modern methods of insulation, the fact remains that the modern steel and concrete hospital is noisier than the old buildings of brick and stone. It is probably colder too, and requires more heat to make it comfortable, though the effects of this are often masked by the existence of modern boilers and central heating.

Fourthly, there is the monotony that is too often associated with utility. Repetition and uniformity in such matters as the design of windows is not in itself a bad thing : one has only to recall the façade of the Royal Crescent at Bath and the long lines of Georgian windows that so easily achieve distinction. But to pass in one of our modern hospitals from one ward to another in exactly the same style and decoration, and to pass from one nurse's bedroom to its twin next door, and so on floor after floor, is to breathe an atmosphere against which surely the spirit of man rebels. Uniformity can, in fact, only be redeemed by a certain generosity of treatment, and the box-like structure of the modern steel-framed hospital proceeds regardless of all but economy. And yet it is not cheap ; it is indeed fantastically expensive. A simple utility nurses' home costs today something like £500 per nurse, without trimmings of any kind. The more luxurious examples like those of the Queen Elizabeth would cost £700–800 per nurse. Compare this with the cost of building good small modern houses !

Internally too the long corridors and the magnificent recreation halls in the nurses' homes seem to express the soulless efficiency of the cosmopolitan hotel rather than the homeliness and comfort of so many of our older English buildings. Pictures are conspicuous by their absence. Sometimes indeed a print of flowers or a Medici reproduction has been brought in to fill the void, but much more is surely called for. Where is there any hint in these modern hospitals of the great traditions of English medicine and of English nursing ? The authorities seem to have forgotten that the hospital with its hundreds of student nurses and other trainees is also an educational undertaking of no mean size. In all education visible contact with the past and a sense of participation in present progress are needed if the newcomer is to feel part of a greater whole. Where are the quiet corners where the nurse can pick up and peruse the history of the hospital, or, if she be so disposed, copies of the current medical publications ? Where are the prints of the old buildings, and the portraits and stories of those that have passed through the school in days gone by and who have achieved distinction ? Where is the list of last year's prize-winners, or where even are the miscellaneous and intriguing papers that clutter the notice-boards of the porters' lodges in the colleges of our universities ?

THREE TRENDS

But this is a digression. Let us return to the factors that seem to be steering us towards this cosmopolitan uniformity of construction, which seems likely to make our hospitals of tomorrow giants dwarfing all natural objects of the landscape. The factors seem to be pretty clear.

First, there is the tendency towards increase of size. It would take us too far afield to go closely here into the arguments in their various applications to the teaching hospital, to the large all-purpose general hospital, and to the smaller local hospitals ; but it may be that the tide is now turning, at any rate in the case of the general hospital. To judge by the latest surveys opinion in America at any rate seems to be hardening observations is, of course, the early immune reaction, which was independently described by Leon[3] in Mexico in 1942. Unfortunately this does not seem to be found often enough in the less severe cases to give it much diagnostic value. It is in the severe case where the kidney is more affected that one would expect urinary excretion of rickettsial substances to be greatest.

Fleck mentions false positive results both with normal serum and with urine from non-typhus cases; but the test is simple to carry out and in a typhus outbreak its extended trial may yield valuable information.

HEALTH IN THE POTTERIES

LEAD poisoning and silicosis have long been known to be the main occupational health risks in making and decorating pottery. Lead enters into the composition of glazes, and free silica in various forms into both glazes and pottery bodies. Ground flint, which contains a high percentage of free silica, has also been freely used in pottery-making for various other purposes such as the "placing" of biscuit ware (or unglazed pots) for firing in ovens.

Since the beginning of the century much progress has been made in reducing the incidence of lead poisoning and silicosis by two standard methods—namely, exhaust ventilation to remove dust from the workers' breathing area, and replacement of the noxious agents by less harmful ones. Leadless glazes have in many cases replaced those containing lead, and a further innovation has been the low-solubility lead glaze, the principle of which was discovered about 1900 by Sir Edward Pope, at that time Chief Government Chemist, when he fused raw lead compounds with silica to produce a "frit" or lead silicate which is relatively insoluble and therefore less poisonous than red or white lead. The result of these improvements can be seen in the figures for lead poisoning in potteries: in 1900 210 cases with 8 deaths were notified, but in 1944 and 1945 none at all. Likewise the practice of using ground flint for the placing of biscuit ware for firing was productive of much dust and many cases of silicosis; but it has been discovered within the last fifteen years or so that powdered alumina, which has refractory properties comparable with those of flint or quartz, will serve the purpose equally well, and its dust is relatively harmless when inhaled by the workers. Since then flint has been replaced by alumina for placing biscuit ware in most of the potteries in the country.

The new code of regulations issued by the Ministry of Labour and National Service[4] crystallises the advances made in preventive measures during the present century and should bring any backward potteries into line. These regulations prohibit the use of raw lead glazes in the manufacture and decoration of pottery after Oct. 7, 1948, and in the manufacture of glazed tiles after Oct. 7, 1949. The actual wording is that "no glaze which is not a leadless glaze or a low solubility glaze shall be used" after the specified dates. Again, after Jan. 7, 1948, ground or powdered flint or quartz shall not be used (1) for the placing of ware for the biscuit fire; (2) for the polishing of ware; (3) as an ingredient in a wash for saggars, trucks, bats, cranks, or other articles used in supporting ware during firing; or (4) as a dusting or supporting powder in potters' shops. Another important regulation is that, with certain exceptions, ground or powdered flint must not be brought into a factory in a dry state, but must come in as a slop or paste. Unfortunately this prohibition cannot be made absolute, and a subsection provides that dry powdered flint or quartz may be brought into a factory if the containers are so sealed and enclosed as to prevent the escape of dust. The subsequent processes of handling and mixing to form the body of the ware must also be done in such a way that no dust escapes into any place where people are employed

The new regulations should go far to make the potters ancient craft a more healthy one.

TOBACCO ANGINA?

THIS unfortunate term, originally introduced nearly fifty years ago by Huchard,[1] dies hard. One reason i that there is still no convincing evidence of a direc relation between smoking and angina pectoris. It ha proved almost impossible to evolve an experiment tha will produce a definite "yea" or "nay," and eve when man himself is the experimental subject there ar many factors to complicate the issue. Thus Pickering and Sanderson,[2] in a detailed study of one patient, show that though in this individual angina pectoris followed smoking it did so only just after the subsidence of an attack of pain precipitated by exercise, when the blood-pressure and pulse-rate were still raised.

Even the many reports which attribute changes in the electrocardiogram to a direct effect of smoking on th heart are under suspicion, because care has not been taken to exclude the possibility—often the probability—of these changes being due not to the smoking but t the changes in pulse-rate which it induces. Impressed by the absence of convincing electrocardiographi evidence, Bryant and Wood[3] have studied 16 patient with coronary disease, all of whom were smokers bu none of whom gave a history suggesting a relatio between their anginal symptoms and the use of tobacco. Unipolar limb and chest leads were used and electro cardiograms were taken at rest before and after th smoking of two cigarettes. In 2 patients angina pectoris accompanied by electrocardiographic changes, followe this procedure: in one of these the pain was induce only by smoking; in the other it was induced by exertio and by smoking. In the patient with "tobacco angina" the pain and electrocardiographic changes were no associated with any rise in pulse-rate, and some te months later he reported that he had given up smokin and had had no further attacks. It is dangerous to argu from the particular to the general, especially when th particular means one case; but extended investigation on these lines might help to solve a vexed problem. Unless, and until, such an investigation shows tha smoking alone can produce angina pectoris, clinician will be justified in contending that, per se, it is not a important factor in the genesis of this condition. Si Maurice Cassidy, from an analysis of 1000 cases o coronary disease seen in his own practice, has state that "so far as so-called 'tobacco angina' is concerned I have never encountered such a condition"[4]; and even in these days of laboratory medicine such a statement must be given serious consideration.

NOBEL PRIZE FOR CHEMISTRY

THE award of a Nobel prize to Sir Robert Robinson, F.R.S., comes as no surprise. It is probably fair to say that he has made more positive contributions to synthetic organic chemistry than any man, living or dead. Where other eminent organic chemists have been content to till one or two fields, he has raised crops from many. His work on the alkaloids, for example, is outstanding and this perhaps is his favourite line; but he is known equally for his achievements with anthocyanine pigments, antimalarial compounds, penicillin, sterols, and sex hormones; while his Faraday lecture at the recent centenary celebrations of the Chemical Society showed that he is equally at home in purely theoretical chemistry. Many good wishes will go to Sir Robert and Lady Robinson, herself a distinguished chemist, on this present recognition of his genius.

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[3] Leon, A. P. *Rev. Inst. Sal. Enferm. trop.* 1942, 3, 201.
[4] The Pottery (Health) Special Regulations, 1947, dated Oct. 7, 1947, made by the Minister of Labour and National Service under section 60 of the Factories Act, 1937. S.R. & O., 1947, no. 2161. London: H.M. Stationery Office. 1*d*.

[1] Huchard, H. Traité clinique des maladies du cœur et de l'aorte, Paris, 1899.
[2] Pickering, G. W., Sanderson, P. H. *Clin. Sci.* 1945, 5, 275.
[3] Bryant, J. M., Wood, J. E. jun. *Amer. Heart J.* 1947, 34, 20.
[4] Cassidy, M. *Lancet*, 1946, ii, 587.

was true, had not risen. In recent years, however, there had been advances in prophylaxis, in maternity and child welfare, and in treatment through the introduction of chemotherapy. Why, then, were the figures not greatly reduced? "Because our rotten diet is wiping out all the benefits." As to morbidity, the incidence of infections involving the eyes and skin had risen; convalescents were taking longer to recover; morals were impaired; and tiredness was a ubiquitous symptom. The deterioration was attributable to bad food, and particularly to lack of fat. Dr. Bicknell found it noteworthy that neither of the two principal speakers against the motion were medical men. "To us who are doctors," he concluded, "the nation is ill."

THE MOTION OPPOSED

Sir **Jack Drummond**, F.R.S., submitted that there was no certain evidence that the nation was now less well nourished than in 1938. There was, he said, misunderstanding of the calorie position. For every type of individual the approximate calorie requirements were known; and the weighted average was reckoned by taking all groups together. In the hardest years of the war the weighted average was 2550 calories per day. To provide this, food sufficient to yield 2900 calories per day had been distributed. There was a wastage of about 450 calories, or 9–9$^{1}/_{2}$%, which compared favourably with the 15% wastage before the war. Then, although there had been enough food to yield an overall average of about 3000 calories a day, a third, if not a half, of the population had been underfed. The war had equalised sacrifice; and the Ministry of Food could show that in recent years there had been little difference in calorie intake between the classes.

Additional fat and meat were simply not to be had; for there was a world shortage. Dr. Bicknell had belittled the scientific approach to the distribution of food; but the relief of Europe and the nutrition of Britain in the war had been undertaken with cold-blooded scientific analysis; and it had succeeded. In working-class families the average consumption of every single nutrient was better now than before the war. Certainly the people of Britain were tired out at the end of the war, they had exerted themselves in the war effort more than any Allied, and probably more than any enemy, nation, and it was natural that they should flock to doctors. Vital statistics were the most sensitive indices of health; all had improved since 1940 and none had gone back. There was, moreover, less anæmia in women, less rickets, and less caries; and the growth of children had increased.

The rationing of potatoes was, however, a serious blow. For the nutritionist calories were almost the whole problem; and an essential feature of any rationing scheme was the maintenance of a buffer of energy. With the rationing first of bread and now of potatoes the position was precarious; it was "very grave indeed." However a calorie shortage did not threaten health, provided that there was no major dietary deficiency. Its main effect would be to lower production. Food moving into consumption at the new level of 2700 calories would barely yield 2550 calories to the consumer. The heavy worker and adolescents would go hungry; they would work less and they would lose weight, but their health would not be undermined. Judging by observations in Continental countries, when times improved they would pick up without demonstrable ill health.

SECONDERS

Dr. **Kenneth McFadyean**, supporting the motion, recalled that the Minister of Food had admitted that the nation's diet was to him "a matter of grave concern." When Dr. McFadyean spoke of "grave concern" to the wife of a patient, he was preparing her for the patient's death in another day or two. He dismissed, as untrue, psychological explanations of the prevalent hunger. During the last few years at least one general practitioner had drawn attention to the increasing incidence of hypochromic anæmia; and this was a condition in which only fatigue preceded collapse. In one factory anæmia among the workers had been cured by extra protein; and the observation had been repeated in an establishment for the old when the diet was supplemented. He allowed that children of school age, expectant mothers, miners, and dock workers were well enough fed; "but let some one tell me how many women in the last four years have nursed their babies for more than four weeks." And what about the increasing prevalence of gastro-enteritis? Impetigo, epidermophytosis, sycosis barbæ, and inflammation of the eye were now more common, as also were chronic rheumatic infections and patches of choroid degeneration in the young and otherwise healthy. People were not being starved to death, but their health was suffering. Formerly an army was said to march on its stomach; now people were expected to fly on air, "belching forth exports on an empty stomach."

Mr. **Magnus Pyke**, D.Sc., questioned whether such infections as epidermophytosis could be attributed to nutritional deficiency. Dr. Bicknell, he held, was not justified in dismissing the quantity of sausages, offal, and meat pies as negligible. Since 1941 surveys had shown consumption per head in the home to be steady at 2300 calories. Speakers for the motion had confused average amounts per head with amounts per man; and the 2900 calories suggested before the war as a desirable intake for an unemployed man had been a man value. It was, he said, notoriously difficult to assess nutrition. Perhaps the most sensitive index of undernutrition was the incidence of tuberculosis; mortality from this disease had been falling steadily and was now lower than ever before. Difficulty in getting enough food was greatest for old people; and yet the fall in the death-rate among the over-65's had been greater in the quinquennium up to 1945 than in the previous twenty years. The explanation was a lowered incidence of obesity, alcoholism, diabetes, and high blood-pressure.

The present overall average of 2700 calories was, Dr. Pyke said, compatible with full vigour. Only 72% of this was obtained from the rations, the remainder being derived from unrationed foods in the home, or from restaurant or canteen meals. The food allocated to industrial category-B canteens was capable of yielding 950 calories, while that provided to category-A canteens was capable of yielding 1095 calories. Altogether 179 million meals were served each week, which for 30 million people meant an average of 6 meals weekly.

No-one liked the diet; but a diet that was disliked did not necessarily malnourish the consumer. In Germany there had been complaints of starvation, and the propaganda on dietetic insufficiency was very similar to that in this country. But recent detailed clinical and nutritional surveys in Germany had not substantiated the complaints.

DISCUSSION

Dr. **Nevil Leyton** suggested that the ration of fat was particularly deficient; the allotment was only 30 g. a day. He claimed to be treating cases of œdema due to malnutrition.

Dr. **G. E. Breen** questioned the basis on which Sir Jack Drummond had suggested that a third or a half of the population were underfed before the war. Where did this figure come from? About 50% of infections against units of more than 750 beds. At least the arguments against an indiscriminate increase of size are better appreciated than was the case a few years ago.

Secondly, there is the belief that a vertical design is less exacting in the demands it makes on staff. When the hospital committee sits down to plan in earnest it soon realises that running cost is largely a reflex of the number of staff employed. Requests for increases come in from all quarters; but staff—and especially nursing staff—are not only expensive but are apt to be scarce. Moreover the committee is never long allowed to forget that demands on the time of the medical men must be kept down to the minimum. These considerations seem to emphasise the necessity for a compact design. The wards, it is thought, must not be too far from the kitchens, laboratories, and other central services. The vertical arrangement of the ward units is therefore preferred to the horizontal, even when there are no restrictions on the site, such as dictated the superimposition of the ward units in the case of Middlesex Hospital and of the Westminster.

Thirdly, the steel frame construction has become almost universal where large buildings are concerned. It is cheaper than brick and stone, and lends itself to vertical construction.

It is these three trends that seem likely to take charge and determine the future for us. Is it necessary? Must we say goodbye to the hope that we shall yet see in this country a modern hospital as convincing in its design as many of our older college buildings—and one or two of our older hospitals—and nurses' homes as restful as the medieval quadrangles?

CASE FOR INQUIRY

It seems to be in part a matter of planning, and in part a matter of money. The ward units cannot be spaced out regardless of the central services; but more information is needed on this matter, and exact comparison of the amount of walking involved in some of the most modern examples of vertical design compared with equally modern examples of decentralisation would be of interest. The supposed merits of the vertical construction might prove mythical, or at least exaggerated. In any case it may be that a measure of decentralisation of the catering and other central services would be no bad thing, and here again some detailed data and discussion would be of value. It may too be that it is better to have several nurses' homes rather than one. Even if such decentralisation did prove to carry some disadvantages, it would still be a question whether they would not be far outweighed by some of the points to which attention has been drawn above. Decentralisation does not appeal greatly to those in authority. They—the deans of the medical schools and the matrons of the larger hospitals—have during the war had a good deal of experience of the extreme inconvenience of having part of their hospital located in one place and part in another. It has meant difficulty in control, and a waste of time and energy, and it is only natural that they should lean strongly in the direction of having the whole organisation easily accessible to central control. But it is surely a matter of degree, and if centralisation does militate against our architectural heritage, and all the dignity and peace that it can offer, the sacrifice can surely be too great. May it not in the end have serious repercussions on the availability of staff? If, for example, girls do not like these great buildings and will not choose to nurse in them, what profit is there in all the effort to economise in staff?

OPPORTUNITY FOR BENEFACTORS

In part, however, it may be a matter of money. Hospital construction now demands the fabulous figure of £2000 a bed, perhaps more for the teaching hospital with its special departments. The Minister of Health, it may be said, cannot be expected to have money to spare for such refinements as I have suggested. But even if it be shown that the dictates of economy point all one way, here surely is just the opportunity for the public benefactor to step in and meet the additional cost. Let the Minister fix his figure and make his maximum contribution, and let the voluntary donor, who has in the past willingly supplied money for so much of our hospital construction, provide the extra that is needed to set hospital architecture free from the necessity to conform to the dictates of utility construction. It is difficult to believe that, if the case were properly put and the need for a breakaway from the Continental and American conceptions adequately grasped, there would be any lack of response from those who have the means.

Special Articles

OUR PRESENT DIET

A DEBATE AT THE HUNTERIAN SOCIETY

THE Hunterian Society met last Monday, with Mr. ALEXANDER ROCHE, the president, in the chair, to debate the motion: That Our Present Diet is Undermining the Health of the Nation.

THE MOTION PROPOSED

Dr. FRANKLIN BICKNELL said that, to be healthy, a man must have enough food for a full day's work —namely, 3000 calories. This figure had been agreed by the British Medical Association in 1932 and by the Ministry of Health in 1933; and the League of Nations had set the total even higher. Dr. Edith Summerskill, parliamentary secretary to the Ministry of Food, had stated in the House of Commons that all rations and pointed foods yielded 1530 calories a day. To the total from rationed foods must now be added 139 calories per day from potatoes, which were being distributed on a basis of 3 lb. per week. The new total was thus *1669 calories.*

The gap might be bridged with unrationed foods or with meals eaten outside the home. Unrationed foods consisted principally of offal, meat pies, sausages, fish, and vegetables. The first three were so scarce that they virtually did not enter into the reckoning. If fish were eaten each day, this would yield 200 calories, and vegetables a further 40 calories. The grand total was now 1909 calories. The Ministry of Food in its latest survey had found the average consumption to be 2287 calories; but this was before the reduction in the rations of cheese and sugar, and before the introduction of potato rationing; and allowing for these new restrictions the adjusted figure was 2121 calories. It was quite impossible, said Dr. Bicknell, to close the gap by restaurant meals; restaurants provided altogether only $1^{1}/_{4}$ main meals and $2^{1}/_{2}$ snack meals each week.

There had been cuts in the priority allocations; this must signify either that the priority groups had previously been guzzling at the expense of the remainder, or else that they were now undernourished. The housewife, it was true, needed less food than some other workers; but she had no chance to eat out and thus got no variety in food. It was nonsense to suggest that she ate the "redundant rations" of her children.

No-one knew what food was consumed before the war; and a more relevant question was what was regarded before the war as a satisfactory diet.

If, as he believed, the nation was undernourished, why were there no frank signs of malnutrition? Weight, he suggested, was maintained because the body conserved itself by allowing less work to be done. Mortality-rates, true, had not risen. In recent years, however, had been advances in prophylaxis, in maternity child welfare, and in treatment through the intro-duction of chemotherapy. Why, then, were the figures greatly reduced ? " Because our rotten diet is wiping all the benefits." As to morbidity, the incidence infections involving the eyes and skin had risen ; ents were taking longer to recover ; morals impaired ; and tiredness was a ubiquitous symptom. deterioration was attributable to bad food, and ularly to lack of fat. Dr. Bicknell found it note-ly that neither of the two principal speakers against motion were medical men. " To us who are doctors," concluded, " the nation is ill."

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The rationing of potatoes was, however, a serious blow. the nutritionist calories were almost the whole lem ; and an essential feature of any rationing scheme the maintenance of a buffer of energy. With the ning first of bread and now of potatoes the position precarious ; it was " very grave indeed." However calorie shortage did not threaten health, provided there was no major dietary deficiency. Its main would be to lower production. Food moving consumption at the new level of 2700 calories uld barely yield 2550 calories to the consumer. The worker and adolescents would go hungry ; they ld work less and they would lose weight, but their th would not be undermined. Judging by observa-s in Continental countries, when times improved would pick up without demonstrable ill health.

SECONDERS

Dr. **Kenneth McFadyean**, supporting the motion, d that the Minister of Food had admitted that nation's diet was to him " a matter of grave concern." When Dr. McFadyean spoke of " grave concern " to the wife of a patient, he was preparing her for the patient's death in another day or two. He dismissed, as untrue, psychological explanations of the prevalent hunger. During the last few years at least one general practitioner had drawn attention to the increasing incidence of hypochromic anæmia ; and this was a condition in which only fatigue preceded collapse. In one factory anæmia among the workers had been cured by extra protein ; and the observation had been repeated in an establishment for the old when the diet was supplemented. He allowed that children of school age, expectant mothers, miners, and dock workers were well enough fed ; " but let some one tell me how many women in the last four years have nursed their babies for more than four weeks." And what about the increasing prevalence of gastro-enteritis ? Impetigo, epidermophytosis, sycosis barbæ, and *inflammation* of the eye were now more common, as also were chronic rheumatic infections and patches of choroid degeneration in the young and otherwise healthy. People were not being starved to death, but their health was suffering. Formerly an army was said to march on its stomach ; now people were expected to fly on air, " belching forth exports on an empty stomach."

Mr. **Magnus Pyke**, D.Sc., questioned whether such infections as epidermophytosis could be attributed to nutritional deficiency. Dr. Bicknell, he held, was not justified in dismissing the quantity of sausages, offal, and meat pies as negligible. Since 1941 surveys had shown consumption per head in the home to be steady at 2300 calories. Speakers for the motion had confused average amounts per head with amounts per man : and the 2900 calories suggested before the war as a desirable intake for an unemployed man had been a man value. It was, he said, notoriously difficult to assess nutrition. Perhaps the most sensitive index of undernutrition was the incidence of *tuberculosis* ; *mortality from this disease had been falling steadily and was now lower* than ever before. Difficulty in getting enough food was greatest for old people : and yet the fall in the death-rate among the over-65's had been greater in the quinquennium up to 1945 than in the previous twenty years. The explanation was a lowered incidence of obesity, alcoholism, diabetes, and high blood-pressure.

The present overall average of 2700 calories was, Dr. Pyke said, compatible with full vigour. Only 72% of this was obtained from the rations, the remainder being derived from unrationed foods in the home, or from restaurant or canteen meals. The food allocated to industrial category-B canteens was capable of yielding 950 calories, while that provided to category-A canteens was capable of yielding 1095 calories. Altogether 179 million meals were served each week, which for 30 million people meant an average of 6 meals weekly.

No-one liked the diet ; but a diet that was disliked did not necessarily malnourish the consumer. In Germany there had been complaints of starvation, and the propaganda on dietetic insufficiency was very similar to that in this country. But recent detailed clinical and nutritional surveys in Germany had not substantiated the complaints.

DISCUSSION

Dr. **Nevil Leyton** suggested that the ration of fat was particularly deficient ; the allotment was only 30 g. a day. He claimed to be treating cases of œdema due to malnutrition.

Dr. **G. E. Breen** questioned the basis on which Sir Jack Drummond had suggested that a third or a half of the population were underfed before the war. Where did this figure come from ? About 50% of infections had become controllable in the last ten years; yet this improvement was not reflected in returns. If the Government was unable to obtain the necessary amount of food, it should frankly say so. Dr. Breen charged the professional nutritionist with arrogance; people were not machines, and on a given meal one man would do twice as much work as another.

A PRACTITIONER interjected an appeal for the housewife, who, she said, was tired and haggard because she was feeding the rest of the household on her own rations.

Mr. A. DICKSON WRIGHT had found no signs of malnutrition. Arguments for the motion had been flimsy; it was nonsense to ascribe such infections as epidermophytosis to undernourishment, and the reason why mothers did not feed their children was that they did not want to. So long as the nation continued to spend large sums on the purchase overseas of tobacco and alcohol it should not complain that food was insufficient.

Sir JACK DRUMMOND held that no concrete facts had been produced in support of the claim that the country was undernourished. He recalled that in 1940, when it was announced that calcium was to be added to flour, many doctors, some of them distinguished, immediately wrote and continued for months to write, complaining that this addition was causing illness. Yet actually, owing to supply difficulties calcium was not added until eighteen months later, by which time all complaints had ceased, never to be resumed.

When the motion was put to the house, the Ayes outnumbered the Noes by about three to one.

MEDICINE AND RELIGION

A SERMON TO DOCTORS

IN the course of his sermon at the annual service of the Society of Apothecaries of London on Oct. 28, the Rev. M. F. FOXELL, chaplain to the society, said:

Mankind is not divided into two or even three sections—clergy, laity, doctors. To every one of us there is a span of life. Clergy and doctors are mortal like the rest of mankind. We practise our professions as long as we are able and eventually the end comes. The clergy are prone to temptation and the doctors have their illnesses—and vice versa. And at the last there is the fact of physical death.

And what is the meaning and significance of it all? I do not suppose that the study of thanatology deals with that kind of question. It is a question that is shirked by many. "We do not know," it is said. With many that leads to "We do not care," or "What's the use of troubling about it?" That there is one event unto all surely does not minimise the importance of that event. If we are content to take no more than a physical and materialistic view, not only of the universe but also of life in its highest manifestations, religion can have no place. But such a view ignores a great deal of evidence or waves it on one side by the merely arbitrary method of identifying religion with superstition. Neither of these ways is scientific. . . .

The crux of the whole matter rests ultimately on the belief in the nature of man. As a biological specimen he serves as an amazingly large field for knowledge and research: as a unit of social life he may be but a pawn in the hands of politicians. But the Christian view sees man as an immortal soul; and the Christian way of life includes within its range both his physical and social well-being, but subordinates these to his eternal welfare, in the same relation as time stands to eternity. . . .

There is some confusion of thought in making a scientific and analytical approach to a subject that requires other criteria. There are values that cannot be established by scientific method. This is obviously true of the arts. The truth of Christianity lies outside the limited realm of exact science. Its truth is moral, even æsthetic and eternal. There is a borderland between the two regions, but to make that an impassable barrier and to deny the existence of another kingdom because there are difficulties in passing from one to the other is a grave mistake. And it must be borne in mind that theology is not religion, any more than a study of ments and composition is art. Religion is a faith an consequent directing of life. It does not claim to solve ov mystery: it sets forth a well-established theory of life, te full account of the whole man, and relates him to God. Acc ing to the belief in the nature of God, so is man given a p in the eternal realm.

In all this we are on the threshold of many and g problems. The mind delights in problems; we even inv games and puzzles to exercise our intellectual ingenuity. If Christianity is merely regarded as a problem it is missing purpose. We have to make up our minds about it. The m phor is an exact one, and one element in the making must faith. It is my commission to commend the Christian fa However much it can be discussed and debated by its adher and its opponents, we need a return from the complicati resulting from all the knowledge, all the inventions, and the turmoil of civilisation to a simple faith. The sophistica person may smile or scoff at such a notion. Look, he says the universe opened up by telescopic view, look at it as through the microscope, and then can we still be sim minded? We certainly can be made to feel humble, un the advance in knowledge misleads men to a vulgar prid human achievement: or we may be inclined to feel humilia to such a degree as to judge ourselves of no account. But this is too elaborate, and we do not see the wood for the tr or rather, we do not see the sky for the trees.

The Christian is not an obscurantist, but he is aware of element in life that all these observable things may obsc unless he looks with the eye of faith. . . . The subject of Christian religion should not be approached from belo from all the accumulated knowledge of material things, wit vain attempt to find God from scientific evidence; but rat it should be approached from the highest values we kn the noblest characteristics, the best aspirations, the spirit experiences, whether our own or of the saints, and above as these are revealed in the person of our Lord Jesus Christ

Public Health

Poliomyelitis and Polioencephalitis

IN the week ended Nov. 8, 198 cases of poliomyel and 12 cases of polioencephalitis were notified, compa with 221 and 22 in the previous week. The smalln of the fall bears out the suggestion in our last issue th the incidence is likely to remain relatively high for so time. The rate of decline has been fairly consistent the last three weeks, and if it remained the same the rest of the year there would still be about 1 notifications per week at the end of December.

Infectious Disease in England and Wales

WEEK ENDED NOV. 8

Notifications.—Smallpox, 0; scarlet fever, 173 whooping-cough, 1072; diphtheria, 219; paratypho 6; typhoid, 9; measles (excluding rubella), 217 pneumonia (primary or influenzal), 571; cerebrospi fever, 30; poliomyelitis, 198: polioencephalitis, 1 encephalitis lethargica, 1; dysentery, 105; puerpe pyrexia, 107; ophthalmia neonatorum, 54. No ca of cholera, plague, or typhus was notified during t week.

Deaths.—In 126 great towns there were no deat from scarlet fever, 1 (0) from enteric fever, 1 (0) fro measles, 1 (1) from whooping-cough, 5 (1) from dip theria, 61 (3) from diarrhœa and enteritis under two yea and 14 (2) from influenza. The figures in parentheses a those for London itself.

The number of stillbirths notified during the week w 186 (corresponding to a rate of 23 per thousand tot births), including 29 in London.

DURING the June quarter 27,546 new donors joined t National Blood Transfusion Service—twice as many as in t first quarter—and blood was given by 66,557 donors. The are now about 350,000 donors on the panel. To provide f further increases in the demands for blood and plasma and t ensure that donors are not asked to give blood more ofte than once every six months, some 168,000 new voluntee are required in England and Wales.

In England Now

A Running Commentary by Peripatetic Correspondents

It is a popular urban fallacy that we country-dwellers ow all the potatoes we need. In fact few cottagers ve room in their gardens or allotments for more than a ek or two's supply, while we "gentry," with gardens half an acre or so, can get no help (even if we could rd a man at £1 a day) and are doing well if we supply selves with other vegetables and fruit. Economically s unsound to grow main-crop potatoes in a small rden; the cost of manure, seed, and labour con- lerably exceeds the value of the crop. Even Bill up the ad, who grew 5 tons this year in what used to be his t orchard, found that what he got for them only paid the seed and labour, so he was down the cost of the nure.

In this part of the country, which being picturesque ntains an undue number of large hotels, there are omy forecasts of a black market in potatoes. In the tic spell last winter, they say, the hotel-keepers went und in their cars buying up all the potatoes at 30*s*. a t; certainly there were none in the shops. Our rer, who delivers provisions and gossip three times a ek, prophesies that potatoes will soon disappear from e shop once more. Even if they don't things are going be difficult for us who feed at home this winter—and t includes the children in the holidays. In term-time e boys get their midday meal at school, and they get lb. of potatoes a day in that, so they don't do too dly with their ration of 3 lb. a week and an extra B.U. t they (and their parents) will feel the pinch in the idays, when there are no school meals and no milk-in- ool either.

As our grocer says—it all depends on how many meals u can get in canteens or restaurants; if you can feed ut" all the week your rations will do nicely for the ekend. But that is a truly rural point of view.

* * *

In the United States I found that there was a great mand for some English textbooks which were said be unobtainable because of the paper shortage over re. It is a pity if this notable source of dollars is t being tapped efficiently. There seems to be no ortage of paper in America if one is to judge by the e of the daily and weekly newspapers. The smallest bought was the *Boston Herald* with 24 pages. The *icago Sun* had 48 pages and the Saturday edition the *Chicago Daily News* 24 ordinary pages with 52 re in three special supplements. The most lavish use paper was in the *Chicago Tribune* which I bought Sunday, Oct. 5. This was in ten parts and the sum tal of pages amounted to 220. The whole paper weighed lb. 10 oz., and all this was sold for ten cents, which ould be equal to fivepence but actually is now nearer pence. Anyway 7 oz. of reading matter for a penny nnot be considered dear, though if one read the editor's e-too-friendly comments on England one might vise that opinion.

* * *

Peripatetic Correspondence, Letters to the Editor, notations, Leaders, Original Articles—thus your respondent of Nov. 1 digests his LANCET. This is deed a dignified and mature approach (he says himself at he is getting old), worthy of a connoisseur beginning s weekly indulgences. This majestic start however is t maintained, for he then proceeds to tear it up and horror of horrors!—throws it away by Monday. This not the behaviour of an epicure but of a glutton, to be pected perhaps in a gormandiser but never in a gourmet. My own colleagues differ in their approaches to this ekly feast. The senior staff work calmly through, arting with the Diary of the Week, while the recently alified residents use it as a missile or club. Only in at shady half-world of the supernumeraries and gistrars do we give the General Advertiser pride of ace, hopefully copying the details of suitable appointents on the back of an envelope, for not many of us e to our own LANCETS.

I hope this view of the seamy side will not distress erybody.

* * *

Now the basic petrol ration has been withdrawn and our non-professional brethren have laid up their cars again, thoughts turn once more to other means of getting about with the least possible expenditure of energy. So it shouldn't surprise one to find a physiologist[1] investigating the best position for a bicycle seat. Using a stationary cycle, and measuring oxygen consumption with the Douglas bag to estimate the energy output in performing a standard piece of work, he finds there are two optimum seat positions. One is the conventional position, which was developed fairly early in the evolution of the modern bicycle. The other is 63° behind the vertical through the pedal axle and is not far from the position of the seat in a child's pedal car. Provided the saddle has a low back to push against this is (just) the most efficient arrangement of all. It is used with success in the French racing velocar, and towards the end of the war was adopted in the little pedal-buggies in which, sitting side by side, mother and father propelled the family around Paris on a Sunday afternoon.

* * *

If I had a literary flair I should write a sequel to de Quincey's masterpiece, called *Confessions of a Membership Candidate*. The clinical picture, with its delusions and hallucinations, is characteristic. When going to an examination you feel that you have got both the day and the place wrong. You confirm them several times by looking at your notification from the examiners. You are sure your watch is an hour slow and that you will be late. If possible you check your watch and all the clocks in the house by the Greenwich time signal. Nihilistic feelings may be prominent. You wish you could melt away and vanish into the ground, and that the examiner would suffer the same fate. Then, of course, there is the psychosomatic aspect. In Edinburgh the ordeal is concentrated into just a week. I had the feeling that if it had lasted any longer I should have perforated or ended up with ulcerative colitis. However, the situation was not without irony. When I was half-way through, Messrs. Plum and Co. favoured me with a piece of blotting-paper advertising their admirable petroleum emulsion. A noble gesture, I thought, and exquisitely timed; inspired no doubt by the desire to pour oil on troubled waters.

* * *

I have been abstracting a paper in English on streptomycin trials in an Athens sanatorium. The author is enthusiastic about the remarkable improvement shown in the radiograms—so obvious that "the most claiming and difficult reader can be satisfied." But he adds, "if there is still any doubt, we think we can repeat to all who are hesitating the reply: 'An evil and adulterous generation seeketh after a sign and there shall no sign be given to it but the sign of the prophet Jonas.'" I racked my brains to think of the relevance of this quotation. Was it that a cavity was involved both in tuberculosis and in the whale? But it seems that the author merely means that if you, dear reader, won't believe him, others will.

* * *

Speaking as a wife—and there's little opportunity to be anything else in British Guiana—it's not a bad thing to live in a hospital compound. Ours, in one of the farthest corners of the Empire, is furnished with a plentiful supply of coloured labour. You want a stamp? A porter will cycle to the post office. The electric iron has gone funny? The hospital electrician works in sight of the house. A wheel has come off the pram? The engineer is here before you can say scalpel. A picture frame needs mending? The carpenter is more than willing. A toy needs painting? What's the painter for? You want a chicken killed or a lettuce planted? The gardener will spring to action. The car is in a mess? The handyman knows *all* about cars. What with all these and a cook-general, a nannie, a scrubber, and a laundress, and only three in family, there isn't really a lot for me to do, which explains why, after only a year in the colony, I have managed to find time to write this.

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1. Hugh-Jones, P. *J. Physiol.* 1947, 106, 186.

Letters to the Editor

COMPENSATION VERSUS RESETTLEMENT

SIR,—Last year there came under my care a middle-aged man who had sustained at his work many and serious injuries. It was early apparent that he would never return to his old employment and the advantages of the Disabled Persons Register were explained to him. He was interested and entirely coöperative. The necessary steps were taken. In due course he made a substantial recovery and arrangements were made for him to go to a Ministry of Labour rehabilitation centre, to be trained for a new job while continuing to receive weekly compensation at the full rate. He was still willing and anxious to be trained.

Now there has been formed an unholy alliance between his trade-union and the employer's insurance company to wreck all the good that has been done. The trade-union, living in the past, has told him that under no circumstance is he to submit to being trained until he has received a lump-sum settlement, for if as the result of his training he achieves employment the lump sum will be smaller than if he hangs around and makes no effort. The insurance company support this view, telling the man the same tale and urging him to accept some figure quickly, because if he gets better the sum will diminish.

All surgeons who deal with industrial accidents welcomed the initiation of the Disabled Persons Register as a big step forward in the resettlement of the injured. The failure of the workmen's lay advisers to appreciate the true value of the scheme and their obstruction to its working seem to me to demand some publicity, for though this is a particularly glaring case it does not stand alone. Men more slightly injured, able and willing to go on working while still under treatment, repeatedly state that their trade-union advises against such a course for fear of jeopardising their compensation.

London, W.1. CECIL FLEMMING.

EARLY RISING AFTER OPERATION

SIR,—I found your leading article on Sept. 20 very interesting. Beginning in 1939, my patients as a rule have been out of bed no later than the second day after peration, and for the past two years on the evening of ration.

comment that patients actually hate it, even
opers have tive words of the enthusiastic surgeon and
Your fact patients have convinced them of its
if the seduc he mea foreign to my experience. Since
his "decoy" study of questioned a number of
feasibility, is quite days to two months
reading the editorial I have they have been
patients, at periods varying from tw had previously
after operation. Without exception conventional
enthusiastic about it, and those who ing. On
been operated and kept in bed for the early
period were loud in their praises of early why
several occasions, through oversight, orders
rising were not written, and patients have asked
they were not being permitted to be out of bed like
other patients they had seen. This showed no fear
dislike of the routine.

Certainly, early rising is foreign to surgical custom, and almost barbarous; but I am sure that once one breaks the spell of tradition, one will never return to prolonged bed rest.

JOHN BURKE.

Buffalo, New York.

RENAL CIRCULATION

SIR,—In your account (Nov. 1) of the meeting of the section of experimental medicine of the Royal Society of Medicine on Oct. 21, Dr. Heggie is reported to have stated that by his findings "he had indicated to the workers in Oxford [Trueta, Barclay, Franklin, Daniel, Prichard] that the short circuit they had discovered and demonstrated in vivo was via these juxtamedullary glomeruli."

Neither of us, who opened the discussion, have any recollection of a statement by Dr. Heggie to this effect, and, in point of fact, it is entirely incorrect. As part of the demonstration at the Physiological Society, on June 15, 1946 (reported in the proceedings of the society), we exhibited photographs and photomicrographs of kidneys that "incline us to believe that the by-passi is effected, at least in part, via the vasa recta." demonstrated vasa recta with their loops arising fro glomeruli at the base of the cortex and, at that tim called them basal glomeruli. A preliminary communic tion of this demonstration appeared in THE LANC of Aug. 17, 1946, and Dr. Heggie wrote to THE LANC about this communication on Sept. 21. This was the fi we had heard of his beautiful work on the structure the glomeruli, and it was this work that he demonstrat at the recent meeting at the Royal Society of Medicir

Your reporter states that Dr. Heggie had nam these structures as juxtamedullary glomeruli in 194 but Dr. Heggie did not refer to this at the meetir nor have we seen any reference to this publication. Aft his letter in THE LANCET we forthwith adopted the nar "juxtamedullary" and attributed it to him in our bo (*Studies of the Renal Circulation*, p. 51); but to sugge that Dr. Heggie's work has guided us to our conclusic is entirely contrary to facts.

Nuffield Institute for Medical
Research, Oxford.

J. TRUETA
A. E. BARCLAY.

MALARIA TRANSMITTED BY BLOOD-TRANSFUSION

SIR,—With reference to the article by Dr. Roge (Nov. 8), I would like to put on record the followi case.

In 1943 a woman was admitted from a maternity hospit in Hertfordshire to the Hertford County Hospital with diagnosis of puerperal fever. Swabs and blood-cultu however, proved negative, and it was only after several da that a full blood-count was requested. On doing the differe tial count I found, to my surprise, a number of terti parasites, and subsequently, if my memory serves me we the following history was obtained from the patient.

She felt well before, but had a severe hæmorrhage po partum, for which 3 pints of blood were given. Shortly aft the second transfusion the patient had a rigor. All bottl were pooled blood supplied from a transfusion centre, a identification numbers had been destroyed. The patie had never been abroad, but as there were anopheles in th district and as the donors could not be traced, no defini proof could be obtained for the evidence of transfusi malaria and the case was never published. Prof. S. Bedson, then sector pathologist, informed the Ministry, a I believe it was Dr. Banks who investigated this case furthe

I am not sure whether Dr. Banks's personal con munication to the author of the article does not ref to the above case.

General Hospital and Infirmary,
South Shields.

K. S. RODEN
Pathologist.

COAGULATION FACTORS

SIR,—The letter from Professor Seegers (Nov. 1 raises several important issues which arise more or les directly from the interpretation of the results obtaine by the one-stage and the two-stage methods for dete mining prothrombin. In both methods it was originall assumed that a unitary substance, prothrombin, wa

nverted by thromboplastin and calcium to thrombi
account for the difference of prothrombin activit
ined by the two methods, especially when measurin
tivel in various species, Warner, Brinkhous, an
Sn[1] postulated a variation in the convertibility c
prombin—"an element of species specificity."

Wny discovery that the loss of prothrombi
activi stored human plasma could be corrected b
adding dog or rabbit plasma treated with Al(OH)
it becamarent that a principle hitherto unrecognise
was alsontial for the formation of thrombin. A
no time aropose that there were two prothrombins
but I poed that prothrombin was a comple
composed oral components. Originally I called th
principle whsappears on storage "component A"
but later st me to re-designate it as the "labil
factor"[3] anpply the term "component A" t

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1. Warner, E. khous, K. M., Smith, H. P. *Proc. Soc exp. Biol.*, N, 40, 197.
2. Quick, A. J. *Physiol.* 1943, 140, 212.
3. Quick, A. J. Sept. 13, p. 379; *Amer. J. Physiol.* (i the press).

the principle that is deficient in one type of congenital hypoprothrombinæmia which I recently described.[3] The term "component B" remains reserved for the factor which is diminished in dicoumarol poisoning and in the last type of congenital hypoprothrombinæmia which I reported.[4] Terms such as "accelerator" were intentionally avoided to prevent confusion with thromboplastin. The concentration of the labile factor varies greatly in different species: it is abundant in dog blood and low in human blood. It appears likely that it was this factor that was lacking in the patient of Rhoads and Fitz-Hugh,[5] the first reported case of idiopathic hypoprothrombinæmia, and also in Owren's[6] case (although it is for Dr. Owren to make the final decision).

The one-stage method, by estimating the composite prothrombin activity of blood. has become increasingly valuable clinically and has in addition yielded much scientific information. The two-stage method is now employed relatively seldom for clinical purposes because it is rather complicated technically and because it yields perplexing results in certain conditions—as for example in early infancy.[7] Dr. Seegers's expression "the more reliable two-stage method for measuring prothrombin activity" must be considered as relative. In his type of investigation with the use of purified reagents it has yielded valuable results, and every worker in the field is appreciative of Dr. Seegers's contributions. Unfortunately the problem of hæmostatic dysfunction cannot yet be bodily transferred to the test-tube. Much information must still be sought by direct study of blood. and for this purpose the one-stage method has proved its value by the test of time.

At present both approaches are still necessary, and the two types of effort should complement each other rather than antagonise. Ultimately it will likely be found that much of the present confusion is one of terminology rather than of basic facts.

Marquette University School of Medicine, Milwaukee, Wisconsin.
ARMAND J. QUICK.

THE BARBITURATES

SIR,—Your leading article of Oct. 18 was most timely, and will cause many to reflect. In your issue of the following week Dr. G. Thurston wrote protesting that "it would be impossible for a busy doctor to see, say, every week all his patients who took phenobarbitone." May I suggest a simpler mode of caution? State upon the prescription that the supplies are to be issued weekly to the patient.

Hasterworth, Gloucester.
S. P. VENABLES.

"JUGGED HAIR"

SIR,—On the cover of the July 27, 1946, *British Medical Journal* appeared in large print "Vinesthene Anæsthesia for Repair of Hair-lip and Cleft Palate." I expected to see some apology for this mis-spelling or at least a letter from some wag cleverly pulling the leg of the editor who had allowed it to pass him. Either it went unnoticed or I overlooked reference to it in subsequent issues of the journal.

In the Oct. 18 *Lancet*, p. 588, in an annotation I read: ". . . since the feeding of a child with a double hair-lip is at best tedious, . . ." In the three issues since that date I have seen no correction of this mis-spelling.

It is perhaps to be expected that a surgeon who receives a great many letters about this condition from parents and general practitioners should have come across this mistake frequently, but it seems odd that the editors of our two leading medical journals should have allowed it to pass. For twenty years or more I have refused to use the term at all: and I and those who have worked with me have adopted the terminology "cleft lip" first suggested, I believe, by Ritchie, of St. Paul, Minnesota—more descriptive, less inapt and less likely to lead to incorrect spelling.

Nuffield Department of Plastic Surgery, Churchill Hospital, Oxford.
T. POMFRET KILNER.

TEACHING APPOINTMENTS

SIR,—In your leading article (Oct. 25) dealing with Dr. Clark-Kennedy's new textbook you state: "He has concluded that medicine is in serious danger from the dominance of specialism. Increasingly narrow specialists are not the best people to control the teaching of the undergraduate student."

The importance of this is not generally realised. and few seem to appreciate what is happening in most of the teaching schools. Several recently appointed professors of medicine are primarily not clinicians but physiologists or workers in some other branch of research: and this tendency has spread to recent appointments of readers and senior lecturers.

Knowledge of general medicine, clinical experience, ability to lecture, enthusiasm and flare for teaching—these apparently are of little consequence. Research-workers are dominating the teaching schools and obtaining most of the full-time teaching appointments; and research-workers are often bad clinicians and poor teachers. From personal experience and the opinions of interested friends, I know that the teaching of medicine to undergraduates in many schools is of poor quality; and the much-boosted and advertised postgraduate teaching is often worse.
M.R.C.P.

RUPTURE OF THE SPLEEN

SIR,—I should like to call attention to the leucocytosis with relative and absolute decrease of lymphocytes in the case reported by Dr. Druitt (Nov. 1). This condition of the blood is found with traumatic rupture of spleen. according to Bieri,[1] and it is therefore a useful sign in establishing the diagnosis.

Institute for Morbid Anatomy, University of Bratislava, Czechoslovakia.
F. KLEIN.

EFFECT OF BENADRYL ON GASTRIC ACIDITY

SIR,—Mr. Doran's letter of Sept. 27 is an important contribution in that it demonstrates that anti-histamine drugs are probably bad treatment for hyperacidity, and in that it helps to uncover a very significant physiological fact. The conclusion however that his results "throw some doubt on the hypothesis that the ultimate stimulus to the parietal cells is normally histamine" may be challenged.

The position is briefly this. Histamine is widely regarded as the physiological stimulus for acid gastric secretion. Certain drugs have been proved to exert an anti-histamine action, and from quantitative studies it is concluded that this action is in the nature of substrate competition. It was thus natural to attempt to reduce gastric acidity by the administration of these drugs, but these attempts have not only failed but often actually resulted in increased acid gastric secretion. From this paradoxical result Doran concludes that histamine may after all not be the physiological stimulus of acid gastric secretion.

This conclusion overlooks the fact that if histamine were unconcerned with acid gastric secretion the administration of anti-histamine drugs should make no difference either way. Doran's line of thought, followed to its logical end, would lead to the conclusion that histamine is actually an inhibitor of acid secretion—a view which seems untenable in the present state of our knowledge.

Assuming that the histamine theory of acid gastric secretion is correct, we must conclude from the above experiments that the administration of anti-histamine drugs led in these cases to an increased supply of histamine to the gastric mucosa. Now, if we accept the idea that these drugs act by substrate competition, then their administration must, ceteris paribus, lead to an increase of circulating histamine by an equivalent amount, as the drug interferes with the fixation of histamine to the H-sensitive cells. This excess could, however, have no influence on the acid gastric secretion unless the mechanism by which histamine affects the parietal cells of the gastric mucosa is different from that by which it produces its effects in other tissues, and such that it is either less or not at all interfered with by the anti-histamine drugs.

Quick, A. J. *Amer. J. lab. clin. Med.* 1946, 31, 79.
Rhoads, J. E., Fitz-Hugh, T. jun. *Amer. J. med. Sci.* 1941, 202, 662.
Owren, P. A. *Lancet*, 1947, i, 446.
Brinkhous, K. M., Smith, H. P., Warner, E. D. *Amer. J. med. Sci.* 1937, 193, 475.

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[1] Bieri, J. *Schweiz. med. Wschr.* 1946, p. 1053.

The hypothesis that the action of histamine on the gastric mucosa is different from its action elsewhere seems reasonable because in the stomach it has a specific function to perform, whereas in most other sites its action is general and (with normal amounts in normal individuals) feeble. It is well known that many active metabolites, while they have a feeble general effect, have a pronounced action on special organs; and it must be assumed that in these instances two different mechanisms are at work. Thus, with an even concentration in the blood, gonadotrophic hormones act chiefly on the gonads, gonadal hormones chiefly on the secondary sexual organs, and thyrotrophic hormone chiefly, though not exclusively, on the thyroid gland.

An analysis of the present situation leads to the following conclusions:

1. There is strong evidence that histamine is a physiological stimulus for acid gastric secretion.
2. There is strong evidence that administration of "antihistamine" drugs increases acid gastric secretion.
3. It seems therefore probable that the action of histamine on the gastric mucosa is a specific one—i.e., different from its action on other tissues.
4. This conclusion is in accordance with the known facts about the action of many other active metabolites (hormones, vitamins, enzymes).

Far from throwing doubt on the histamine theory of acid gastric secretion, Doran's results may be evidence in favour of it, indicating as they may a specific reactivity of the gastric mucosa to histamine.

Surgeons' Hall, Edinburgh. ERICH GEIRINGER.

URETHANE IN CHRONIC MYELOID LEUKÆMIA

SIR,—The question whether urethane can prevent relapses in chronic myeloid leukæmia cannot be answered with certainty, though Paterson and her co-workers[1] state that it cannot do so. Equally, it is still uncertain whether severe damage to the hæmopoietic tissues is attributable to urethane, though Paterson et al. mention a case in which there were signs of aplasia, perhaps due to urethane. Davidson[2] refers to toxic effects but does not specify their nature.

No report has been published of chronic myeloid leukæmia treated continuously for long periods with urethane; and for this reason the present cases are placed on record.

CASE 1.—A woman, aged 26, had been diagnosed as having chronic myeloid leukæmia in 1942, but was free from symptoms until about August, 1945.

When I first saw her in October, 1945, she complained of bouts of sickness, fatigue, occasional fever, and increasing size of her waist. Her spleen extended below the umbilicus, and there was extreme tenderness on pressure over the lower part of the sternum. The leucocyte-count was 200,000 per c.mm. (with the usual differential count of chronic myeloid leukæmia) and there were 340,000 platelets per c.mm.

She was given X-ray treatment by Dr. Russell Reynolds, and by the end of December, 1945, the number of leucocytes had fallen to 14,200 per c.mm., with few myelocytes present.

By April, 1946, the leucocyte-count had again risen to 71,000 per c.mm., and the spleen, which had almost retired to the costal margin, was again below the umbilicus. The patient again had X-ray treatment and improved, but on Aug. 16, 1946, the leucocyte-count was 78,000 per c.mm., the lower sternum was tender, and the spleen reached the umbilicus.

She was now given enteric-coated capsules of urethane (Martindale) 0·5 g. thrice daily. A month later the spleen was half-way between the costal margin and the navel, the sternum was not tender, and the leucocyte-count was 46,000 per c.mm.

The patient continued to take urethane, and in January, 1947, the leucocyte-count was 6250 per c.mm. Urethane was continued in spite of the diminished white-cell count, and shortly afterwards the patient found that she was pregnant. Even so, the same dose of urethane was continued, and in May, 1947, when the leucocyte-count had risen to 21,500 per c.mm., the dose was increased to four capsules (2 g.) daily. This was continued throughout the pregnancy until, Aug. 30, Mr. Leslie Williams performed a cæsarean section.

The baby appeared perfectly healthy, its neonatal blo picture was within normal limits, and it has gained weig steadily during the first month of life. The mother can fe the child and appears to be in excellent health. The brea milk contained less than 15 mg. of urethane per 100 ml.

Urethane was only stopped for a few days after the operati during a slight urinary infection, but three days after t birth the leucocyte-count was only 18,000 per c.mm.

The mother and child remain in good health (a month af the cæsarean section) and the total amount of urethane tak up to that time was nearly 900 g.

No signs of toxicity have been noted, and as yet there no signs of a relapse, though the blood picture is, of cour not normal.

CASE 2.—A woman of 41, with a total leucocyte-count 695,000 per c.mm., has had 300 g. of urethane in five mont with a resultant fall in the number of leucocytes to 104,0 per c.mm. Treatment is being continued.

CASE 3.—A woman of 67, with a spleen that would longer respond to radiotherapy, has had 400 g. of urethа in nine months; and, as a result, the spleen has retir behind the costal margin.

My results in cases of chronic lymphatic leukæmia far less satisfactory, and in acute leukæmia urethane h proved to be useless.

It seems possible that the toxic effects attributed urethane may be due to its use as a method of produci the same sort of rapid improvement in the blood pictu as can be obtained by radiotherapy. My experience the cited cases (and in others) is that a moderate dc (in enteric-coated capsules to avoid nausea) produces more gradual but equally spectacular improvement, a that a maintenance dose can be given to avoid relaps If only in the last respect, urethane is more useful th radiotherapy, which has to be administered episodicall

Case 1 is not the only recorded example of a success pregnancy in a leukæmic woman, but it is the only o in which urethane has been given throughout. He again, urethane has a great advantage over X rays, whi cannot safely be given during pregnancy for fear damage to the child, whereas urethane is apparent *innocuous to the fœtus.*

London, W.1. A. PINEY.

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[1] Paterson, E. A., Thomas, I., Haddow, A., Watkinson, J. M. *Lancet*, 1946, i, 677.

[2] Davidson, L. S. P. *Practitioner*, 1947, 159, 315.

THE HEALTH OF AUTHORS

SIR,—In his delightful and refreshing lecture (Nov. 1 Mr. Harold Nicolson refers to A. E. Housman as displayi "plodding assiduity." This I find surprising, for in h preface to the first edition of *Last Poems* Housm writes: "I publish these poems, few though they a because it is not likely that I shall ever be impelled write much more. *I can no longer expect to be revisit* by the continuous excitement under which in the ear months of 1895 I wrote the greater part of my oth book, nor indeed could I well sustain it if it came. Surely these words suggest that with Housman, to inspiration was an impulse.

London, N.14. ARNOLD BLOOM.

ESTIMATION OF RENAL ACTIVITY

SIR,—It seems that some of the statements in tl article by Dr. Greiner and Professor Podhradszky, o Oct. 4, require comment.

They stated that "reduction in urinary flow is du to changes occurring simultaneously in glomerular an tubular functions, the latter, owing to their large extent, being more important." On referring to fig. we find that the tubular reabsorption *decreases*, durin the thirsting phase, and that the reduction in urine flo is mainly due to a reduction of filtration-rate. Th values from fig. 3 (*a*) are: glomerular filtration-rat 160, 145, 100, 128 c.cm. per min.; urine flow 10, 2·4 0·5, 3·7 c.cm. per min.; and tubular reabsorption c water 150, 142·6, 99·5, 124·3 c.cm. per min.

It seems that the chloride clearance is used as a estimate of tubular function. Now when the tubula reabsorption is large, less work need be performed, i withdrawing a given amount of chloride from the tubule than when the water reabsorption is less. This is obviou since the reabsorbate in the former case will be les trated than in the latter, and it is difficult to see a value like chloride clearance can act as an indication "increased tubular function." It is more rational regard concentrating power as an index. Where the urinary concentration of creatinine, P the concentration of creatinine, and V the minute-me of urine, the clearance, represented by UV/P, remain the same although U rises.

this connexion it is interesting that Barcley et al.[1] suggested that the concentration ratio of creatinine be used as an indication of renal function.

Department of Anatomy,
dical School, Birmingham, 15.

DAVID F. COLE.

INFECTION FROM SPINAL ANÆSTHETIC

R,—It appears that almost all the cases of infection spinal anæsthesia have been traced to con- tion of the so-called sterile water used for washing the needles and syringes. May one who, although a professional anæsthetist, has given many hundreds pinal anæsthetics, without incident so far, offer a of advice?

ver use any "sterile water": there is always too h anæsthetic solution in the ampoule and this is ys sterile. I attach the spinal needle to the syringe draw up a little of the anæsthetic; this washes ugh the needle and can be shaken about in the l of the syringe. Apart from the mechanical -out, the introduction of this small amount of hetic will use up anything present in the needle ringe which might cause precipitation of the anæs- sing agent; in fact, this was my reason for adopting a technique in the days when cocaine products, h are more easily affected in this way, were in more on use.

is simple technique avoids the need for using sterile r which, in my opinion, should always be regarded suspicion.

ternity Hospital, Kingshill, Swindon.

GUY ROWORTH.

DEPERSONALISATION SYNDROME

R,—The article of Nov. 15 by Dr. Shorvon is of importance. Psychiatrists and psychotherapists benefit by the careful study of the cases reported .

my mind, the very features of the complaints in patients distinguish them from psychoneurotics are fit for analytical therapy. May I say that, apart the early "enthusiastic" days of my practice, ould have recognised these cases as unlikely to to the most skilful analytical therapy. Case 5 aps might have benefited by such treatment after first attack, in having had less proneness to react depersonalisation, even though one ought not to be about this. But in general it is unjustifiable to d much time and money on a prolonged experiment sycho-analysis in cases of the type referred to in von's publication. The rare cases of depersonalisation h did improve by psycho-analysis (I know of only showed a different character and development.

us, however, does not imply that this syndrome is ys quasi-psychotic and not a disturbance of psycho- tive processes. The few cases which yielded to ether action do suggest that the feeling of unreality may be re psychoneurotic manifestation, even though not e type that reacts to the ordinary analytical approach.

don, W.1.

S. LOWY.

LANCETS ON LOAN

of. K. Thomas, dean of the medical faculty of the Univer- of Erlangen, writes to say that for some time past he een receiving copies of THE LANCET regularly. Professor nas has been unable to trace where the packets come , but he and the other members of the faculty, with n he shares them, would like to thank the unknown donor. ugh many periodicals are available in the American ry at Erlangen they cannot be taken away on loan, and, rofessor Thomas remarks, "Wer von uns hat schon iber die Zeit sich in die Bibliothek zu setzen?" He and colleagues are therefore all the more grateful to the rmous LANCET-lender.

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[1] arclay, J. A., Kenney, R. A., Cooke, W. T. *Nature, Lond.* 1947, 160, 432.

Parliament

FROM THE PRESS GALLERY

Medical Practitioners and Pharmacists Bill

IN moving the second reading of this Bill in the Upper House on Nov. 11, Lord HENDERSON said its object was to dispose finally of the war-time problems associated with the admission to the British Medical Register of doctors not possessing British qualifications. After briefly describing its main provisions[1] he added that when temporary registration ceased there were about 3500 names on the temporary register. This figure included many American and Canadian doctors, and of the others —Germans, Austrians, Poles, and Czechs—many had returned to their own countries. It was estimated that not more than 1500–2000, including the Polish doctors who had come to this country under the Polish resettlement scheme, would avail themselves of the Bill.

The Bill also provided for the registration—in the first instance on a provisional basis—of certain doctors who are not on the temporary register. This power, Lord Henderson emphasised, was limited to doctors who were in this country when the Bill was introduced. Neither in this Bill nor in our war-time measures, he thought, had we treated foreign doctors ungenerously, but we must put some limit on the relaxation of ordinary procedure. Permanent modification of the present law—which makes the registration of foreign doctors dependent on reciprocity—would be beyond the scope of the Bill.

Only clause 8 in part I of the Bill, therefore, would be permanent. Its intention was to regularise the position of doctors visiting this country for a limited period, either as teachers or as postgraduate students. Many of these visitors were not eligible for registration under the Act of 1886, and technically it was a professional offence for a registered practitioner to coöperate in professional work with an unregistered person. These doctors were at present also unable to give statutory certificates or to possess or supply dangerous drugs. It was true that in the past no legal difficulties had arisen, but the risk had been there, and the Government thought it should be removed, especially as in the near future hospitals would become a State responsibility. Registration under this provision would be temporary and would only be given for the duration of and in respect of specific appointments. The Bill would give the General Medical Council the necessary powers in regard to these doctors. The council, he added, were the guardians of the standards of medical education in this country and we could safely leave to them the task, which might not prove easy, of assessing the value of the great variety of medical diplomas held by applicants under the Bill.

Though Lord LLEWELLIN welcomed the Bill, "for we are not overflush with doctors at present," he stressed the medical profession's satisfaction that the Government, since the Bill was first introduced, had limited eligibility for registration to doctors already in this country on Aug. 4, 1947. Lord HARLECH supported the Bill because it sought to break down the idea that all the doctors from one country should be recognised and allowed to practise here and that none of the doctors from other countries should be recognised. Recognition, he held, ought to be personal and should depend on whether a man was properly qualified. He hoped to see the day come when there would be more interchange of medical experience, medical research-workers, and medical practice between all the countries in the world.

QUESTION TIME

How Many Calories?

Major E. A. H. LEGGE-BOURKE asked the Minister of Food how the daily calorie content of the weekly minimum amount of food regarded as necessary for an unemployed man, as decided by the Ministry of Health in coöperation with the British Medical Association in 1933, compared with that of the present ration after the reductions recently announced by the Government.—Mr. J. STRACHEY replied: The calorie value of the no. 2 diet suggested for an adult man by the British Medical Association in 1933 was 3386 calories daily. As announced by the Minister of Economic Affairs, the recent reduction in distribution will result in an estimated average daily calorie intake of just below 2700 per head for the whole population. Major LEGGE-BOURKE: Is the Minister aware that his reply will cause considerable concern in the country, and can he say whether the figure of 2700 calories quoted by the Minister of Economic Affairs took into consideration the recent cut in potatoes?—Mr. STRACHEY: Yes, sir; it did take into consideration the rationing of potatoes. I cannot agree that there was a ration figure for the unemployed before the war, but I entirely agree that the level of calories which I have just quoted is a matter of grave concern.

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[1] See *Lancet*, Nov. 8, p. 703.

Mr. SOMERVILLE HASTINGS: Is it not a fact that many people engaged in sedentary work are not now taking in 2700 calories a day?—Mr. STRACHEY: Yes, sir. The figure of 2700 is the average figure. There are many sections of the population getting very much more; therefore there are many who are getting much less. Mr. J. S. C. REID: How many calories are represented by the cut caused by potato rationing?—Mr. STRACHEY: Seventy.

Replying to a further question, Mr. Strachey gave the following calorie values for the rationed foods (not including eggs or pointed foods) of a normal adult:

Meat ..	.. 117	Sugar ..	.. 123
Bacon ..	.. 15	Bread ..	.. 648
Cheese ..	.. 33	Milk ..	.. 102
Butter ..	.. 61	Preserves	.. 41
Margarine	.. 124		
Lard ..	.. 36		1300

Calories for Industrial Workers

Lieut.-Colonel U. CORBETT asked the Minister what was the calorie value of the rations available to the following categories of workers taking account of basic rations, extra rations, and canteen rations: miners, workers in factories having canteens, farm workers, and other working men.—Dr. E. SUMMERSKILL replied: Assuming that a worker takes five main meals and five hot beverages a week at his canteen, the average calorie value of his basic rations, including points and sweets and the rations provided through the canteen, would be 3370 calories a head daily for a miner, and 2530–2630 for an industrial worker, depending on the type of canteen available. Agricultural workers' rations provide 2600 calories a head daily. Other workers get amounts which depend on the nature of their work, and the provision of canteens.

Rations for Hospital Patients

Mr. H. W. BUTCHER asked the Minister whether the patients in hospitals and nursing-homes would suffer the recently announced cut in civilian rations.—Mr. STRACHEY replied: Residents in hospitals and nursing-homes are entitled to the same rations as the domestic consumer. Additional foods considered necessary on medical grounds may be obtained in the same way as for people suffering from similar complaints at home. Special cuts of 15% or 17½% in the allowances of various rationed and controlled goods to certain catering establishments made because of the crisis were not applied to residents in catering establishments or anyone in institutions.—Mr. BUTCHER: While bearing in mind the fact that persons in these institutions have no access to public canteens, or other methods of feeding out, is the Minister really satisfied that the ration these people will receive will be adequate to restore them to good health?—Mr. STRACHEY: That was why we did not apply the recent catering establishment cut to these places.

Health and Nutrition Surveys

Mr. BUTCHER asked the Minister whether, in view of the reduced rations, he would arrange for frequent surveys of the health and nutrition of the civilian population and for the publications of the reports of such surveys.—Mr. STRACHEY replied: Surveys of health are the responsibility of the Ministry of Health, but the Ministry of Food has been carrying out a monthly survey of food consumed in the home since 1941, and will continue to do so. A report on the survey results from 1941 to 1946 is now being prepared for publication. Ad-hoc surveys are also arranged to investigate current problems and difficulties.

National Health Service

Sir E. GRAHAM-LITTLE asked the Minister of Health if he would now give an estimate of the number of general practitioners and specialists, respectively, which would be req to warrant putting into operation the National Health Se Act, 1946, now proposed to take place in July, 1948; and measures had been taken to provide additional ho accommodation, health centres, and other buildings req to carry out the provisions of the Act.—Mr. A. BEVAN rep The National Health Service will be brought into oper with the resources available at the appointed day. T resources will be extended as circumstances permit.

Obituary

WALTER ROWLEY BRISTOW

M.B. LOND., F.R.C.S.

Rowley Bristow's influence as orthopædic sur to St. Thomas's Hospital and as orthopædic consul to the Army will long continue through his power leader and teacher of young men.

Born in 1882, the son of Henry Joseph Bristow Bexley, Kent, he began his medical studies St. Thomas's, where he won renown not only as a p winner but as a member of the soccer, lawn-tennis, water-polo teams, and later as a scratch golfer and owner of a series of sporting motor-cars. In 1907 took the Conjoint qualification, and the following year his M.B. After holding house-appointments at the hospital he obtained his surgical fellowship in 1909, and when war broke out in 1914 he was already established in consulting practice as a traumatic surgeon. With the Middlesex Yeomanry he served in Gallipoli and was mentioned in despatches for his work at Suvla Bay. In 1916 he returned to England to work at Shepherd's Bush military hospital with Sir Robert Jones. Here he quickly became Sir Robert Jones's disciple and friend, for they shared the same vigour of bo ability of mind, and generosity of character. After war their association continued, for in 1919 St. Thom set up an orthopædic department with Sir Robert its titular head and Bristow as his active assista When Bristow retired from the staff early this yea tribute in the hospital gazette acclaimed him as fact from the start the real director of this departme "Though he was a loyal and ardent admirer of Rob Jones, he proved no slavish follower of the Liverp school. His organising ability and his happy kn of picking good assistants and getting good work out them soon established the new venture on a sou footing." But his affectionate respect for his old ch continued, and it was appropriately recognised by h election last year to give the Robert Jones lecture the Royal College of Surgeons, when he spoke on injuri of the peripheral nerves. With his work at St. Thoma he combined his surgical directorship of the St. Nichol Hospital for Cripples at Pyrford, to the advantage of bot He was also on the consulting staff of the King Edwa VII Hospital for Officers at Osborne.

When war came again in 1939 Bristow was appoint orthopædic consultant to an E.M.S. area, but in th following year he became orthopædic consultant the Army, and in 1941 he was made consulting surge in orthopædics to the Army, with the rank of brigadie In the course of his duty he flew many thousands miles across the Atlantic and over the Mediterranea and Middle East. He was largely responsible for th establishment of orthopædics as a specialty in th Army, and the Service gained immeasurably from h choice and direction of young surgeons, from who he demanded something of his own whole-hearte efficiency. They gave of their best for the work itse and in loyalty to their leader.

Bristow's colleagues at home trusted him fully, an he was president of the British Orthopædic Associatio in 1937. He was also elected to the orthopædic associa tions of America, France, and Belgium. and last year he was appointed chevalier of the Legion of Honour, and awarded the Croix de Guerre with palm. Of his international relations a Canadian surgeon says: "To see the many visitors from the United States and Canada come to his doorstep, whether mature orthopædic surgeons or not, to wonder, marvel, and then remain to learn, was a never-ending pleasure. Here was a man to warm the cockles of the hardest transatlantic heart, with his straightforwardness, his singleness of purpose, his cutting of the inevitable red tape, his brilliance, and his conciseness of thought and dynamic action. Some of us discovered his kind affection and his pleasure in all things beautiful. Those of us who visited him at his ome, where he fondly and proudly displayed his alpine owers, his herbaceous border, and his fruit and vegetable arden, and talked quietly with him by his fireside, could ppreciate the greatness of the man and the loving-indness in his heart which he hid behind his somewhat ustere and brusque exterior. We, who had the privilege f working with him, have had our moments of difficulties, lways of our own making, and at a later stage have ppreciated his mature advice and wise guidance. No ore will we be affectionately greeted, with the pungent emark that so often went home, by the man with the parkle in his eye, whom we came to love, admire, and spect."

As O. M. P. puts it, Bristow "possessed the happy nack of getting loyal coöperation from all his assistants. utside his professional work he was keen on many rms of sport: above average as a player of ball games, e continued to be a good golfer till a few months before s death; lately his main interest had been in fishing d shooting. He thoroughly enjoyed the social casion and showed both generosity and discrimination his entertainments both at home or in his club. He ved his life to the full and with good courage."

"It is difficult to believe." writes H. P., "that Walter ristow has gone from our midst whilst still at the height his powers. For to his colleagues, his pupils, and his iends—in many different walks of life, all over the world —he seemed invulnerable. We had looked forward to his njoyment of a long Indian summer, in which some of us, both young and old, might have continued to share his radiant spirit. In his genius for friendship, and in the ideal setting of his home and family life, we have lost something which is irrèplaceable. By the death of Walter Bristow, international orthopædic surgery loses one of its outstanding leaders, and we mourn the passing of a master surgeon."

We conclude by quoting part of a tribute from G. R. G.: "My long friendship with Rowley Bristow," he says, "has been to me a source of great happiness, and valued even more because all the time I have been learning from those things he taught by example to all who were with him—to get at the facts, to keep one's feet on the ground, and to master one's methods. It is human to make mistakes, and he was very human, yet probably he made as few mistakes as any man. This, I think, was due to his essential humility, shown by his eagerness to learn from juniors and seniors alike provided they could give their proofs. We shall miss him as a man of outstanding character, with a genius for life and friendship, and above all else a most heartening presence."

Mr. Bristow married in 1910 Florence, only daughter of James White, LL.D, and they had one son and two daughters. He died in London on Nov. 10.

WALTER KING HUNTER

M.D., D.SC., LL.D. GLASG., F.R.F.P.S.

Prof. W. K. Hunter, who died on Nov. 7 at the age of 80, was one of the most distinguished physicians of his generation in Scotland. The active years of his life were spent in the service of Glasgow Royal Infirmary, where he was in turn student, house-physician, and a member of the visiting staff until he retired in 1934. From 1903 until his appointment to the newly instituted Muirhead chair of medicine in 1911, he was lecturer in the practice of medicine at Queen Margaret College.

After leaving the Glasgow Academy, Hunter entered the faculties of science and medicine at the university, graduating B.SC. in 1888 and M.B. in 1890. Seven years later he obtained the degree of M.D., and in 1901 that of D.SC. On his retirement from his chair the university conferred on him the honorary degree of LL.D. A fellow of the Royal Faculty of Physicians and Surgeons, he held various offices in the faculty, including examinerships in medicine for the licence and for the fellowship. In his younger days Hunter was on the staff of the Glasgow Royal Hospital for Sick Children, and it was a great satisfaction to him to serve in later years on the board of governors. He was also for many years consulting physician to Glasgow Royal Mental Hospital. He was one of the foundation members of the Association of Physicians of Great Britain and Ireland, and he also took an active part in the work of the local medical societies, holding various offices, including that of president of the Glasgow Royal Medico-Chirurgical Society.

Hunter's years of postgraduate study on the Continent, when he visited the neurological clinics of the Paris hospitals, laid the foundations of a life-long study of neurological problems which he combined with a keen interest in hæmatology. His work in these two subjects formed the basis of a number of publications, including a small monograph on the anæmias, and he contributed to our columns (1904–06) a series of papers on the action of snake venoms on the nervous system.

"Hunter was not an easy man to know," writes J. N. C. "His rather formal speech and mannerisms tended to give a false impression. Perhaps his most characteristic trait was a horror of overstatement and of flamboyance in speech, behaviour, and dress. What is now called 'shooting a line' was abhorrent to him. But to the man who was interested in learning clinical medicine, his teaching was an inspiration and his equanimity an example. Uncle Walter, as he was called by generations of students, will long be remembered with the late W. R. Jack, John M. Cowan, John McKenzie Anderson, and others happily still with us, who carried on the clinical tradition of the Auld Hoose. One of the secrets of Hunter's happiness was the variety of his interests. He was deeply read in general as well as in medical literature. His appreciation of music, poetry, and painting was founded on a real knowledge of these arts and he was devoted to quiet rural pursuits. All these were elements in the background of a busy life spent in the service of the community."

Births, Marriages, and Deaths

BIRTHS

Bartholomew.—On Nov. 10, at Bath, the wife of Dr. N. I. Bartholomew—a son.

Denny.—On Nov. 11, at Plymouth, the wife of Surgeon Lieut.-Commander G. C. Denny, R.N.—a daughter.

Hargrove.—On Nov. 11, at Wokingham, Berks, the wife of Dr. Peter Hargrove—a son.

Mason.—On Nov. 9, at Aylesbury, the wife of Flight-Lieutenant J. K. Mason, R.A.F.—a son.

Pike.—On Nov. 6, in London, the wife of Dr. Charles Pike—a daughter.

Southern.—On Nov. 10, in London, the wife of Dr. E. M. Southern—a daughter.

MARRIAGES

Gavourin—Thomson.—On Nov. 3, at Guildford. H. S. Gavourin, M.B., lieutenant, R.A.M.C., to "Terry" Thomson.

McCormack—Jones.—On Nov. 13, Robert John Murray McCormack, M.B., to Gwyneth Avarina Jones.

Osmond—McKenzie.—On Nov. 12, at Milford, Surrey, Humphry Fortescue Osmond, M.R.C.S., surgeon lieutenant, R.N., to Amy Edith McKenzie.

Wakelin—Ellis.—On Nov. 12, at Copthorne, Sussex, John Wakelin, M.R.C.S., to Joan Ellis.

DEATHS

Dickinson.—On Nov. 15, at Eastbourne, William Henry Dickinson, M.B. Edin., lieut.-colonel, I.M.S. retd.

Fawcett.—On Nov. 8, at Harrogate, Herbert Fawcett, M.A. Camb., L.S.A., aged 77.

Fraser.—On Nov. 9, at Fittleworth, Sussex, Margaret Helen Fraser, M.B. Lond., aged 75.

Hingston.—On Oct. 14, James Clarence Ledeatt Hingston, M.R.C.S., D.P.H., colonel, R.A.M.C. retd., aged 65.

O'Donnell.—On Nov. 10, at Ledbury, Sir Thomas Joseph O'Donnell, K.C.I.E., C.B., D.S.O., L.R.C.P.I., major-general, A.M.S. retd., aged 89.

Ritchie.—On Nov. 8, at Dunedin, New Zealand, Russell Ian Ritchie, M.B., M.R.C.O.G.

Shea.—On Nov. 12, at Royston, Henry Francis Shea, D.S.O., M.B. Durh., colonel, R.A.M.C. retd., aged 75.

Winder.—On Nov. 12, James Herbert Roche Winder, D.S.O., B.A., M.D. Dubl., lieut.-colonel, R.A.M.C. retd.

Notes and News

PURCHASE-TAX ON DRUGS

THE British Medical Association has sent to the Ministry of Health a strong protest against the increase of purchase-tax on many classes of drugs which is proposed in the Budget. "It is impossible," the association says, "for any doctor with the interests of his patients at heart to view other than with grave concern any measure which increases the cost of sickness, or adds to the anxiety which accompanies illness. Many of the drugs affected by the increase of purchase-tax are in constant use. The association feels bound to point out that a substantial increase in the cost of these medicines is bound to be reflected in increased cost of medical services which will fall most heavily on the chronic sick, to whom perhaps more than any other sections of the community, this additional burden will cause hardship. The association urges that a reconsideration be given to this question."

LONDON MEDICAL EXHIBITION

THIS year's London Medical Exhibition, held at the hall of the Royal Horticultural Society, missed the splendour of last year's display when all the war-time advances were on show for the first time. There were, however, some interesting novelties. One was an electrical device whereby up to twelve students can listen simultaneously through stethoscopes to heart or breath sounds; selectivity is acute, and the apparatus should find a place both in teaching and in diagnostic work, particularly with obese subjects. Many surgical-instrument manufacturers are finding it hard to keep pace with orders. In part this is due to sales overseas, where the demand is great and still growing; but basically the cause is shortage of skilled labour. Apprentices, usually reserved during the war, are now called up; and in any case young men commonly prefer to engage in less skilled but better-paid employment, such as machine-minding, rather than undertake the long apprenticeship required before they can qualify as artisans in this field.

SCHOLARSHIPS IN AID OF SCIENTIFIC RESEARCH

THE council of the British Medical Association is prepared to receive applications for research scholarships as follows: an Ernest Hart scholarship (£200 p.a.), a Walter Dixon scholarship (£200 p.a.), and four research scholarships (each £150 p.a.). These scholarships are given to candidates qualified to undertake research in any subject (including State medicine) relating to the causation, prevention, or treatment of disease. In addition, applications are invited for the first award of the Insole scholarship (£250 p.a.) for research into the causes and cure of venereal disease. Preference will be given to doctors. Each scholarship is tenable for one year commencing on Oct. 1, 1948. The scholar, who may be reappointed for not more than two additional terms, is not necessarily required to devote the whole of his or her time to the work of research, but may hold an appointment at a university, medical school, or hospital, provided the duties of such an appointment do not interfere with work as a scholar. Applications must be made not later than April 30, 1948, on the prescribed form, which may be obtained from the secretary of the association, B.M.A. House, Tavistock Square, London, W.C.1.

NEW FILMS

SOME new films shown at the Ministry of Health on Oct. 30 set a high standard of technical finish, and deliver their messages well.

Patent Ductus Arteriosus is a beautifully made record of an operation for closure of the ductus carried out at Hillingdon Hospital. The effects of this anomaly on the heart and circulation are well illustrated by animated drawings, the stages of the operation are clearly shown, and the commentary is particularly good. It should prove valuable as a reminder to general practitioners that this formerly hopeless type of congenital heart disease can now be perfectly cured.

The film was made by the Crown Film Unit, and is now to be issued by the Central Office of Information at the request of the Ministry of Health, for showing to medical audiences. Copies will shortly be available in 35 mm. and 16 mm. (sound) sizes from the Central Film Library, Imperial Institute, South Kensington, London, S.W.7. The running time is 27 minutes.

The Prevention of Tuberculosis in Hospitals is an American film, running for 22 minutes, and showing a very well-organised scheme for routine miniature radiography of all patients attending a general hospital. Dr. Peter Kerley, in introducing it, noted that the incidence of tuberculosis in American hospital patients seems to be rather higher than the supposed rate here. Nevertheless, the precaution of routine radiological examination is well worth taking, and this film reveals many important details of management, besides showing how films can be developed, examined, and stored with the least possible waste of time for everybody concerned.

A one-minute film—*Diphtheria Trailer No. 10*—now being shown in cinemas at the end of news-reels brings home the immunisation lesson in a tiny animated cartoon which manages to be amusing without being frivolous, and telling without being alarming. It was made by the Central Office of Information (Halas & Batchelor Cartoon Films Ltd.) at the request of the Ministry of Health.

Your Children's Meals, the fifth film in the "Your Children" series, is for showing to general audiences, and runs 13½ minutes. It teaches a great deal about the management of meal times, the types of food that children fancy, and the ways in which sensible and sociable parents can get their children to be sensible and sociable too. The cutting of the film is clever, the sequences amusing as well as informative, and the standard of photography good. As usual the children act themselves with uncanny skill.

The film has been made by the Central Office of Information (Central Film Unit) for the Ministry of Health, and copies will soon be available in 35 mm. and 16 mm. (sound) sizes from the Central Film Library. Arrangements can be made for the film to be shown through the Central Office of Information mobile film units, on application to the Film Officer at the appropriate C.O.I. Regional Office (addresses from the C.O.I. Films Division, 83, Baker Street, London, W.1).

HOSPITAL FOR CHILDREN IN GERMANY

AT a meeting of the Save the Children Fund held in London on Nov. 6, Dr. Cyril Elgood described the work of the fund's hospital at Schlutup in Schleswig-Holstein where he is superintendent. The building, formerly the administrative block of a German war-time factory, has room for about 100 children, who come from the neighbouring camps for displaced persons. The staff includes 10 English nurses, and Dr. Elgood also trains displaced persons to help with the nursing. The stocks of penicillin for the whole area are in his charge, but they do not suffice to meet the need; for military supplies are not available for children, and German hospitals have none. The address of the fund is 20, Gordon Square, London, W.C.1.

AUSTRALIAN CHAPEL OF REMEMBRANCE AT HAREFIELD

DURING the 1914–18 war No. 1 Australian General Hospital was stationed at Harefield, and the patients received many kindnesses from the residents. Over 100 Australian soldiers and sailors are buried in the churchyard, where a service of remembrance is still held on Anzac Day. There are thus ties between Harefield and many Australian homes, and this has led to the desire to convert a chapel in the old church at Harefield into an Australian Chapel of Remembrance which will commemorate both world wars. An executive committee has been formed and is asking for £5000 for this purpose. Contributions from English friends will be welcome but the appeal is primarily addressed to Australians resident in Britain, and especially those who were with the Australian Imperial Forces in the first world war. Donations should be sent to Major N. Keith Bushell, c/o the National Bank of Scotland, 18–20, Lower Regent Street, London, S.W.1.

University of Birmingham

Dr. Harold Scarborough has been appointed a lecturer in the department of medicine.

Dr. Scarborough graduated M.B. with honours at Edinburgh in 1932 and later took his PH.D. He became M.R.C.P.E. in 1940 and F.R.C.P.E. this year, while in 1941 he was elected to the fellowship of the Royal Society of Edinb[illegible]. Dr. [illegible] held a succession of teaching and research [illegible] and for the last two years as a Bolt[illegible] at St. Mary's Hospital, London. At present he holds a Rockefeller fellowship and is working in Prof. E. M. Landl's department at Harvard. His research interests have been devoted to the problems of ascorbic acid and vitamin P, while recently he has been investigating certain aspects of peripheral blood-flow.

Royal College of Physicians of Ireland

On Nov. 7 the following were admitted to the membership: T. J. Ryan, J. W. Magner, Max Millard, G. A. C. Miller.

A painting by Mr. Henry Carr of the council of the Royal College of Surgeons of England for 1946–47, presented to Sir Alfred Webb-Johnson, the president, at a dinner held at the college on Nov. 13 in honour of Sir Alfred and Lady Webb-Johnson.

In front of the table, standing, from left to right: Sir Hugh Cairns, Mr. Philip Mitchiner.
Sitting, from left to right: Mr. L. E. C. Norbury, Mr. Zachary Cope, Mr. Geoffrey Keynes.
Behind table, standing, from left to right: Mr. Tudor Edwards, Sir Max Page, Prof. Ernest Finch, Mr. McNeill Love, Sir Reginald Watson-Jones, Prof. A. H. Burgess, the President, Mr. Henry Souttar, Prof. Harry Platt, Mr. Julian Taylor, Prof. Lambert Rogers, Prof. G. Grey Turner, Sir Gordon Gordon-Taylor.
Sitting, from left to right: Prof. Paterson Ross, Sir Heneage Ogilvie, Sir Cecil Wakeley, Sir James Walton, Prof. R. J. Willan, Mr. Scott Mason.

University of Manchester

Mr. Victor Lambert has been appointed as professor of otolaryngology.

After graduating M.B. at the University of Manchester in 1923, Mr Lambert was admitted F.R.C.S E. in 1927. He took his M.CH. in 1932 and his M.D. in 1940. Since 1935 he has been lecturer in diseases of the ear at Manchester University, and he is also consulting otologist to the department of education of the deaf, aurist and laryngologist to the Manchester Dental Hospital, and assistant lecturer in physiology. Mr. Lambert also holds appointments as aural surgeon to the Manchester Royal Infirmary, the Christie Hospital, and the Royal Manchester College of Music. He has published original work on diseases of the larynx, and has taken a particular interest in comparative anatomy.

Dr. Michael Polanyi, F.R S , professor of physical chemistry in the university, has been appointed to the chair of social studies.

Professor Polanyi graduated in medicine in the University of Budapest. Later he specialised in chemistry and he held the chair of chemistry in the Technical High School of Berlin, and taught in the Kaiser Wilhelm Institute, publishing original work on crystal structure and chemical reaction kinetics. In 1933 he accepted an invitation to become professor of physical chemistry at Manchester. His wide experience and range of interests have brought him closely into contact with investigators and teachers in social studies and in economics, and he is the author of *The Contempt of Freedom* and *Full Employment and Free Trade*. He was elected a fellow of the Royal Society in 1944, and in 1946 delivered the Riddell lectures in the University of Durham on Science, Faith, and Society. His Lloyd Roberts lecture on the Foundations of Academic Freedom was published in our columns this year.

Queen's University, Belfast

Dr A. C. Stevenson has been appointed to the chair of social and preventive medicine.

Dr. Stevenson, who is 38, was educated at Glasgow Academy and Glasgow University, where he took the degrees of B.SC. in 1930 and M.B. in 1933. After holding house appointments at the Glasgow Royal Infirmary he became resident medical officer at Highgate Hospital, London. In 1935 he took his M.R.C.P. and two years later his D.P.H. while serving as assistant M.O H. for Wakefield. In the same year he was appointed deputy M.O.H. for the borough. From 1939 to 1945 he served with the R.A.M.C. as assistant director of hygiene, West African command, and as deputy director of hygiene, Western Command. At the beginning of 1946 he was appointed to his present post of reader in the University of London at the London School of Hygiene.

Mr H. W. Rodgers has been appointed to the chair of surgery.

Mr Rodgers, who is 39 years of age, was educated at King's College School and St. Bartholomew's Hospital, where he took the Conjoint qualification in 1931, and the F.R.C.S. two years later. After holding house-appointments at Barts and clinical assistantships at St. Mark's and St. Peter's Hospital he became chief assistant to a surgical unit at Barts, and afterwards was appointed to the staff as assistant surgeon. He is also surgeon to the Radium Institute and Mount Vernon Hospital, and he holds the honorary rank of lieut.-colonel in the R.A.M.C. He has published articles on gastroscopy and diseases of the stomach, some of them being written in collaboration with Mr. N. C. Tanner and Dr. F. Avery Jones. Mr. Rodgers delivered a Hunterian lecture at the Royal College of Surgeons in 1938 on Gastroscopy, and in 1947 on the Late Results of Gunshot Wounds of the Abdomen He has also published reports for the Army on gas-gangrene and abdominal wounds. He was appointed O.B E in 1943.

Royal College of Surgeons of England

At a meeting of the council of the college held on Nov. 13, with Sir Alfred Webb-Johnson, the president, in the chair, Mr. James Wyatt was admitted as a coöpted member. Mr. V. E. Negus, Sir Stewart Duke-Elder, Mr. F. C. Ormerod, Mr. F. W. Law, and Mr. George Black were admitted as members of the court of examiners. Mr. H S. Souttar was appointed Hunterian orator and Mr. L. E C. Norbury Bradshaw lecturer.

The following were elected fellows in dental surgery:

Sir Frank Colyer, Prof. E. C. Sprawson, Colonel E. B. Dowsett, Mr. Frank Coleman, Mr. T. W. Widdowson, Mr. F. N. Doubleday, Mr. J. H. Badcock, Mr. W. Warwick James. Mr. J. G. Turner, Mrs. Lilian Lindsay, Mr. A. E. Rowlett, Mr. Bryan J. Wood, Mr. C. S Morris, Mr. Harold Round, Brigadier R. A. Broderick, Mr. J. Sim Wallace.

It was decided to institute courses of postgraduate lectures on dental subjects Dr. F S. Gorrill was appointed anatomical curator and lecturer in anatomy. Dr. B. Schofield was appointed lecturer in physiology. Leverhulme scholarships were awarded to Mr. E. S. R. Hughes and Mr. H. Daintree Johnson.

Diplomas of membership were granted to the candidates named in THE LANCET of Nov. 8 (p. 707) as having qualified to practise, and to D. J. Parr and J. C. E. Pougher. Diplomas in child health, medical radiodiagnosis, medical radiotherapy, and physical medicine were granted, jointly with the Royal College of Physicians, to the candidates named in THE LANCET of Nov. 8 (p. 707). The D M R. was also granted to D. K. Sambrook.

Society and the Individual

On Thursday, Dec. 4, the British Social Hygiene Council will hold a conference on this subject in the Livingstone Hall, Tothill Street, Westminster, S.W.1. The chair will be taken by Prof. Winifred Cullis, D SC , and Dr. E. B. Strauss, and the speakers will include Mr. Kenneth Walker, F.R.C.S., and Dr. E. H. Larkin. Tickets may be had from the council, Tavistock House North, W.C.1.

Central Midwives Board

Mr. R. J. Fenney, previously assistant secretary, has been appointed secretary and chief executive officer of the board, in succession to Mr. A. J. Bennett, who has been appointed secretary to the North-west Metropolitan regional hospital board.

University of Leeds Postgraduate Committee

Clinical meetings, open to general practitioners, will be held at 3.15 P.M. on Tuesdays, beginning on Jan. 6, in the instructional block, Leeds General Infirmary. No fee will be charged, and further information may be had from the senior administrative officer, School of Medicine, Leeds, 2.

Institute of Dermatology, London

Two alterations have been made in the lecture programme for December and January, which appeared in our advertisement columns last week. On Dec. 4 Dr. R. T. Brain will give a lecture on Filtrable Viruses, and on Jan. 14 Dr. C. W. McKenny will speak on X-ray Technique.

Spens Committees

Sir Horace Hamilton, G.C.B., has been appointed a member of these committees, which are considering the range of professional income of consultants and specialists, and of dental practitioners, in a publicly organised health service. Sir Horace, who was Permanent Under-secretary of State for Scotland from 1937 until 1946, succeeds Sir Thomas Gardiner.

Royal Society

A Royal medal has been awarded to Dr. F. M. Burnet, F.R.S., for his work on bacteriophages, viruses, and immunity, and for his contributions to the study of infectious diseases as an ecological phenomenon. The Buchanan medal has been awarded to Sir Edward Mellanby, F.R.S., for his researches *on the physiology of nutrition, especially in relation to the* causation of deficiency diseases.

Scottish Triple Qualification

The following have been admitted licentiates of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow:

Afolabi Alakija, J. M. Brownlie, Leo Charles, W. J. C. Colin-Thome, R. S. Cowie, A. M. Darwish, T. P. Edwards, P. H. T. Fok, Sidney Gordon, J. A. Gray, W. S. Hall, Maurice Harris, Patricia E. Hartley, J. M. Hillock, Emanuel Katz, D. P. Keith, Stanley Lipson, Michael Lloyd-Jones, Peter Macpherson, Hilary E. C. Millar, H. G. C. Payne, A. I. Richardson, J. R. Scott, Joan C. R. Shiell, Harry Simmons, H. S. Sloane, J. D. Stewart.

The latest monograph of the Queckett Microscopical Club, *Illuminants and Illumination for Microscopical Work*, comprises a lecture delivered by Mr. F. E. J. Ockenden. The monograph, price 2*s.* 6*d.*, is published for the club by Messrs. Williams and Norgate Ltd., 36, Great Russell Street, London, W.C.1.

Yearbook of Physical Anthropology.—A new number of this yearbook will shortly be available, and requests for copies, for which there is no charge, will be met as far as possible. Those who would like to be considered for a copy of this new edition or who still wish a copy of the first number, which covered 1945 (*Lancet*, 1947, i, 684), should apply to Dr. J. M. Tanner, Department of Human Anatomy, University Museum, Oxford.

Appointments

Bottomley, Janet, M.D. Lond., F.R.C.S., M.R.C.O.G.: first assistant and registrar, gynæcological and obstetric department, London Hospital.

Bourdillon, J. F., B.M. Oxfd, F.R.C.S.: senior registrar, orthopædic and fracture department, Addenbrooke's Hospital, Cambridge.

Kemp, T. A., M.B. Camb.: asst. physician, St. Mary's Hospital, London.

Nash, D. F. E., F.R.C.S.: asst. surgeon, St. Bartholomew's Hospital, London.

Pilcher, M. F., M.B. Lond.: orthopædic registrar, Hospital for Sick Children, Great Ormond Street, London.

Thompson, Walter, M.B. Leeds, F.R.C.S.: chief assistant to a surgical unit, Manchester Royal Infirmary.

London County Council Hospital Service:

Catterall, R. C. F., M.CHIR. Camb., F.R.C.S.: surgeon specialist.

Metcalfe, R. H., M.A., M.D., M.CHIR. Camb., F.R.C.S.: surgeon specialist.

Thomas, R. G., M.B. Lond., F.R.C.S.E.: asst. surgeon specialist.

Diary of the Week

NOV. 23 TO 29

Monday, 24th

Royal College of Surgeons, Lincoln's Inn Fields, W.C.2
3.45 P.M. Mr. S. Mottershead: Blood-supply of the Hindgut.
5 P.M. Prof. R. J. S. McDowall: Shock.

Royal Society of Medicine, 1, Wimpole Street, W.1
5.30 P.M. *Odontology.* Miss E. M. Knowles: Survey of Denta Condition of Children in Day Nurseries and Residentia War-time Nurseries.

Medical Society of London, 11, Chandos Street, W.1
8.30 P.M. Mr. E. W. Riches, Mr. W. Somerville Mack, Mr. Ronal Reid: Tumours of the Bladder.

Institute of Laryngology and Otology, 330, Gray's Inn Road W.C.1
6 P.M. Mr. Geoffrey Gateman: Cinematograph films on Organi Disorders of the Larynx and on Bronchial Neoplasms b Dr. Paul Hollinger.

Illuminated Engineering Society
6 P.M. (2, Savoy Hill, W.C.2.) Prof. Hamilton Hartridge, F.R.S. Physiology of Vision.

Tuesday, 25th

Royal College of Surgeons
3.45 P.M. Dr. J. Whillis: Anatomy of the Œsophagus.
5 P.M. Dr. F. C. Courtice: Oxygen and Carbon-dioxide Transpor

Royal Society of Medicine
8 P.M. *Medicine.* Sir Allen Daley: Acute Anterior Poliomyeliti Dr. Margaret Macpherson: Atypical Primary Tuberculou Lesions. Dr. J. E. Capes: Use of Tubular Blockade i Penicillin Therapy.

Institute of Dermatology, 5, Lisle Street, W.C.2
5 P.M. Dr. I. Muende: Pathological demonstration.

Edinburgh Post-Graduate Board for Medicine
5 P.M. (Royal Infirmary.) Dr. J. L. Henderson: The Child Inheritance.

Wednesday, 26th

Royal College of Surgeons
3.45 P.M. Mr. R. J. Last: Segmental Innervation of Lim Musculature.
5 P.M. Prof. A. C. Frazer: Fat Metabolism.

Royal Society of Medicine
5 P.M. *Endocrinology.* Prof. H. L. Sheehan, Dr. A. W. Spence Dr. Russell Fraser, Dr. S. L. Simpson: Simmonds' Disease.

Institute of Laryngology
11 A.M. Prof. T. Pomfret Kilner: Plastic Surgery.

Royal Institute of Public Health and Hygiene, 28, Portlan Place, W.1
3.30 P.M. Dr. Mary Sheridan: Hygiene in the Nursery an Play-room.

Thursday, 27th

Royal College of Surgeons
3.45 P.M. Prof. John Kirk: Fœtal Circulation.
5 P.M. Dr. D. J. Bell: Carbohydrate Metabolism.

Society of Medical Officers of Health
5.30 P.M. (B.M.A. House, Tavistock Square, W.C.1.) Sir Alle Daley: My American Diary.

Medico-Legal Society
8.15 P.M. (26, Portland Place, W.1.) Dr. W. R. H. Heddy: Deat on the Roads.

Honyman Gillespie Lecture
4.30 P.M. (Edinburgh Royal Infirmary.) Prof. J. Chassar Moir November 1847 and its Sequel.

Friday, 28th

Royal College of Surgeons
3.45 P.M. Dr. P. R. Peacock: Experimental Study of Brea Cancer.
5 P.M. Dr. L. E. Glynn: Hepatic Dysfunction.

Royal Society of Medicine
5 P.M. *Pædiatrics.* Dr. Ian Skottowe, Dr. A. A. E. Newth Dr. *Mildred Creak*: Child Guidance in the New Healt Service.

London Chest Hospital, Victoria Park, E.2
5 P.M. Dr. Shirley Smith: Acute Heart-failure.

Middlesex County Medical Society
2.45 P.M. (Royal National Orthopædic Hospital, Stanmore. Mr. John *Cholmeley*: *Management of* Anterior Polio myelitis—Early and Late. Dr. J. O. F. Davies: Epidemio logy of Anterior Poliomyelitis.

Royal College of Physicians of Edinburgh
5 P.M. Dr. R. M. Stewart: Clinical Features and Pathologica Anatomy of Infantile Hemiplegia. (Morison lecture.)

Saturday, 29th

Medical Society for the Study of Venereal Diseases, 11 Chandos Street, W.1
2.30 P.M. Dr. Eric Wittkower: Psychological Aspects of Venerea Disease.

Corrigendum: *Thorium-X.*—The correct reference t Mr. Henry Corsi's papers (mentioned by Dr. Carleton an Dr. Whittle in their letter last week) is *Lancet*, 1943, ii, 346.

A HEPATIC SYNDROME OF WIDE DISTRIBUTION

ILLUSTRATED BY LESIONS IN MALARIA AND BLACKWATER FEVER

BRIAN MAEGRAITH
M.B. Adelaide, M.A., D.Phil. Oxfd

W. H. HORNER ANDREWS
M.A., B.M. Oxfd

DAVID GALL
B.M. Oxfd

From the Department of Tropical Medicine, Liverpool School of Tropical Medicine

CLINICAL manifestations of liver disease may appear in all forms of human malaria at any stage. They are most common in *P. falciparum* infections, and extreme examples present the syndrome of bilious remittent fever in which the liver is enlarged and tender, jaundice appears early, associated with either the indirect or biphasic van den Bergh reaction, and there is bilious vomiting with severe and often intractable diarrhœa. Bilirubin is usually, but not always, present in the urine (Manson-Bahr 1945, Fairley 1932–33). A clinical picture very similar to bilious remittent fever sometimes develops in blackwater fever.

Henry (1932) maintains that the liver is always affected in malaria, but this view is not widely accepted. Nevertheless in uncomplicated malaria there may be enlargement of the liver with some jaundice and other signs of liver disturbance, including deviations in serial hepatic-function tests and the passage in the urine of bilirubin, urobilin, and urobilinogen (Rudolf 1927, Allen and Norris 1944, Hughes and Bomford 1944, Kean and Smith 1944, Kopp and Solomon 1943, Mirsky et al. 1944, O'Leary et al. 1929, Lippincott et al. 1945, 1946, Fredricks and Hoffbauer 1945, Carter and McLagan 1946, Glenn et al. 1946).

LIVER CHANGES IN MALARIA AND BLACKWATER FEVER

In active malaria associated with deviations in hepatic-function tests liver-biopsies have occasionally been performed and have revealed no evidence of structural alterations (Fredricks and Hoffbauer 1945). In fatal cases, however, important pathological changes are often observed.

At necropsy after acute malaria the liver is usually enlarged and varies from dark red to black according to the amount of pigment present. The cut surface bleeds easily and is often fatty. Occasionally there are small hæmorrhages in the central regions of the lobules.

The histological picture is one of central zonal degeneration and necrosis. The lobules are indistinctly demarcated. The congested organ shows the central vein and its tributary sinuses filled with erythrocytes, many of which contain parasites. When anæmia is severe, the central vein and sinuses appear dilated and empty. There is little evidence of stasis or thrombosis in the blood-vessels, whose endothelium is not much affected. Some writers have recorded "mechanical obstruction" of the sinuses and occasionally of the larger blood-vessels by collections of pigmented macrophages, free parasites, and pigment; stasis; thrombosis; and agglutination of erythrocytes, some containing parasites. Such obstruction appears to be rare. Klotz (1929), for instance, found no evidence of it in patients who died of malignant tertian malaria in West Africa, and he stated that, so far as vascular occlusion was concerned, the picture in the liver in *P. falciparum* infections was "nothing like" that in the brain.

The Kuppfer cells and the littoral cells of the sinuses are often grossly swollen and filled with erythrocytes, parasites, and debris. These swollen cells appear in places to obstruct the lumen of the sinuses. The columns of polygonal cells are often widely separated and appear to be distorted and pushed apart by the hypertrophied Kuppfer cells.

The polygonal cells contain hæmosiderin but not malarial pigment. They may show only mild acidophilic granular degenerative changes, but fatty degeneration is common and is most evident in the cells of the central zone of the lobule or, when these cells are necrotic, in the cells at the periphery. More severe degeneration and necrosis have often been reported in human and animal malaria and in blackwater fever.

Klotz (1929) has provided one of the clearest descriptions of the liver lesions. In patients who died of *P. falciparum* infections the appearance of the cut surface of the liver was one of "reversed nutmeg details," the lobules showing a yellowish-grey centre and a peripheral red zone. Necrosis of the liver cells was found in the inner two-thirds of the lobule and was most prominent in those cells surrounding the central vein. In this region the cytoplasm was granular, vacuolated, fatty, and acidophilic, and the nuclei stained feebly or were pyknotic, broken up, or absent. The necrosis was sharply limited, and the cells at the periphery of the lobule were relatively unaffected. The central veins and sinusoids were deeply congested. Klotz believed this dilatation was very significant and developed before the changes in the hepatic cells.

Similar changes have been observed by other workers in human and simian malaria (Rigdon and Stratman Thomas 1942, Kean and Smith 1944, Taliaferro and Cannon 1936, Taliaferro and Mulligan 1937, Gaskell and Millar 1920, Dudgeon and Clarke 1919).

Some degree of atrophy of the polygonal cells is also commonly seen in malaria. Gaskell and Millar (1920), for instance, described "rows of shrunken cells" in the central zone of the lobule. The atrophic cells show reduction of cytoplasm, which is often fragmented, and some minor changes in the nuclei.

In severe malaria and blackwater fever the bile in the gall-bladder is tarry and inspissated, and the liver cells may show evidence of biliary obstruction, with the canaliculi distended with greenish bile. These cellular changes are again most prominent in the central zone of the lobule. Occasionally, even in the presence of severe central necrosis, there may be no apparent biliary changes (Whipple 1909, Dudgeon 1920, Paterni 1923, Klotz 1929).

Cellular infiltration of Glisson's capsule has been described, especially in cases with a history of long-sustained or frequently recurring attacks of malaria. The cells are lymphocytic in type and do not usually invade the cells of the lobules. They are confined as a rule to the region of the portal vessels.

PATHOGENESIS OF CENTRAL-ZONE HEPATIC NECROSIS

Vascular Changes

The hepatic lesions in malaria in many ways resemble those developing in right-sided heart-failure, associated with tissue anoxia arising from interference with the escape of venous blood from the liver. In a few cases of malaria the effects of a failing heart probably contribute towards the pathological changes in the liver (Gaskell and Millar 1920), but in most cases almost identical liver lesions appear without any evidence of cardiac failure. This is especially true of blackwater fever, in which liver lesions are very common and cardiac failure is rare except as a strictly terminal event. Some patients in whom liver lesions are well developed die in a state resembling shock (Atchley 1930), a condition in which right-heart failure does not occur and indeed the venous return to the heart is much reduced; hence "back-pressure" effects originating in the vena cava cannot play any part in the production of the liver changes (Wiggers 1918, Mann 1919, Moon 1938, Rigdon 1942, Maegraith 1944). The similarity of the lesions of shock to those of "passive" congestion in the liver as well as other organs has been emphasised by Moon (1938).

Some explanation other than right-sided heart-failure must therefore be sought to explain the hepatic lesions in most cases of malaria and blackwater fever. The congestion and dilatation of the lobular vessels may result from obstruction to the blood-flow arising from changes in the vessels themselves. The blood-flow through the vessels may be to some extent inhibited by: (1) intravascular agglutination of red cells, which occurs, however, only late in the disease; (2) stasis or thrombosis, of which there is very little firm evidence (stasis might be expected to follow changes in the endothelium leading to increased permeability, but in the liver the endothelial cells are physiologically so permeable that no further appreciable local loss of fluid takes place even when the cells are damaged); and (3) mechanical effects arising from hypertrophy, hyperplasia, and degeneration of the Kupffer and littoral cells.

The balance of histological evidence indicates that these processes can affect the flow through the lobule only slightly. There must therefore be some other form of resistance to the venous flow, and this is most probably an active obstruction due to constriction of some elements of the hepatic venous vessels. Such constriction would reduce the hepatic venous outflow, and it is probably this reduction of venous flow and the associated anoxia arising from it which give rise to the hepatic lesions observed. The syndrome of Chiari (1899) illustrates well the effects of obstruction to the hepatic veins. Here the orifices of the larger veins are obstructed by thickening of the intima and sometimes suddenly by thrombosis. When the obstruction is acute, the cells of the central zone of the lobules are completely destroyed and there is intense congestion of the central vein and its tributary sinuses. In cases of more gradual development there is "extensive atrophy" of the hepatic cells in the centre of the lobule with distension of the central vein and sinuses. Thompson and Turnbull (1911) observed that in this syndrome there is a "remarkable association of a liver showing extreme atrophy with venous congestion with a heart in which there is no evidence of chronic embarrassment."

This picture is the same as that seen in malaria, in which there is neither constant cardiac failure nor any evidence of thrombosis or other anatomical occlusion of the hepatic veins. Since interference with the drainage of venous blood from the hepatic lobules arises somewhere between the lobule and the vena cava, there must be obstruction (presumably vascular constriction) in the hepatic venous tree.

Cellular Changes

The vascular changes discussed above lead to slowing of the intralobular circulation and to progressive stagnant anoxia (Peters and Van Slyke 1931) interfering with the oxygen supply to the tissue cells. Cellular damage arising from this anoxia is at first reversible, but finally becomes irreversible and goes on to degeneration and necrosis. This anoxia is probably the principal cause of the changes found in the liver cells, but there are contributory factors in malaria which aggravate the anoxia arising from the intralobular circulatory incompetence. The invasion of erythrocytes by the plasmodia leads to a lowering of the oxygen-carrying capacity of the infected cells, and the anoxæmia so produced is augmented by the anæmia arising from the destruction of both infested and non-infested cells. These general processes may be further enhanced in malaria, but not in blackwater fever, by the local tissue effects of diffusible products of the parasitic metabolism, such as pyruvic acid, lactic acid, and possibly other substances released at sporogony of the parasites. The malarial pigment is not involved (Anderson and Morrison 1942). In the production of the final picture of degeneration a necrosis other factors are also involved, including t nutritional status of the patient and the hypoprote æmia prevailing in many cases.

It is possible also that the anoxic state of the hepa tissue, or some change in it arising indirectly fr the malarial infection, produces changes in the c stituents of the cells and renders them auto-antige and capable of producing anti-liver-cell antibodies wh react with the antigens and cause tissue damage. G (1946) has suggested that some process of this sort m be involved in the lysis of erythrocytes in malaria a has shown that the yellow-fever virus will prod auto-antigens in rhesus-monkey livers.

There is no need here to discuss these contribut factors in detail, since there is ample evidence to sh that the essential factor in the cellular changes is ano resulting from alterations in intralobular blood circulati It is not very easy to see, however, why the les should be centrally placed, since pure stagnant ano should affect all areas of the lobule equally. Poss *the depleted oxygen-carrying powers of the blood* concerned here, and the tissue at the periphery of lobule, which receives the arterial blood first, has better opportunity of securing its oxygen supply th that in the centre of the lobule. Specific sensitiv of the central cells to chemical poisons and some kind collateral circulation between sinuses in the periph of the lobule have also been suggested, without mu supporting evidence.

MALARIA AS AN EXAMPLE OF A GENERAL PROCESS

We have seen that the hepatic lesions of malaria a blackwater fever are similar. In severe cases t picture is one of dilatation and possibly congestion, the central lobular veins and tributary sinuses. The is degeneration and necrosis of the polygonal cells of t central zone of the lobule, resulting, so far as can judged, from anoxia arising mainly from obstruction the venous outflow from the liver.

The conditions referred to above are clearly anox but the central zonal necrosis often appears in circu stances which are not so obviously anoxic. For instan it is not easy to see at first sight how anoxia cou develop in chloroform or carbon-tetrachloride poisoni except in the form of histotoxic anoxia arising fro the direct action of the chemical agent on the tiss oxidation systems (Keilin 1925). The same difficul arises in explaining the liver lesions in burns and ma of the experimental procedures such as ligation of th portal vein or hepatic artery and the production Eck's fistula. We believe that the only explanatio can be that in all these conditions there is an alteratio in the intrahepatic blood-flow which leads to stagnat anoxia. This still does not explain the central distr bution of the degeneration, and it seems necessary t postulate also either some process whereby most of th oxygen of the blood is removed by the cells in th periphery of the lobules, such as we have mentione elsewhere, or the shunting of blood away from th centre of the lobule so that the peripheral cells receiv a better supply than those in the centre.

No particular specific agent has been implicated i the pathogenesis of the liver lesions in either malari or blackwater fever. These lesions may therefore b regarded as examples of a general pathological reaction the non-specific nature of which is emphasised by th wide variety of clinical conditions in which it occurs Thus central lobular necrosis has been recorded i right-sided heart-failure; poisoning by various chemica agents, such as chloroform (Whipple and Sperry 1909) heat hyperpyrexia (Malamud et al. 1946); severe burn (Hartman and Romence 1943), especially after tanning (Wilson et al. 1938, Erb et al. 1943); acute postoperativ of the liver (Sutton 1943); various allergic ; pernicious anæmia; secondary anæmias, severe hæmorrhage; and babesia infections in Experimentally, similar lesions have been pro- by the administration of various poisons, such tetrachloride and phosphorus (Williamson and 1923), by long exposure of animals to low atmo- oxygen tensions (Rosin 1928, Rich 1930), and asions but not always (Cameron and Mayes 1930) interference with the blood-supply to the liver (Rous Larimore 1920, Bainbridge and Leathes 1906–07, et al. 1922, Whipple and Hooper 1916).

The appearance of identical pathological changes in such diverse conditions indicates a common factor. It is our contention that the lesions develop primarily because of alterations in intrahepatic blood-flow, and that the cellular changes are brought about by localised anoxic conditions.

Rous and Larimore (1920) obtained central necrosis by ligating branches of the portal vein, and they concluded it arose from venous "back pressure." They noted, however, that "atrophy is least at the periphery of the lobule where oxygenation is most." MacCallum), Resnik and Keefer (1925–26), and Rich and Resnik (1926) studied the development of central zonal degeneration under various conditions and concluded that the basis of the lesion was deficient oxygenation of the blood, which progressively increased from the periphery to the centre of the lobule. Rich (1930) examined livers from many cases of anæmia and found central degeneration in all of them; dietetic factors had been excluded. He concluded that "atrophy and central necrosis will occur as the result of anoxæmia in the absence of heart-failure, and in the absence of any evidence of passive congestion of the heart, spleen, or other organs." Anoxia, therefore, whether due to anæmia, stagnant circulatory conditions (right-heart failure), or lowered oxygen tension in the respired air, will produce central zonal cellular changes in the lobules.

In the absence of right-heart failure, as we have seen in malaria, the stagnant anoxia in the liver probably arises from active obstruction to the venous outflow, which leads—for example, in Chiari's disease—to a centrally placed lobular lesion. We suggest that the obstruction to the venous outflow arises from constriction of some or all of the hepatic venous tree, and that this is the basic mechanism in the production of the lesions in the conditions referred to. (There is evidence that this may also be the case in heart-failure.)

Acute constriction of the hepatic veins in dogs is readily produced by anaphylactic shock (Simonds and Brandes 1927), the trigger dose giving rise to a rapid swelling of the liver, a fall in blood-pressure, and a diminution of venous return to the heart. The hepatic venous flow is greatly reduced. On section the vessels are found to be intensely congested, the maximal effect being on the central and tributary sinuses. Similar obstruction to the hepatic venous flow may be produced by histamine (Mautner and Pick 1929) and peptone (Simonds and Brandes 1929).

Bauer et al. (1932) obtained clear evidence, in perfusion experiments, of the existence of a "sphincter-like" mechanism which could regulate to some extent the venous outflow from the dog's liver. This "sphincter" could be activated by histamine and relaxed by stimulation of the sympathetic nerves to the liver or by small doses of adrenaline. It was located near the caval ostia of the hepatic veins. Physiological evidence of a similar "sphincter" has not been obtained in man, but there is some anatomical evidence suggesting that the musculature of the larger hepatic veins may be specialised to act as sphincter. If such a hepatic venous sphincter does exist in man it presumably reacts to shock and histamine by constriction, which would explain the hepatic lesions of, for example, algid malaria and blackwater fever. There may be constriction of any part of the venous tree, including small vessels like the sublobular veins, or large vessels like the hepatic veins, or even the hepatic vena cava.

Deysach (1941) has brought forward evidence for the existence of "sluice vessels" which drain directly from the sinusoids into the sublobular veins; these were present in all mammals, independent of the degree of musculature of the hepatic veins, and their constriction impeded venous drainage.

The mechanism of the reflex is still highly speculative. Since the classical experiments of Francois-Franck and Hallon (1896) and Burton Opitz (1911–14) many observers have studied the effects of nerve stimulation and of adrenaline on the liver, both in situ (Griffith and Emery 1930, Edmunds 1915) and perfused (McMichael 1932, Bauer et al. 1932). The consensus of opinion is that both adrenaline and stimulation of the sympathetic nerves cause a diminished inflow of blood coupled with an increased outflow (see Franklin 1937). Bauer et al. (1932) go further and find that, whereas large doses of adrenaline reduce the outflow, smaller doses hasten it. Large doses of adrenaline lead to hepatic engorgement (Bainbridge and Trevan 1915) and even to central necrosis (Drummond 1904). Histamine (Baer and Rössler 1927, Mautner and Pick 1929), peptone, anaphylactic shock, and digitalis (Katz et al. 1938) all diminish the outflow from the liver of dogs. The effect of acetylcholine and of vagal stimulation is equivocal, no great change usually being noted; diminished outflow has, however, occasionally been recorded. Adrenaline reverses the effect of histamine and of peptone.

As we pointed out above, in the dog the ostia of the hepatic veins are surrounded by a thick coat of smooth muscle which appears in induced shock to be the primary factor in restricting the venous outflow (Arey and Simonds 1920). No such localised thickening of the venous wall is found in man, though Elias and Feller (1931) report that the smooth muscle present is capable of raising folds in the intimal wall. The smaller venous tributaries are, however, well supplied with muscle, and various observers believe that resistance to venous outflow may also take place in these vessels (Bauer et al. 1932, Mautner and Pick 1929, Baer and Rössler 1927).

The initiation of the vascular changes in the liver is probably reflex in origin. In general states, such as shock, the reflex may be initiated by extrahepatic stimulation and represent part of a generalised, possibly protective, mechanism designed to restrict the blood-flow through the viscera. It is interesting to note here the frequent association of renal and hepatic changes. Possibly the so-called hepatorenal syndrome has its origin in such reflex activity, whereby the central lobular lesions and those of renal anoxia (Maegraith et al. 1945) are simultaneously produced. In conditions in which the liver is primarily affected the process may be initiated solely by intrahepatic stimuli, possibly arising from the damage to the cells, or directly from toxic substances—e.g., chloroform—acting on them though there is evidence that so-called "liver poisons" are part of a generalised pathological process (Williamson and Mann 1923).

SUMMARY

The hepatic lesions in severe malaria and blackwater fever are distributed mainly in the central zone of the lobules.

The lesions are non-specific and are essentially similar to those of a great variety of other conditions.

The cellular changes develop primarily from anoxia.

We maintain that the lesions arise from stagnant anoxia resulting from active obstruction to the venous outflow from the liver, and that this arises from constriction of some part of the hepatic venous tree.

This constriction is brought about mainly by nervous reflexes which may have their origin within or outside the liver. In the latter case they probably explain the frequently reported relation between hepatic and renal disturbances.

Postscript.—Later evidence suggests that the vascular reflex described above is not the only intrahepatic mechanism causing centrilobular anoxia. Professor Himsworth has shown that swelling of the parenchymal cells may partially obstruct the flow of blood through the liver, giving rise to centrilobular degeneration. Working independently we have come to the conclusion that this happens with CCl_4 poisoning, though in some cases the reflex postulated above may contribute. We still believe that a vascular reflex is of great importance in producing centrilobular degeneration.

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EPIDEMIC MYALGIA OR BORNHOLM DISEASE IN SOUTH INDIA

A REVIEW OF 19 CASES

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OUTBREAKS of epidemic myalgia or Bornholm dise arouse interest mainly because of the difficulties of t differential diagnosis. So far as we know, no outbrea have been reported from tropical or subtropical countr except Alabama (Nichamin 1945) and a Caribbe island (McDaniel 1944).

Benign epidemic pleurisy (Williamson 1924) clos resembles it and has been observed by Scadding (19 in the Middle East, and Roche and Smiddy (19 in India. The latter paper, however, seems to deal m with an upper respiratory infection.

In twelve weeks, from the end of June to the e of September, there were 19 cases of a benign myal syndrome in a South India garrison, 14 of these ca occurring in one unit; 2 of the patients were Indian a 17 were Europeans. The clinical picture was in ea case ill defined, but that of the series as a whole tall very well with Sylvest's (1932) description of Bo disease. In all our cases the myalgia predominat distinguishing them from the series observed by Scaddi (1946) and Roche and Smiddy (1946). In fact, 5 o of 20 attacks observed were suspected of being ac abdominal emergencies, the myalgia giving the impress of rigidity; and 2 of the patients underwent explorato laparotomy.

We wish to draw attention to the possibility of t occurrence of Bornholm disease in India, and the ne to distinguish this malady from other acute upp abdominal or thoracic pains. Our findings are summaris in the accompanying table.

CLINICAL PICTURE

Onset was sudden, with severe pain in the lower p of the chest and/or upper abdomen.

Pain was aggravated by any movement of the affect muscles, such as deep breathing, coughing, pressin or rotating the trunk. The patients repeatedly volu teered the information that laughing particular exacerbated the pain; in one case the attack start during a fit of laughter. The centre of the pain was eith in the upper epigastrium, radiating to the side, or in o hypochondrium. It lasted, on the average, 48 hour if longer, it was interrupted by remissions of vario lengths.

Temperature ranged between 100° and 102°F in abo half the cases; in the other half it was normal. In th pyrexial cases, the temperature *usually* returned t normal with the disappearance of the pain. Th pulse-rate was not raised in proportion to th temperature.

In practically all cases the affected muscles were tende There were no other physical signs; no pleural frictio was heard. There were no characteristic changes in th blood picture, except a suggestion of a mild relativ lymphocytosis. In 15 cases examined radiologically no abnormalities of the chest were detected.

ILLUSTRATIVE CASE-RECORDS

Case 5.—Acute onset of continuous stabbing pain i right lower chest and upper abdomen six hours before admission. Pain was aggravated by deep breathing.

On examination: temperature 98°F, pulse-rate 88, respirations 18. Chest movements diminished; percussion not nt: breath sounds normal, but poor air entry at both bases. Board-like rigidity of abdominal muscles. Maximal point of tenderness appeared to be a little below the xiphisternum. Patient looked toxic, with congested face. Radiography of the chest negative.

Exploratory laparotomy for a suspected perforated peptic ulcer showed no abnormality. Temperature settled within [illegible] hours, but it was difficult to assess the duration of the pain owing to the abdominal incision. White-cell count 7000 per c.mm. (polymorphs 86%). Convalescence uneventful.

Case 14.—Admitted with 24 hours' history of pain, of sudden onset, in left side of chest. This started while he was on a march, and was so severe that he had to fall out. He then went to bed, with a temperature of 100°F. In the morning he had a violent frontal headache and felt he could not take a deep breath.

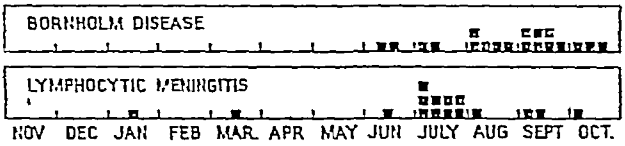
On examination: temperature 98°F, pulse-rate 70, respirations 20. Definite tenderness of muscles in 3rd–5th left intercostal spaces in anterior axillary line. Pectoral muscles tender on firm pressure. White-cell count 6800 per c.mm. (polymorphs 53%, lymphocytes 38%). Chest radiogram negative. Urinary chlorides normal.

Pain became gradually less severe, and patient was completely free of it five days after admission. He had been afebrile since admission.

COMMENTS

The outstanding clinical features of epidemic myalgia vary from outbreak to outbreak. As in Sylvest's (1932) description, upper epigastric and low chest pain, muscular tenderness, mild pyrexia of short duration, and embarrassment of breathing were prominent.

The importance of the differential diagnosis is shown by the fact that 5 cases simulated abdominal emergencies so closely that 2 of them were operated on by different surgeons. It was the opinion of all the medical officers who examined these cases that they were indistinguishable from an early acute abdomen, and it is only in the context of the whole series of the cases that similar errors were avoided. It is perhaps helpful to note that the collapse of classical intestinal perforation was not present. Rather did our patients have a toxic look, with a congested face and drowsy appearance.



Coincidence of outbreaks of Bornholm disease and of lymphocytic meningitis in South India.

The tendency of the pain to shift from the centre to the side, and its relation to respiration, suggests pleurisy, appendicitis, cholecystitis, and amœbic or other hepatitis. We are, however, satisfied from clinical observation

Case No.	Pain		Pyrexia	Leucocyte-count			Tenderness of muscles	Remarks
	Site	Duration		Day	Total (per c.mm.)	Lymphocytes (%)		
1	Lower abdomen	5 hr.	Nil	..	..	..	+	Rigid abdomen; laparotomy performed; nil abnormal found
2	Right hypochondrium	72 hr.	Nil	3rd	5200	..	+	..
3	Right hypochondrium	24 hr.	100°F for 24 hr.	..	..	..	+	Rigidity −; suspected acute abdomen, but operation not performed
4	Right hypochondrium	48 hr.	101°F for 48 hr.	..	..	..	+	..
5	Right hypochondrium and epigastrium	48 hr.	Nil	2nd	7000	..	+ −	Rigidity +; laparotomy performed; nil abnormal discovered
6	Right hypochondrium and epigastrium	48 hr.	102°F for 48 hr.	1st	8000	36	..	Toxic, with congested face; suspected acute abdomen; first case suggesting myalgia
7	Right hypochondrium	72 hr.	Nil	8th	7400	35	+ +	..
8	Right hypochondrium	48 hr.	102°F for 48 hr.	1st	15,000	40	..	Toxic, with congested face
9	Right hypochondrium and epigastrium	48 hr.	101°F for 24 hr.	1st	15,000	36	+	..
10	Epigastrium	5 days	Nil	2nd	6600	..	+	Pain started after a route march; urinary chlorides normal; treated in outpatient department
11	Epigastrium	6 days	Nil	3rd	6800	..	+	Pain started after a route march; urinary chlorides normal; treated in outpatient department
12	Epigastrium and circumumbilical	10 hr.	Nil	..	..	..	+	Suspected acute abdomen
13	Right hypochondrium and circumumbilical	60 hr.	102°F for 48 hr.	1st	8200	..	+	Pain so severe as to require morphine on night of admission
14	Left chest	5 days	100°F for 24 hr.	2nd	6800	38	−	Urinary chlorides normal; Hb normal
15	Right and left chest, and upper abdomen	60 hr.	100°F for 24 hr.	3rd	7200	40	+	Urinary chlorides normal; Hb normal
16	Left chest and epigastrium	5 days	Nil	..	7200	36	−	Mild diarrhœa; urinary chlorides normal; Hb normal
17	Right chest and epigastrium	72 hr.	Nil	..	..	..	−	Urinary chlorides normal
18	Right hypochondrium	36 hr.	Nil	1st	5000	..	−	Relapsed after 5 days, becoming case 19
19	Left chest	48 hr.	101°F for 48 hr.	2nd	7000	..	−	Relapse of case 18
20	Right and left hypochondrium, and epigastrium	72 hr.	Nil	2nd	6800	..	−	..

and the invariably benign course that none of these conditions was present in any of our patients.

White-cell counts varied widely, as reported by other observers. No reduction in the hæmoglobin level was noted in the cases examined. The age and sex incidence, all cases being men below the age of 30, is not significant, as we were dealing with a military population of young men.

The description by Goldstone and Le Marquand (1946) of 13 cases in British soldiers in West Africa of a syndrome simulating acute abdominal disease seems to us to be a perfect description of an outbreak of Bornholm disease, except for one atypical case in which the pain was in the upper abdomen and back. Their contention that these cases (which like ours recovered spontaneously and rapidly) were abortive forms of perinephric staphylococcal infection does not appear to be supported by any objective findings. The benign clinical course of their cases (with the one exception) is to all intents and purposes identical with that in our series.

Huss (1934), Lindberg (1936), and Howard et al. (1943) have recorded an associated lymphocytic meningitis or meningo-encephalitis. None of our cases showed any neurological signs, but there have recently been several cases of benign lymphocytic meningitis in this area. The monthly incidence of lymphocytic meningitis and Bornholm disease is shown in the accompanying figure.

The climate in this station is subtropical. Naturally, the question arose if these muscular spasms could not be the result of sodium-chloride depletion. We therefore estimated the urinary chlorides in some cases but found no deficit, even in two patients in whom the attack had started immediately after long route marches.

In an epidemic in Mobile, Alabama, the prevailing climate being that of excessive rainfall with periods of continuously high humidity, warm moist weather was thought to be a precipitating factor (Nichamin 1945). The present cases all occurred during an unusually late and heavy monsoon with long periods of moist heat. One must, however, not forget that most epidemics have been observed in countries such as Denmark, Norway, and Iceland. Warm moist weather there and in South India are very different. We have convinced ourselves that the men in the most affected unit were not living under conditions of overcrowding, there being one room for every two soldiers.

In the Mobile epidemic the patients were left for an appreciable period with marked debility. This was not so in the present epidemic, as all the patients returned to full military duty immediately after discharge from hospital.

SUMMARY

A series of 19 cases of Bornholm disease or epidemic myalgia occurring in South India is reviewed.

In 2 cases the rigidity of abdominal muscles led to exploratory laparotomy.

We wish to thank Lieut.-Colonel C. Greenway, R.A.M.C., officer commanding this hospital, for his interest and permission to publish these cases, and Capt. E. A. Spriggs, R.A.M.C., graded physician, for his help in collecting the clinical data.

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SYMPTOMS DUE TO MECKEL'S DIVERTICULUM

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THE discovery of a Meckel's diverticulum during laparotomy must come as a surprise to most surgeon for it is an uncommon congenital abnormality. Harkin (1933), who collected all those recorded where complet examination of the gastro-intestinal tract was made pos mortem, found that in 25,149 necropsies it was presen on 327 occasions—an incidence of 1·3%. Often th diverticulum is merely an incidental finding when th abdomen is opened for some quite different reason rarely it is itself the site of disease, and on this accoun it is seldom if ever incriminated before operation. Amon 69,000 admissions to the Truesdale Hospital Atwoo (1946) has reported 37 cases with symptoms due t a Meckel's diverticulum. In the records of King' College Hospital there are numerous references to th finding of Meckel's diverticulum during abdominal operations, but only 11 times in eighteen years (1928–45) was it the actual cause of symptoms which necessitate surgical intervention. Thirteen cases are briefly reviewe below, with the addition of one of different causation, a a result of which it is tentatively suggested that Meckel' diverticulum may be involved in the pathogenesis o chronic as well as acute abdominal pain.

Developmentally the vitelline duct communicates a an early stage between the yolk-sac and the midgut o the embryo. Normally it is obliterated from the umbilicus inwards, and therefore the intestinal end more often remains patent. It is this tube-like structure which is called Meckel's diverticulum and it may show any stage of involution, from complete patency between umbilicus and gut to a small sac ending in a fibrous cord attached to the anterior abdominal wall, or merely a free blind sac. Wilson (1942) classified the types as follows:

(1) Connexion between umbilicus and gut persists as a fibrous band or as an intestinal fistula.
(2) Umbilical portion of duct persists.
(3) Intestinal portion of duct persists.

Type 3 is the commonest finding and was the one first described by Meckel (1809, 1812).

ACUTE SYMPTOMS

In the accompanying table are collected the 11 cases of acute surgical conditions due to a Meckel's diverticulum.

The complications arising in connexion with Meckel's diverticulum are briefly as follows:

(1) Intestinal obstruction due to a band or to volvulus.
(2) Inflammation; perforation.
(3) Intussusception.
(4) Ulceration of heterotopic gastric mucosa; hæmorrhage indicated by melæna; perforation.
(5) Foreign body.
(6) Neoplasm.
(7) Aberrant pancreatic tissue.
(8) Strangulation in hernial sac (Littré's hernia).

1. *Intestinal obstruction* is the commonest complication and is either due to direct pressure on a loop of gut or to an actual volvulus (Rothman and Zetena 1943) caused by the rotation of gut round a diverticulum attached at its tip to the abdominal wall. Cases 2, 4, 7, and 11 in the table fall into this category, and the prognosis depends on how early the intestinal obstruction is treated.

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* During the war years, however, there was not the usual admission of patients.

Inflammation or diverticulitis (sometimes progressing [illegible]) simulates appendicitis so closely that the diagnosis is unlikely to be made. Rousseau Martin (1943) reported the case of a girl, aged 15 who complained of pain in the right lower quadrant the abdomen. There were four attacks of pain in months, each lasting six hours and being preceded nausea and followed by vomiting. The surgeon was satisfied with the diagnosis of appendicitis and, the acute symptoms had subsided, a barium mination was done, with the result that a four-hour showed a pear-shaped sac in the terminal ileum; appendix did not fill. This shows that in favourable mstances a Meckel's diverticulum may be demon- ed radiologically, which may be important in the osis of abdominal pain (see below).

Intussusception is a particularly lethal complica- of Meckel's diverticulum. It occurred twice in this s but is not common. Of Atwood's (1946) series of cases of Meckel's diverticulum only 1 developed an usception through inversion of the diverticulum. ms (1933), reviewing the cases published earlier, d only 160, and added 2 more. He pointed out that usception due to an invaginated Meckel's diverti- m differed from the ordinary intussusception in four s: it occurred in older children; there was usually story of a previous attack; the progress was more ic and more mild; and vomiting was usually more se.

4. *Ulceration of heterotopic gastric mucosa* (hæmor- e indicated by melæna) is an interesting finding in diverticulum. There was 1 case of this in the present s, and the leiomyoma in case 10 may well have arisen ectopic gastric tissue, but this could not be demon- ted after the widespread secondary changes had n place. Marshall (1942), reviewing 12 consecutive of diseased diverticula, propounded the view that was the commonest complication in the younger nt, whereas the older age-group tended to develop tinal obstruction or inflammatory lesions. Aschner Karelitz (1930) discussed the condition, mentioning previously recorded cases of Meckel's diverticulum taining gastric mucosa, in 12 of which ulceration had n place. They added 2 cases of their own in which bleeding from the bowel was the presenting sign. Mr. Rupert Corbett has kindly sent me particulars of 2 further cases of bleeding from Meckel's diverticulum. Since a correct preoperative diagnosis was made, a brief case-record of each is given here.

Case 12.—A boy, aged 2 years, was admitted to St. Bartholomew's Hospital on Feb. 16, 1942, having passed blood in his motions. The mother had noticed bright blood in a loose motion three weeks previously. The child appeared well otherwise, with no vomiting or pain. Thereafter he passed a dark stool daily, started to go off his food, and complained of lassitude. Three days before admission he started to improve and passed more normal motions.

Examination.—The child was well built but pale and irritable Abdomen, nothing abnormal discovered: sigmoidoscopy normal. Temperature went up to 100°F and pulse-rate varied from 100 to 120. Hæmoglobin 34%, falling later to 29%; next month it rose to 58%. No pathogenic organisms isolated from stools. Heterotopic gastric mucosa in a Meckel's diverticulum was suspected, but the mother did not agree to operation.

The patient returned on May 23, 1942, with recurrent hæmorrhage; his health had deteriorated; Hb 47%, pulse-rate 120, temperature normal.

Operation.—On May 27 a laparotomy was performed, and a large Meckel's diverticulum situated 9 in. from the ileocæcal valve was removed. The specimen was sectioned by Dr. Cuthbert Dukes, who found large numbers of gastric glands with both pepsin-secreting and acid-secreting cells. There was a small nodule of tissue resembling pancreas. The specimen was presented to the Royal College of Surgeons.

Case 13.—A male, aged 19, was admitted to hospital on Aug. 20, 1941, passing black motions. In 1930 he had fallen off a wall, and two days later had passed black motions for a fortnight. Diagnosed as traumatic intestinal hæmorrhage at St. Bartholomew's Hospital Six months later he had had a shorter attack after eating crackling on roast pork. In 1938 he had again been investigated for abdominal pain and dark motions. Since then he had suffered three or four attacks of melæna a year.

Examination.—Pale, nothing abnormal found. Sigmoidoscopy, barium examination, and gastroscopy all normal.

Operation on Sept. 20, 1941, revealed a small Meckel's diverticulum 2 ft. from the ileocæcal valve and adherent to the mesentery with several enlarged lymphatic glands nearby. Section of the diverticulum by Dr. Dukes showed heterotopic gastric mucosa with ulceration.

Follow-up.—Seen on Aug. 25, 1942, patient was very fit and serving in Royal Air Force.

ACUTE SURGICAL CONDITIONS DUE TO MECKEL'S DIVERTICULUM

Case no.	Sex	Age (yrs.)	Clinical findings on admission	Provisional diagnosis	Operative findings	Result
1	M	31	Acute abdominal pain; nausea, vomiting; tenderness not localised	Appendicitis	Gangrenous M.D.	Recovery
2	M	11	Abdominal pain; tympanites; absolute constipation 3 days	Intestinal obstruction	M.D. twisted round and obstructing gut	Death
3	M	4	Abdominal pain 48 hr.; vomiting; mass in right side; blood and mucus present per rectum	Intussusception	Intussusception with M.D. at tip	Death
4	M	64	Abdominal pain; vomiting for days	Intestinal obstruction	Small intestine obstructed by M.D. attached to anterior abdominal wall	Recovery
5	M	10	Abdominal pain few hours; vomiting; shock; mucus only per rectum	Intussusception	Intussusception with M.D. at tip	Recovery
6	F	36	Abdominal pain 24 hr.; no vomiting; 2 months pregnant; tender right iliac fossa	Appendicitis	Inflamed M.D.	Recovery
[illegible]	M	23	Abdominal pain 3 days; vomited continuously; hiccups; ileus	Intestinal obstruction	Small intestine obstructed by M.D.	Death
8	M	6	Abdominal pain 2 days; no vomiting; tender in right side of epigastrium	Appendicitis	M.D. with peptic ulcer at tip; subacutely inflamed appendix	Recovery
9	M	44	Abdominal pain; no vomiting; tender in both iliac fossæ	Appendicitis	Inflamed M.D. containing gastric mucosa; subacutely inflamed appendix containing 2 carcinoid tumours	Recovery
10	M	30	Recurrent attacks of severe melæna; two blood-transfusions; barium enema showed no abnormality	Duodenal ulcer	Leiomyoma of M.D. adherent to another loop of ileum	Recovery
11	M	73	Acute pain around femoral canal; constipation	Strangulated hernia	Littré's hernia with gangrenous diverticulum	Recovery

M.D. = Meckel's diverticulum.

Sir Gordon Gordon-Taylor also informs me that he has had 1 case of bleeding from an ulcerated Meckel's diverticulum. Schullinger and Stout (1934), reviewing this complication in the light of 68 previously recorded cases, wrote: "Sudden severe pain in the lower abdomen with rigidity, signs of diffusing peritonitis, fever and leucocytosis, especially in children should lead to suspicion of Meckel's diverticulum. Cryptic intestinal bleeding should make one suspect Meckel's diverticulum as a possible source."

5. A *foreign body* is occasionally met with in an inflamed Meckel's diverticulum, and has probably the same significance as a foreign body in the inflamed appendix. Case 6 presented an acutely inflamed diverticulum which on being cut open was found to contain a rolled portion of tomato skin.

6. *Neoplasm* is a rare complication, but 1 is recorded in this series. The leiomyoma reported here had caused repeated melæna, which on more than one occasion had necessitated blood-transfusion, a bleeding duodenal ulcer being suspected. The patient was admitted with Hb 32% and required four pints of blood before laparotomy could be undertaken. The tumour was well encapsulated and very vascular, but with no evidence of malignancy. This patient replied to an inquiry on Oct. 21, 1946, that he was fit and well, weighed 12 st., and had suffered no further attacks of bleeding.

7. *Aberrant pancreatic tissue* occurs in many sites in the abdomen, but Hunt and Bonesteel (1934) could find only 13 recorded cases in which it had been demonstrated in Meckel's diverticulum. They added a 14th case in which the presenting symptom was acute lower abdominal pain unassociated with vomiting, tenderness, or rigidity. It is interesting to speculate whether the pancreatitis seen in these cases is primary or secondary to an inflammation of the diverticulum; possibly such tissue could be involved in mumps.

CHRONIC SYMPTOMS

All the above complications manifest themselves in some form of acute abdomen, and I have found no record of a Meckel's diverticulum causing chronic or subacute abdominal symptoms. This is all the more surprising when it is remembered that any diverticulum of a hollow viscus is a potential source of pain if it is distended. Spriggs and Marxer (1925–26), in their comprehensive review of intestinal diverticula, state that duodenal and jejunal diverticula may give rise to definite and sometimes distressing symptoms. "The cause of the symptoms is probably mainly stretching of the walls of the pouch by distension with food or irritation by either acid or putrefying material." It is remarkable therefore that the most constantly present diverticulum of the small intestine (Edwards 1939) should not have been described as producing symptoms similar to a diverticulum of the duodenum or jejunum. The following case illustrates the type of clinical picture which may be presented:

Case 14.—A leading seaman, aged 27, reported to a Naval sick-bay complaining of pain in the lower abdomen which had troubled him intermittently for six months. He pointed to a spot three finger-breadths above the symphysis pubis as the site of the pain and said that it was occasionally severe enough to wake him at night.

Examination.—He was a well-built man with tongue clean and moist and abdomen moving normally on respiration. On palpation a vague swelling could be made out just to the right of and below the umbilicus, and on firm pressure the pain could be reproduced. There was no hernia; patient had never vomited during an attack and did not have constipation or difficulty of micturition. *Urine:* sp. gr. 1·016; acid reaction; no albumin, sugar, or ketones present. Blood-count: red cells 4,810,000; Hb 104%; colour-index 1·08; white cells 6400 per c.mm. (polymorphs 66%, lymphocytes 29%, monocytes 3%, eosinophils 2%). Wassermann and Meinicke reactions negative.

Straight radiography of the abdomen revealed abnormality. At barium-meal examination the stomach duodenum were seen to have normal outlines; no evid of diverticulum was detected; the meal passed norm through the intestine.

Operation.—As the patient continued to have intermi attacks of pain and discomfort, it was decided to perfo laparotomy, the provisional diagnosis being a mes cyst. The abdomen was opened; there was no exce free fluid, the appendix appeared healthy, and there no adhesions. The stomach and duodenum appeared no and no diverticulum of the latter was present; pan normal on palpation; no evidence of a mesenteric A tubular Meckel's diverticulum, with engorged v coursing over its apex, was discovered about a foot fro ileocæcal junction; and, as this would lie naturally in app mately the position at which the patient complained o pain, it was decided to remove it. A crushing clamp placed across its base, and it was excised; the ileum narrow at this point and, as the removal of the divertic decreased its breadth even further, a side-to-side anasto was performed to ensure that stenosis was not prod The appendix was removed and the abdomen closed.

Progress.—Convalescence was uneventful. Eighteen after operation he was discharged from hospital with a sou healed wound and complete relief from his previous pai discomfort.

A month later he was having some trouble with flatu but four months later he was completely free from hi complaints.

Pathologist's Report (Dr. W. W. Woods).—"Me diverticulum; no gastric mucosa; no pathological ch A bell-shaped piece of intestine and thus a characte Meckel's diverticulum. It has been turned inside out fixed in this position. It measures about 1·5 cm. in diam The mucosa looks normal, being grey, velvety, and th up into ridges. No sign of a different sort of mucosa in part. No congestion. No ulceration. Serosa is partly partly dull red. Wall not thickened; mucosa, submucosa muscularis are each about 0·05 cm. thick.

"The diverticulum has the structure of normal inte Its villous mucosa is everywhere the same. There i gastric mucosa. The occasional epithelial cells with eo philous cytoplasm in the deeper glands are the normal Apart from the normal areas of lymphoid tissue, the conne tissue of the mucosa contains eosinophil leucocytes, lym cytes, and plasmacytoid cells, but they do not appear in greater numbers than are found in normal intestinal mu The moderate degree of congestion of submucosa and serosa and the few focal hæmorrhages occurred during operation. Thus there is no inflammation, nor strangula nor any other pathological change."

A thorough investigation of this patient was m before and during operation, and it could reasonabl claimed that most of the other causes for these attac abdominal pain had been eliminated. After exci of the diverticulum the patient was completely reli of his symptoms; hence it appears very probable his attacks of pain were due to intermittent disten of his diverticulum, its inability to empty, or narro of the small intestine at this point. The narrowin "coarctation" of the ileum opposite the divertic may have been responsible for its inability to em properly. It might have been wise to resect the seg of intestine rather than amputate the diverticulum then short-circuit the coarctation as was done in this c

This is only a single case-record, but it suggests th the possibility of such a condition were kept in m others might be found. It provides yet another g reason for looking for a Meckel's diverticulum w every appendicectomy is performed, and it is preci in those patients with a not too clear-cut clinical pic of appendicitis that the condition is most likely to encountered. Though the diverticulum was not sh at barium examination in this case, it is someti possible to show its presence, as in Rousseau and Mart (1943) patient. I do not agree with Greenblatt et (1936) that all Meckel's diverticula encountered laparotomy should be removed as a routine.

analysis of the last 11 cases of acute abdomen in a Meckel's diverticulum was the causal factor to the hospital shows examples of practically known complication, and confirms the opinion vious writers on the subject that the correct is is rarely made before operation.

commonest situation for this developmental error in. from the ileocæcal valve, but it has often been vered 12–36 in. from the end of the ileum; therefore, the whole terminal 3 ft. of ileum is inspected, it be overlooked.

SUMMARY

kel's diverticulum occurs in 1·3% of people and is in the ileum 18–36 in. from the ileocæcal valve.

te abdominal symptoms are caused by the diverti-, and the pathogenesis of these has been investigated consecutive cases. Two additional cases presenting a are described.

ute or chronic abdominal symptoms were caused the diverticulum in 1 case and its mechanism is ed.

ckel's diverticulum should be looked for more often more carefully, especially in laparotomies where the abdominal organs do not appear sufficiently mal to explain the signs and symptoms.

is a pleasure to acknowledge the assistance given by rdon Gordon-Taylor and Mr. Rupert Corbett in providing ation about their cases, to *Dr. W. W. Woods for the* logical report, and not least to Miss D. A. Fern, chief of the record department, King's College Hospital.

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DETERMINATION OF HÆMOGLOBIN

II. THE HALDANE HÆMOGLOBIN STANDARD

COMPARED WITH IRON AND GASOMETRIC ESTIMATIONS

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THE Haldane-Gowers method for estimating hæmoglobin has been widely used in this country for many years in determining normal English hæmatological values and assessing nutrition. It is therefore desirable that the results obtained by this method should be capable of comparison with the results of other methods in other countries, but before this can be achieved it is necessary to be certain what the Haldane standard represents in terms of hæmoglobin.

The solution of carboxyhæmoglobin which Haldane (1901) adopted as a standard was equal in colour to a 1% dilution of blood which had an oxygen capacity of 18·5 ml. of oxygen/100 ml. as estimated by the Haldane gasometric method. The application of Hüfner's (1894) factor (1 g. of Hb=1·34 ml. of O_2) converts 18·5 ml. of oxygen to 13·8 g. of hæmoglobin (Hb). Hence it has been generally accepted that 100% on the Haldane scale is equivalent to 13·8 g. of Hb/100 ml.

More recently the method of standardisation has been altered, colour tubes being defined in terms of colour, and only indirectly in terms of oxygen capacity.

B.S.I. COLOUR STANDARDISATION

The standardisation of the Haldane Hb method—British Standard 1079 (1942) (Donaldson et al. 1943)—was undertaken to remove as far as possible the non-personal error in the Haldane hæmoglobinometer. In the British Standards Institution (B.S.I.) specification, limits of accuracy were set for each part of the apparatus—colour tube, dilution tube, and pipette. The limits were chosen to be acceptable to both user and manufacturer: sufficiently narrow not to add appreciably to the experimental error, and wide enough to allow economic production by the manufacturer. For the colour tube a colour definition was adopted. The optical absorption of the completed tube was specified rather than the chemical properties of the Hb solution. This course was taken because the primary function of the colour tube is to act as a colour standard, and because colour can be measured as accurately as oxygen or iron. There also follows the advantage that a colour tube can be tested at the last stage of manufacture and at any time in the course of its life.

The maintenance of the colour standard at the National Physical Laboratory (N.P.L.) has now been going on for about five years. On the whole, the methods of colour specification adopted in British Standard 1079 have been found satisfactory in practice. It has been possible to make calibrated colour tubes generally available at reasonable cost. With the present steady improvement in colour-measuring apparatus, both visual and photo-electric, an accuracy corresponding to $\pm{}^1/_2$% in Hb concentration can be realised both in the maintenance of the standard and in the routine testing of the tubes for distribution. The unexpected permanence of the colour tubes also helped considerably to reduce the work connected with maintenance. These tubes have the reputation of sometimes fading badly, and certainly we have come across some examples of discoloured tubes of older manufacture; but, since the standardisation, none from the current commercial production has been found to fade in this way. In the course of the colour-tube testing at the N.P.L. some 20 tubes have been measured and subsequently remeasured after being in use for an average interval of about 2 years. The average rate of change is 0·2% per year. This performance compares very favourably with that of other colour standards, such as dyed gelatin filters or even some coloured glasses.

OXYGEN AND IRON EQUIVALENT

In the preparation of the colour standard, the oxygen content of a sample of blood was determined by the Haldane blood-gas apparatus, and its colour after conversion into carboxyhæmoglobin was estimated by a photo-electric spectrophotometer. The colour corresponding to an oxygen capacity of 18·5 ml./100 ml. of blood was then standardised. This method of defining the standard followed the usual practice for making colour tubes; and comparisons with some older tubes, notably one belonging to Dr. C. Price-Jones with which he carried out work on hæmatological standards, afforded confirmatory evidence that the new standard was in agreement with Haldane's original definition.

For some time, however, evidence has been accumulating which suggests that this standard colour represents more than 13·8 g. of Hb. Surveys of the values of normal English males in which an equivalent standard was used—e.g., Price-Jones et al. 1935—gave significantly lower results than those in which other methods for estimating

TABLE I—SCHEME OF INVESTIGATIONS CARRIED OUT DURING TWO SESSIONS AT DIFFERENT CENTRES

Session	Year	No. of samples	Donors	Investigations at:			
				P.M.S.L.	*Cardiff*	Oxford	*N.P.L.*
1	1945	11	Normal adult males	Fe analysis O_2 capacity	O_2 capacity	Fe analysis O_2 capacity CO capacity	*Spectro*-photometer, colour comparator
2	1946	10	Normal adult females	Fe analysis O_2 capacity CO capacity	O_2 capacity	..	Spectrophotometer, colour comparator

Hb were used—*e.g.*, *Jenkins and Don (1933)*—and normal figures from the U.S.A. and other parts of the world agreed more closely with the latter observations (Wintrobe 1942).

It was also observed independently by two of us (E. J. K. and R. G. M.) that estimations by the Haldane method and by photo-electric methods standardised by iron determination suggested that commercial Haldane standards, at any rate, represented more Hb than supposed.

These results suggested that there was need for a more authoritative determination of the Hb equivalent of the standard. The 1942 standardisation experiment was designed on too narrow a basis (one blood only) to give a generally valid relation between oxygen and colour. Its primary purpose was not to establish this relation but to transfer the fundamental definition from oxygen to colour. All that was required, therefore, was that it *should be more accurate than the commercial methods* for producing colour tubes, which it undoubtedly was. When the colour definition and a technique for the production of accurately calibrated tubes had been established, the task of linking colour with oxygen an iron could be undertaken more advantageously.

Macfarlane and O'Brien (1944) and King et al. (194 carried out an extensive determination of this relationshi with 49 and 20 *bloods respectively*. The result was th the B.S.I. standard was found to be equivalent to 14·7 of Hb on an oxygen basis, and 14·8 g. of Hb on an iro basis. This difference from 13·8 g. was considered t large to be explained on the grounds of experiment error, though no adequate explanation for the discrepan was offered.

In these latter experiments the colour was determin by the usual hæmoglobinometer colour tube and dilutic tube. *Macfarlane (1945) has shown that* with so observers the personal error in colour matching exceeds the calibration errors, and that the colour measur ment was probably for this reason more unreliable th the oxygen or iron estimations. Following a suggesti put forward by him, the work has been repeated wi the substitution of the N.P.L. colour-measuring equipme for the Haldane Hb method.

TABLE II—COMPARISON OF HÆMOGLOBIN CONTENTS OF 21 NORMAL BLOODS DERIVED FROM IRON AND GASOMETRIC DETERMINATIONS WITH THE HALDANE VALUES AS MEASURED IN COLOUR COMPARATOR

Blood	Hb value of blood on Haldane scale	Hæmoglobin (g.) corresponding to 100% Haldane						
		By iron analysis		By gas analysis				
				Oxygen			Carbon monoxide	
							Oxford	
		P.M.S.L.	Oxford	P.M.S.L.	Cardiff	Oxford	Without prelim. reduction	After reduction
Male:								
1	103·1	14·85	14·78	14·39	..	..	14·66	14·84
2	108·4	15·12	15·11	14·63	..	14·70	15·02	15·16
3	105·6	14·83	15·05	14·50	..	14·51	14·67	15·13
4	104·8	14·91	14·80	14·30	14·31	14·29	14·61	15·03
5	102·3	15·01	14·86	14·50	14·74	14·65	14·69	15·14
6	108·0	14·83	14·89	14·21	14·46	14·30	14·49	14·95
7	115·6	14·92	14·87	14·42	14·45	14·56	14·68	14·88
8	111·7	14·97	14·83	14·53	14·60	14·75	14·70	14·90
9	105·2	14·72	14·52	14·43	14·33	14·20	14·39	14·53
10	99·8	15·01	14·62	14·57	14·43	14·58	14·58	14·84
11	113·9	15·03	14·62	14·52	14·48	14·34	14·74	15·00
Mean	..	14·93	14·81	14·46	14·49	14·48	14·60	14·95
σ	..	0·12	0·17	0·12	0·15	0·18	0·15	0·17
							P.M.S.L.	
Female:								
1	109·6	14·64	..	14·07	14·14	..	13·80	14·46
2	93·7	14·92	..	14·35	14·78	..	14·07	14·75
3	88·0	14·54	..	14·03	14·30	..	14·33	14·67
4	92·4	14·60	..	13·95	14·06	..	14·00	14·02
5	83·9	14·82	..	14·50	14·65	..	14·62	14·61
6	88·2	14·07	..	14·48	14·56	..	14·34	14·43
7	83·6	14·70	..	14·40	14·62	..	14·49	14·65
8	70·8	14·80	..	14·45	14·75	..	14·54	14·60
9	93·1	14·82	..	14·33	14·64	..	14·35	14·49
10	91·3	14·93	..	14·46	14·53	..	14·38	14·44
Mean	..	14·74	..	14·30	14·50	..	14·30	14·52
σ	..	0·13	..	0·21	0·25	..	0·25	0·21

TABLE III—HÆMOGLOBIN EQUIVALENT OF B.S.I. STANDAR

—	Hæmoglobin (g.) corresponding to 100% Haldane			
	By iron analysis (P.M.S.L.)		By oxygen analysis (P.M.S.L. and Cardiff)	
	Spectrophotometer	Comparator (from table II)	Spectrophotometer	Comparat (from table
Male ..	14·77	14·93	14·33	14·47
Female	14·74	14·74	14·40	14·40
Mean ..	14·75	14·84	14·37	14·44
	Final mean 14·80		*Final mean 14·41*	

The arrangements of this redetermination and i results are described below.

EXPERIMENTAL

General Organisation.—The work was carried o *during a large-scale investigation* into the accuracy different methods of Hb determination, conduct simultaneously *at the Postgraduate Medical* School London, the University of Cardiff, the Radcliffe Infirmar Oxford, and the National Physical Laboratory. Veno blood was withdrawn from subjects at Oxford, a samples were distributed by post to the other centr considerable care being taken to make sure that t samples were truly representative of the original bloo Simultaneous determinations at the various centres we then carried out; these usually began within 24 hou *of taking* the blood. Generally one or two samples of blo were dealt with during each week of an experiment session. Further details are given in table I.

Briefly, iron was determined by titration with titano chloride (*Delory 1943*); *oxygen capacity* was determin according to the method of Van Slyke and Neill (1924 and carbon *monoxide* capacity, both *before* and aft preliminary reduction, was measured.

Preparation of Solutions.—Solutions of as many as different Hb derivatives were prepared. For the prese purpose, however, solutions of carboxyhæmoglobin we prepared as follows:

With calibrated pipettes and volumetric flasks, dilutions the blood *sample* (1·0% and 0·5%) were made with 0·01 ammonia.

The *solutions* were then placed in conical flasks a thoroughly gassed with the commercial coal-gas suppl since preliminary experiments had shown that commerci coal-gas (tested in parallel with pure carbon *monoxide*) d not introduce an appreciable error.

After being gassed, the solutions were preserved in stopper bottles; *if a* delay of more than an hour elapsed between t preparation and colour measurements, *the solutions* we regassed immediately before the measurements were mad

RESULTS

each blood sample the following determinations obtained :

1) The iron content in mg. of Fe/100 ml. of blood.

) The oxygen capacity in ml. of O_2/100 ml. of blood, and carbon-monoxide combining power, both before and after tion, in ml. of CO/100 ml. of blood.

figures were then converted into g. of Hb/100 ml. d with the conversion factors given by Hüfner (1894) , Hb contains 0·334% of Fe, and 1 g. of Hb = 1·34 ml. 0, or of CO.

) The colour as a percentage of the Haldane standard , obtained by comparison of the carboxyhæmoglobin tions with the N.P.L. standards, using a colour parator and a spectrophotometer.

rom (1), (2), and (3), values were calculated of the contion of Hb in g./100 ml. of blood, corresponding to % on the Haldane scale.

table II are shown the iron and oxygen equivalents of B.S.I. standard for each blood.

e colour was also determined on the spectrophotometer complete absorption curves throughout the spectrum for blood. The mean curve for the males and females is n in the accompanying figure, which includes a comparison other measurements by Kennedy (1927), Newcomer 19), Haurowitz (1926), Heilmeyer (1932), Race (1940), Jope et al. (1943).

rom an absorption curve the value on the Haldane scale be derived by calculation. This can be done by using the ption at one wave-length only, but in this instance a od of calculation which gives an over-all result for the plete range of wave-lengths was used. The calculations long and were only carried out for the means of the male female groups. The results are shown in table III.

he oxygen and iron analyses at Oxford have been omitted calculation of the final means, since these analyses only carried out for the first group of male bloods.

he results as measured by spectrophotometer and comtor are in good agreement, and the average for the two ruments has been taken for the final results.

ale–Female Difference.—There is no evidence of any matic difference between the male and female lues. The comparator showed a difference of about 1%, t this was not confirmed by the spectrophotometer.

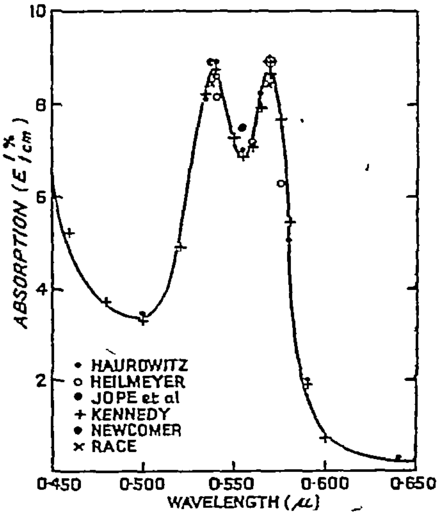
TABLE IV—NORMAL HÆMATOLOGICAL VALUES (MALES)

Observer	Hb (g./100 ml.)	Red cells (million/ c.mm.)	P.C.V. (%)	M.C.V. (c.μ)	M.C.H. (μμg.)	M.C.H.C. (%)	Remarks
ce-Jones, han, and ard (England) 1935	14 6	5 42	46 8	85 9	26·9	31·3	Assuming 100% Hb = 13 8 g. per 100 ml.
	15 6	5·42	46 8	85·9	28 8	33 5	Assuming 100% Hb = 14 8 g. per 100 ml.
Macfarlane and O'Brien (England) 1944	16·2	5 51	47·0	85·3	28·8	33 6	Hb by direct iron estimation
King et al. (England) 1944	16·0	..	..	..	..		Hb by direct iron estimation
Wintrobe (U.S.A.) 1942	16 0	5·4	47 0	87 0	29 0	34 0	Composite "normal" figures for men

DISCUSSION

From the foregoing results it now seems to be established that the B.S.I. Haldane-Gowers Hb standard is quivalent to significantly more Hb than was originally pposed. If iron determination is accepted as the most liable method for estimating Hb, the standard is equivalent to 14·8 g. of Hb. This result, obtained on 21 blood samples by independent determinations in two different laboratories, agrees almost exactly with the previous results of Macfarlane and O'Brien (1944) on 49 samples, and of King et al. (1944) on 20 samples. In the present investigation the colorimetric determinations which form the essential link between the B.S.I. standard and the iron determinations were made with the most precise instruments available in this country, and not, as in the previous work, with the Haldane hæmoglobinometer.

The oxygen-capacity determinations agree less closely with the previous work. Macfarlane and O'Brien (1944) obtained, on the basis of oxygen capacity, an equivalent value for the standard of 14·7 g. Thus the iron and oxygen determinations were in good theoretical agreement. It is true that there was a good deal of variation in the iron/oxygen relationship from one blood sample to another, and from one group of subjects to another. This variation was thought to be due to technical errors, changes in technical ability or procedure during the work, and, possibly, to a sex-difference in the relationship of iron to oxygen capacity.



Absorption curve of carboxyhæmoglobin. Optical density of a 1 cm. layer of a solution containing 1 g. of Hb per 100 ml. Hb was determined by iron analysis (1 g. of Hb contains 3 34 mg. of Fe).

In the present series, however, the oxygen-capacity determinations, made by the same method but in three different laboratories, agree fairly closely to the mean figure of 14·4 g. of Hb as the equivalent of the standard. Thus there are two discrepancies to explain: (1) the difference of 0·4 g. (or 2·7%) between 14·8 g. as determined by iron estimation and 14·4 g. as determined by oxygen capacity in the present series; and (2) the difference of 0·3 g. (2%) between the present equivalent determined by oxygen capacity and that of Macfarlane and O'Brien (1944).

It must be admitted that neither the iron nor the gasometric method is absolutely accurate. Variations in technique, in reagents, and in apparatus may, in either case, lead not only to variation between results but also to consistent errors that may affect the mean of a series of results. Such errors may explain part of the observed discrepancy between iron and oxygen figures in the present series. Part of the difference may well be due to the presence of inactive Hb in certain blood samples, which would therefore give a low oxygen capacity per unit of Hb iron. It may be significant in this respect that the CO capacity estimated after reduction of the Hb sample is very close to the theoretical figure for the oxygen/iron ratio (preliminary reduction converts any inactive Hb into a form which is capable of combining with carbon monoxide).

As regards the oxygen-capacity estimations of Macfarlane and O'Brien (1944) the reason for the difference from the present figure is not clear. It seems unlikely that the latter, derived from three independent sources in good agreement, is at fault. It is also unlikely that the normal blood samples examined in the 1944 series differed qualitatively from the present series to a degree likely to explain the difference. It must be assumed that, for some unknown reason, the previous oxygen-capacity determinations were too high, or the iron results too low. Since the iron results agree well both with those of King et al. (1944) and those of the present series, it seems probable that it was the 1944 oxygen method that was at fault to the extent of 2%.

A sex-difference in the relationship between the colour, iron content, and oxygen capacity of Hb was suggested by Macfarlane and O'Brien (1944) and Bell et al. (1945) but denied by Gibson and Harrison (1946). No evidence of a significant sex-difference of this sort was found in the present investigations; hence no separate definition for the standard is required for male and female blood. The problem that now arises is to decide whether the standard, for purposes of reference and calculation, should be taken as 14·8 g. or 14·4 g. of Hb. The latter is likely to be the figure derived in any future work if the Van Slyke oxygen-capacity method is used, as it usually is in the standardisation of other Hb methods. In terms of Hb mass, however, this figure is probably too low, since by iron determination 14·8 g. of Hb is obtained and 14·7 g. by CO capacity after reduction. The figure given by the iron determination, therefore, seems to be the correct one to adopt.

Such an adoption would bring the normal English hæmatological values into close agreement with those accepted in the U.S.A. Table IV shows the figures obtained by Price-Jones et al. (1935), in which they assumed that 100% of their standard was equivalent to 13·8 g. of Hb. Since it has been found that this standard has very nearly the same value as the B.S.I. standard, it is permissible to recalculate these normal values, assuming that the standard actually represented 14·8 g. When this is done, the results become very similar to those given by Wintrobe (1942) as representative of the U.S.A.

The mean figures given for red-cell count, and mean corpuscular volume for normal males, both in England and the U.S.A., are almost identical; hence the supposed difference in Hb content has always been difficult to explain. It is true that the English standard in these recalculations is based on iron, whereas most American figures are based on oxygen capacity, which may be relatively lower. Against this, however, must be set the fact that the English surveys have used the Haldane-Gowers Hb method, and it has been shown (Macfarlane 1945) that even the most experienced observers read, on the average, 4% too low by this method, a tendency that would more than compensate any difference between iron and oxygen standardisation.

As regards the difference of 4·4% between Haldane's original definition of his standard and the present value, it is probable that it can be explained almost entirely by the lower results given by the Haldane gasometric method as compared with the modern Van Slyke apparatus. Bierring et al. (1936) found a mean difference in the results of the two methods of 1·2 volumes %, an even greater difference than exists between the two definitions.

SUMMARY

The hæmoglobin values of 21 normal bloods have been measured by iron analyses and gasometric determinations carried out simultaneously at several centres. By means of the N.P.L. colour comparator and a photoelectric spectrophotometer, the hæmoglobin contents of these bloods have also been measured on the Haldane-Gowers scale.

The B.S.I. standard tube (100% Haldane) is not equivalent to 13·8 g. of hæmoglobin per 100 ml. of blood but to 14·8 g. when measured by iron analysis, or 14·4 g. when measured by oxygen capacity.

The reasons for this discrepancy are discussed.

Normal English hæmatological values, when recalc lated with the new value for 100% Haldane, come in line with those published in other countries, notab the United States.

This investigation has been carried out for the Medi Research Council's subcommittee on analytical metho The expenses incurred were partly defrayed by a gr from the Medical Research Council, to whom grate acknowledgment is made.

Our thanks are due to Dr. C. R. Harington, chairman the subcommittee on analytical methods, for much valua advice; Dr. Q. H. Gibson and Miss K. Glaser, Miss Quel Mr. A. F. Hoffler, and Mr. W. Weedon for valuable assistan The colour measurement of the carboxyhæmoglobin solutic was carried out at the National Physical Laboratory on beh of the Medical Research Council.

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DISSEMINATION OF HÆMOLYTIC STREPTOCOCCI IN AIR

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THE events which initiate an epidemic seldom come light. The following story describes events which mig well have formed the starting-point of at least a ser of cross-infections, but thanks to prompt action th did not. The story is also of interest for its bearing the mechanism of such cross-infections in surgical wa and as illustrating the value of the bacteriologi laboratory in controlling such infections.

It is our practice in this unit to dress all burns in specially ventilated dressing-room or, occasionally, in similarly ventilated saline-bath room; they are nev exposed in the open wards (Bourdillon and Colebro 1946). This, combined with a strict dressing techniq and the local application of penicillin, has almo eliminated added infections by hæmolytic streptoco for $2^1/_2$ years (Colebrook et al. 1947). It is necessa however, to be constantly on the watch for the occasio reappearance of these infections and particularly detect the streptococci should they at any time be prese in the air of the dressing-station. For this purpose it part of our routine to expose a blood-agar plate (we c it a "settle" plate) whenever patients are being dress Sometimes a more severe test for the purity of the Sometimes a more severe test for the purity of the is made with the large-model Bourdillon slit-sampl (Medical Research Council 1947), which can suck as 20 c. ft. of air a minute on to the surface of a

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* Receiving a whole-time grant from the Medical Research Counc

streptococci are very seldom present in the none were found on 76 settle plates exposed between 23, 1946, and Jan. 7, 1947. On Jan. 8, 25, and 27 on Feb. 1, however, single colonies of streptococci obtained on the settle plates, and on Jan. 30 the ampler revealed a heavier contamination of the air olonies on one plate). During this period they were grown in small numbers from the air of the saline- room on one occasion (Jan. 23) and from the en's ward of the unit (Jan. 31).

equent investigation of these air-borne streptococci Dr. V. D. Allison at the Central Public Health atory, Colindale, showed that two distinct types present on different occasions. Thus, the strepto- recovered on Jan. 8, 25, and 27 and on Feb. 1 the air of the dressing-station and on Jan. 23 from air of the saline-bath room were all type-I strains, as those recovered by the slit-sampler on Jan 30 the air of the dressing-station included a few of type I strain on four of the plates, and a second type, p 19," on one other plate. This second type was recovered from the air of the children's ward on 31.

INVESTIGATION OF SOURCE OF STREPTOCOCCI

e existence of two distinct types was not known at the time of the investigation; nor were we of any probable source among the patients or the nnel of the unit. Throat swabs of everyone who been in the dressing-station or saline-bath room when tococci were recovered from the air yielded none of organisms; and all the 56 burns under treatment streptococcus-negative, though one child had given ative swab (later found to be an Imp. 19 strain) Jan. 8, 11, and 13. Three subsequent swabs from child taken during and after local treatment with cillin had been negative on Jan. 15, 22, and 30. source of her infection could not be traced.

nce this child's strain was identical with those grown large numbers from the air of the dressing-station Jan. 30, and only when this child was in the room, it s highly probable, indeed almost certain, that the a were in some way disseminated in the air during child's dressing, notwithstanding that a swab from child's granulating wound did not yield any strepto- on this occasion. The most likely explanation is the child's bedding became contaminated with olytic streptococci when her wound was infected that organism (Jan. 8, 11, and 13); the blankets possibly also other bedding) were not changed after organisms disappeared from the wound under cillin treatment; from these infected blankets, and/or r bedding, the streptococci passed to the crêpe dages covering the burn, and during the removal of crêpe bandages they were scattered into the air the dressing-station. Direct contamination of the of the dressing-station from the child's bedding bed-jacket could not have happened, since these been removed or covered with sterile sheets before came into the dressing-station.

The suggestion that the child's bedding was the ulti- source of the Imp. 19 cocci found in the air was merely hypothetical; it is supported by the fact , though moist swabs taken direct from the bedding ed no streptococci, these organisms were recovered slit-sampler plates when the child's blankets were en near the machine, on two separate occasions, the same day as she was in the dressing-station n. 30). On the day following exposure of her burn to heavily contaminated air of the dressing-station, the p 19 strain was again found on the child's burns. ppily it did not infect either of the two patients who followed her, after an interval, in the dressing-station on Jan. 30.

The type-I streptococcus found in the air on five occasions appears to have had a totally different origin. On Feb. 1 Mr. A, the surgeon who had been doing all the dressings, remembered that he had a small scabbed-over abrasion on his elbow, dating from before he joined the burns unit on Jan. 1, 1947. It had given him no trouble and, so far as he was aware, had remained perfectly dry throughout January. However, on Feb. 1 Mr. A removed the scab and cultivated the trace of serous fluid beneath it. It gave a pure culture of hæmolytic streptococcus, type I. On Feb. 2 he swabbed his waistcoat and shirt, and on Feb. 3 his jacket and the skin of his forearm and neck. The waistcoat swab yielded hæmolytic streptococcus type I; the others were negative. The elbow lesion had been treated with penicillin cream on Feb. 1 and promptly healed.

How did the streptococcus reach the air of the dressing-station from the scabbed-over lesion on Mr. A's elbow? He had never worn his waistcoat during dressings, and his clothing had always been covered with a sterile gown and canvas overshoes. The gown, however, did not give complete cover, because Mr. A is very tall and the gowns are often imperfectly closed at the back. His forearms were exposed during dressings; so there was opportunity for friction between the forearm skin and his gown. It is also possible that, though we detected hæmolytic streptococci only on his waistcoat by our casual swabbing of a small area with a moist swab, a more efficient method of extracting dust from the clothing, like that used in vacuum-cleaning, might have revealed the presence of streptococci also on his shirt, trousers, &c. (see below). In that case the movement of his garments might well have been responsible for the small number of streptococci isolated from the air of the room. In this connexion it will be remembered that Hare (1941) reported finding hæmolytic streptococci on the clothing of healthy throat carriers.

It is therefore suggested that contamination of the air by this type-I strain was due, in the first place, to imperceptible leakage of serous fluid from Mr. A's lesion, the fluid drying into powdery scales on his forearm and being rubbed off either by the sleeves of his gown or by his clothing.

None of the 42 wounds dressed by Mr. A on the days when his type-I strain was found in the air of the dressing-station or the saline-bath room acquired this organism. This and the similar fact noted in connexion with the Imp. 19 strain of the child were probably due to the constant decontamination of the air of the dressing-station by the forced-ventilation system, by which the air of the room is completely changed every few minutes (Bourdillon and Colebrook 1946).

SUMMARY

Hæmolytic streptococci recovered from the air of a dressing-station were of two types: type I and type Imp. 19.

The evidence suggests that the type-I strain came indirectly from a small scabbed-over lesion on the elbow of the surgeon doing the dressing (perhaps from his clothes); and that the Imp. 19 strain was scattered in the air during the removal of bandages from a burn which was not at the time infected with that organism, the bandages having become contaminated from the child's bedding.

NOTE ON THE DETECTION OF PATHOGENS, ETC., ON CLOTHING BY "HOOVERING"

In 1944 Dr. R. B. Bourdillon suggested to one of us (L. C.) that a slit-mouthed flexible tube fitted to the air-inlet of the slit-sampler would enable us to sample a much larger amount of dust from clothing, bedding, &c.,

than is obtained by merely swabbing it with a moist swab. Dr. Bourdillon also made the appropriate fittings at that time, but we had not previously used it. After the events recorded in this paper we carried out some trials as follows:

(1) Four streptococcal throat carriers, one of whom, A. B., had also a streptococcal infection of an old burn on his leg, gave the following results:

In the case of A. B. "hoovering" bedding, dressing-gown, &c., gave 42 colonies of hæmolytic streptococci, whereas moist swabs of the same articles gave none; but unfortunately these swabs were taken after the "hoovering," so that it is possible, though not likely, that a large part of the contaminated dust had been removed. Of the 42 colonies obtained by "hoovering," 10 were tested for type. All belonged to type II, which was the type present in the patient's throat and on the leg.

Of the other three carriers, C. D., aged 2 years, gave no hæmolytic streptococci by moist swabbing (swabs before the "hoovering"), but 8 colonies were grown by the "hoovering" test. All the 8 colonies were of the Imp. 19 strain present in the child's throat.

Another child, E. F., yielded one colony of hæmolytic streptococci on "hoovering" the bedding, and none by swabbing.

The fourth child gave one colony by swabbing and none by "hoovering."

(2) In the case of 8 other people with negative throat swabs, 5 of whom were working in the wards in more or less close contact with streptococcal infections, one or two colonies of hæmolytic streptococci were recovered by "hoovering" the clothing from 3 but none from the others. Tests by swabbing were not made in these cases.

So far as it goes, therefore, the evidence suggests that "hoovering" clothing, bedding, &c., is much more likely to detect hæmolytic streptococci than moist swabbing, and that it may prove a valuable aid in the future investigation of cross-infections.

We wish to thank Dr. Allison, whose help in the typing of the streptococci made this investigation possible; Dr. Bourdillon, who taught us to use the slit-sampler and suggested the "hoovering" device; and Mr. Michael Hood for technical assistance.

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CALCIFEROL IN THE TREATMENT OF CHILBLAINS

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CALCIFEROL in high dosage has been widely advertised as effective in the treatment of chilblains. Since this therapy is hazardous unless controlled by estimations of blood-calcium (especially diffusible calcium) and of renal efficiency, it seemed important to assess its effects on chilblains.

The incidence of chilblains during last winter in a group of patients receiving calciferol in large doses for other reasons was determined and compared with the incidence in a group not receiving calciferol.

Material.—The test group (A) consisted of 103 patients (36 men and 67 women) with either lupus vulgaris (92 cases), sarcoidosis (6 cases), tuberculosis verrucosa cutis (3 cases), lupus erythematosus (1 case), or erythema induratum (1 case). Their mean age was 46·3 years (variation 21 to 70) with a standard deviation of 9·2. This group received calciferol daily in tablet form by mouth in doses of 50,000–150,000 I.U. (tab. 'Ostelin,' high potency, Glaxo) for various periods but consistently through the winter months from September, 194 March, 1947 (with four exceptions who took the ta for a shorter time during this period, one for a m one for two months, and two for five months). The r individual doses were as follows:

INCIDENCE OF CHILBLAINS IN RELATION TO TREATME WITH CALCIFEROL

—	Sex	Experimental group A	Control group B	Con gro
No. in group.. ..	M F	36 (35%) 67 (65%)	19 (39%) 30 (61%)	44 (66 (
Total		103	49	110
Mean age (years) .. Standard deviation ..		46·3 9·2	42·4 15 9	43 4 13·1
No. with lupus vulgaris		92 (89%)	45 (92%)	N
No. who had had chilblains before 1946–47 winter	M F	5 (4·8%) 19 (18·4%)	1 (2·0%) 4 (8·2%)	9 (26 (
Total		24 (23·2%)	5 (10·2%)	35 (
No. who had chilblains for the first time in 1946–47 winter	M F	7 (6·8%) 7 (6·8%)	3 (6·1%) 4 (8·2%)	6 (4 (
Total		14 (13·6%)	7 (14·3%)	10 (
Total no. with chilblains in 1946–47 winter	M F	9 (8·7%) 20 (19·4%)	4 (8·2%) 8 (16·3%)	10 (21 (
Total		29 (28·1%)	12 (24·5%)	31 (

Standard error, 8·7

	Mean individual dose (million I.U.)	*Variation* (million I.U.)	Sta devi
Patients with chilblains ..	21·4 ..	2·0–42·9 ..	
Patients without chilblains	22·2 ..	2·8–40·2 ..	

The controls were in two groups: group B consis of 49 patients (19 men and 30 women) with e lupus vulgaris (45 cases), tuberculosis verrucosa c (3 cases), or erythema induratum (1 case); and grou of 110 patients (44 men and 66 women) atten primarily for skin conditions other than chilblain lupus vulgaris. The total control group there consisted of 159 patients, none of whom was gi calciferol.

Results.—The accompanying table shows that 28· of the 103 patients given calciferol developed chilbla and of the 159 patients not given calciferol, 24·5% group B and 28·1% in group C developed chilbla There is no statistically significant difference betw the test and control groups as regards the incidence chilblains. It is thus clear that, in the conditi of this test, a patient receiving calciferol is as liable chilblains as one who is not receiving it.

Comment.—These results suggest that calciferol ineffective in preventing chilblains. Further, calcife appears to have no effect in the treatment of chilbla since chilblains developed and persisted about the sa length of time in all the groups.

As treatment with calciferol in high dosage is n without danger, it would be as well if its use for t purpose were discontinued.

I am grateful to Dr. J. T. Ingram and Dr. F. F. Helli for allowing me to carry out this investigation on th patients.

EACH bed in the new tuberculosis wards at Anlaby Ro Hospital, Hull, has been equipped with a pillow-wirel according to the Hull *Daily Mail* (Oct. 16).

Medical Societies

BRITISH ORTHOPÆDIC ASSOCIATION

The annual meeting was held in Manchester on Oct. 24 25 under the presidency of Mr. GEORGE PERKINS.

Recurrent Dislocation of the Shoulder

H. OSMOND-CLARKE described a capsulorrhaphy recurrent dislocation of the shoulder which he called Putti-Platt operation. This consisted in a wide ach to the front of the joint with division of the oid subscapularis tendon, and capsule. The distal e of the subscapularis tendon was sewn to the bourhood of the anterior lip of the glenoid, and the al portion of the tendon was made to overlap ture line. The coracoid was repaired and the wound

J. C. ADAMS had investigated the results, after years or more, of 114 out of 159 operations for ent dislocation of the shoulder in the Royal Air during 1940–45. He said that 21 recurrences had place after 59 Nicola operations, and 2 after 37 -Platt operations. The intervals before recurrence between four months and five years, averaging -two months. Among 79 shoulders adequately ed, the glenoid labrum was found detached in 69 ndly attached in 10. Adequate radiography of tients revealed a posteromedial defect in the ral head of 56; an anteroposterior view with mb rotated inwards through 60–70° was advised. nge of movement was almost full after Nicola's ion; lateral rotation was often diminished after art's operation, and rather more so after the capaphy. The relatively free range after Nicola's ion was perhaps a factor in recurrent cases, which always show atrophy of the reattached tendon. od results of the other operations were attributed e fibrous tissue formed in the front of the capsule. limited lateral rotation.

A. L. EYRE-BROOK gave a detailed analysis of consecutive cases operated on by the anteromedial ach. These lesions were found: anterior detach- of the glenoid labrum (Bankart's lesion) alone in a posteromedial defect in the humeral head alone a combination of these two defects in 10 cases. detachment of the subscapularis from the lesser sity in 1 case. The bony defect was best revealed ratively by radiography from above with the film axilla and the arm laterally rotated through 70°. graphy often disclosed also a bony subglenoid out- in cases of Bankart's lesion. In cases showing lesion at operation, a modified Bankart's operation performed. In cases not showing this, but having t in the humeral head, multiple osteotomy of the d had been performed (2 cases), and more recently pplication of an iliac graft to the front of the r neck. After operation the arm was bandaged side for four to six weeks. Work was resumed after six weeks. In 12 cases followed for periods of ths to four years, no recurrence had been found.

A. B. PAIN had examined the case-records of 43 ions for recurrent dislocation of the shoulder in nts treated in the Leeds area during the preceding years. Of the patients, 1 had bilateral operations, had two operations, and 3 had as many as three ions each; 6 were epileptic. Among 28 patients seven different types of operations had been ed as follows (recurrences in parentheses): Clair- 1 (1), Henderson 13 (9), subscapularis tenotomy Nicola 12 (4), Bankart 2 (1), capsular plication 1 (0), k 4 (0). Recurrence took place at any time up to years after operation, but in 12 out of 18 instances within a year—in 6 of them within three weeks.

Other Papers

JACQUES LEVEUF, in a paper on the *Treatment of Osteomyelitis Viewed from the Anatomical and gical Basis*, expressed the view that in hæmato- osteomyelitis the first bony lodgment of the coccus is not usually the metaphysis but the hood of the entry of the perforating artery, a cortical abscess forms, with usually a very small sequestrum. Spread is mainly towards the surface, but also along the artery and its branches, producing further cortical lesions and occasionally medullary ones. Professor Leveuf, who has practised plaster-of-paris immobilisation in this disease for twenty years, condemns bone operations in the acute stage, and especially metaphyseal drainage. The soft-tissue abscess should be drained between the fifteenth and twentieth day; formerly the wound was left widely open, but now, with the aid of penicillin, it is closed forthwith.

Prof. S. L. BAKER, in speaking of the *Histology of Callus*, stated that the first sign of bone appeared within the first week in an area of gelatinous œdema in the mass of young connective tissue which invades the hæmatoma about a fracture.

This bone is of a type called woven bone, because of the irregular arrangement of the fibres, which with a connecting substance form the osteoid matrix, in distinction from lamellar bone, in which the fibres have a parallel arrangement Whereas woven bone can be laid down rapidly in connective tissue, lamellar bone forms slowly and can only be laid down on a surface. Woven bone forms about blood-vessels, and so the orientation of its trabeculæ is determined by the vascular arrangement, whereas that of the trabeculæ of lamellar bone is determined by the stresses to which it is submitted. Woven bone is usually replaced slowly by lamellar bone. The formation of cartilage in callus appears to depend largely on movement, being frequent after rib fractures and in animals. Cartilage sometimes forms a ring about the fracture and may result in pseudarthrosis, but commonly it is replaced gradually by bone. Callus is no respecter of the periosteum, often passing well outside it.

In certain rare instances, said Professor Baker, especially fragilitas ossium, there is a prodigious formation of callus which may be taken for sarcoma. Dr. J. F. BRAILSFORD and Mr. B. L. MCFARLAND confirmed this danger.

Mr. ROLAND BARNES reported on 22 cases of *Paraplegia in Cervical Column Injuries*, which he subdivided into (1) flexion injuries (dislocation 8, crush fracture 4, acute retropulsion of an intervertebral disc without bone injury 3), and (2) hyperextension injuries (dislocation 1, injury of arthritic spine 6). He believed that with acute retropulsion of an intervertebral disc cerebrospinal-fluid block called for emergency laminectomy and not merely skull traction. With paraplegia following hyperextension injury of an arthritic spine there was little or no evidence of bone injury. These patients were all more than fifty years old. A complete tear of the anterior common ligament had been produced in 1, and it seemed probable that not only was the stiff extended arthritic spine unduly prone to hyperextension injury, but the cervical lordosis and often associated thoracic kyphosis would aggravate the consequent traction injury to the spinal cord, which seemed a probable cause of the paraplegia. Prof. GEOFFREY JEFFERSON, F.R.S., agreed with what had been said but had an open mind about crediting laminectomy with the improvement which sometimes followed it.

Mr. D. LL. GRIFFITHS advocated the following steps in the *Management of Acute Ischæmia in an Injured Limb*.

(1) Adequate general investigation, including arterial blood-pressure and blood hæmoglobin estimation.

(2) Removal of all possible sources of external pressure.

(3) Attention to the patient's general condition, with special reference to maintenance or restoration of a satisfactory blood-pressure.

(4) Reduction of the associated fracture, if any; this may assist the collateral circulation but should be attempted only once.

(5) Operative exploration of the artery, except in cases of over twenty-four hours' duration in the lower limb, or in cases showing obliteration of both anterior and posterior tibial arteries. Preliminary arteriography is helpful. Complete division demands ligation; incomplete division provides an opportunity for a trial of arterial suture; bruising of a length of artery calls for resection; no operation should be performed on the artery if it is occluded by spasm without any obvious arterial injury.

(6) Paralysis of the cervicothoracic or lumbar sympathetic system by local infiltration.

(7) Other measures to improve the collateral circulation: slight elevation or slight depression of the limb, as suits the patient's comfort; cooling the limb, but without the use of ice; warming the patient; administration of morphine, alkalis, and

penicillin. Tobacco is usually condemned, but alcohol may help.

Mr. JOHN CHARNLEY gave a discourse, illustrated by models, on some of the basic mechanical principles used in the *Reduction and Splinting of Fractures.*

Mr. O. H. CULLEN discussed *Causalgia* on the basis of 24 cases he had seen during the war. Of 17 in which sympathetic block was successfully achieved with 2% procaine ('Novocain'), as shown by peripheral loss of sweating, 14 were completely relieved temporarily. For such, sympathectomy was the treatment of choice; in the 8 patients submitted to it, the results were uniformly good, except that 1 patient, in whom part of the stellate ganglion was spared, was not completely cured. Radiotherapy was less successful than sympathectomy, and was reserved for cases not responding to sympathetic infiltration.

Mr. T. J. FAIRBANK spoke on *Fracture-subluxation of the Shoulder.* Among 115 cases of fracture about the shoulder, he had found 12 with radiologically demonstrable downward subluxation of the humeral head; in 11 of these it was a complication of fracture of the neck of the bone. Clinically a groove could be felt between the acromion and the humeral head, which could usually be abolished by lifting the humerus actively or passively, or by recumbency. In the normal subject little downward subluxation occurred except during anæsthesia, and muscle tone appeared to be the main factor preventing it. At follow-up, a year after injury, the subluxation had sometimes disappeared, but it sometimes persisted for three years or more. Of the patients, 9 had been treated for their fractures with collar-and-cuff slings and 3 with abduction frames. It was suggested that, in the treatment of fracture of the humeral neck, a triangular sling is preferable to a collar-and-cuff, and that if abduction is necessary a plaster-of-paris spica should be used. Sir REGINALD WATSON-JONES considered it important to distinguish between subluxation due to the original violence and that due to diminished muscle tone.

In considering the *Treatment of the Unreduced Pathological Dislocation of the Hip from Septic Arthritis in Infancy*, Mr. A. F. BRYSON excluded patients aged more than twelve months at the time of the acute illness. In most it occurred in the first nine months. His 18 cases were all unilateral, and 15 were operated upon. One underwent an unsuccessful Colonna's arthroplasty. Of 3 treated by osteotomy, 1 secured stability, but the other 2 continued to show progressive shortening, flexion, and adduction. Arthrodesis was much the best procedure. Eleven patients were so treated; bony fusion occurred within a few months in 7 of them, and after subsequent osteotomy in another. Operation should be delayed till the age of twelve or thirteen years, because of the great amount of activity possible till then and because earlier bony fusion is not only difficult to obtain but does not fully prevent subsequent flexion and abduction deformity. Preliminary weight traction has been found of little value in diminishing shortening, but freeing of the upper end of the femur at operation allowed considerable correction of real shortening, which in 1 case was reduced from $3^{1}/_{2}$ in. to 1 in. The denuded bone surfaces were secured with Platt's miniature tri-fin nail. Only 1 patient had complained of pain in the back—eighteen months after an operation performed at the age of fourteen years—but she claimed to have walked 40 miles in a day. Professor LEVEUF advocated arthroplasty in such cases, even although unilateral. Mr. R. I. STIRLING considered that a shelf operation had a place in the treatment, in order to limit shortening before the best time for arthrodesis had arrived.

Miss E. L. WILLIS summarised the *End-results in Fractures of the Femoral Neck* in 192 cases treated in the university department of orthopædics at the Manchester Royal Infirmary, with a death-rate of 8% within three months of injury. Out of 113 patients with subcapital and transcervical fracture, 50 were seen two or more years after injury: 22 had good results and 15 poor; 13 showed avascular necrosis of the femoral head. Of 74 fractures treated by Smith-Petersen nailing, 41 showed radiological union. Of 79 basal and pertrochanteric fractures, 51 were treated by well-leg traction, with union in 43. There were 23 good clinical results among 28 patients examined more than a year after injury.

Reviews of Books

Radium Dosage

The Manchester System. Editor: W. J. Mered
M.SC., F.INST.P., physicist to the Christie Hospital
Holt Radium Institute, Manchester. Edinburgh: E
Livingstone. 1947. Pp. 124. 15*s.*

THIS book presents in one volume a complete do system for mould, intracavitary, and interstitial gam ray radium therapy. By means of dosage tables distribution rules it attempts to solve the three probl of radium therapy: how much radium should be us how it must be arranged; and how long treatment sho last. It is based on papers published since 1 by the staff of the Christie Hospital and Holt Rad Institute, including Ralston Paterson, M. C. Tod, H. Parker, F. W. Spiers, S. K. Stephenson, and W. Meredith. These papers are well known to physi and radiotherapists, and the book will replace thumbed "reprints" in all departments where rad therapy is practised.

Milk and Food Sanitation Practice

H. S. ADAMS, B.SC., chief, Bureau of Environme
Hygiene, Minneapolis; lecturer, School of Public He
University of Minnesota. New York: Commonwe
Fund. London: Oxford University Press. 1947. Pp.
18*s.*

THIS well-written book places the whole questio food protection in a modern setting.

The first section, which deals with milk sanitation, an interesting survey of the steps taken in the United St to improve the quality of market milk, and shows that progress has been made in pasteurisation and its accept by the public. Mr. Adams gives minute instructions the standards of milk production, also devoting a chapte unpleasant flavours in milk and means of avoiding th Arguments against pasteurisation are analysed and demoli The second and shorter section deals more broadly with control, discussing inspection of food, the hygiene of worker, the safety of the water-supply, protection contamination, and the war against the perpetual enemi food—insects and rodents.

The book is a valuable statement of the mo attitude towards food and milk; and is besides a le to us in Great Britain on the rather tiresome subjec how far we lag behind in these matters.

Atlas of Cardiovascular Diseases

IRVING J. TREIGER, M.D., assistant professor of medi
University of Illinois, Chicago. London: H. Kimp
1947. Pp. 180. 50*s.*

IN this atlas the anatomy of the normal heart the pathology of the diseased heart are shown in pho graphs of specimens and in radiograms; and as a the corresponding cardiographic changes are also il trated; moreover, each common disorder of the car vascular system is represented by a case of which h clinical details are given. The study of photograp however good—and those in this atlas are exception good—is not an effective substitute for the examinat of the material itself in the post-mortem room, nor the written matter here take the place of a textbo but in so far as the correlation of first-class radiogr with morbid anatomy, as shown in photographs, help the student to a clear conception of cardiovasc disease, this atlas provides excellent instruction.

Experimental Physiology for Medical Students (ed. London: J. & A. Churchill. 1947. Pp. 290. 18*s.* Prof. D. T. Harris notes that in the six years which have pa since the last edition of his book there have been gr advances in the study of electronics, especially during war years. Students nowadays have a first-hand knowle of radio devices, and he has therefore included in the edition such simple assemblies as are thought to pos definite advantages—for example, a robust micro-amme with simple amplifier instead of a highly sensitive and co galvanometer. This has made it possible to replace the ol experiments on nerve by simple exercises illustrating electrochemical view of the propagation of nerve impul The book remains a standby for the student to use conjunction with his theoretical textbook.

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THE LANCET

LONDON: SATURDAY, NOV. 29, 1947

Ambulances

RELIABLE arrangements for moving patients by bulance are an important element in any medical ce. Little is heard of the preparations for the bulance system in the National Health Service, its organisation is being considered.

Ambulance services in this country were largely lgamated during the war, but they have now n restored to their pre-war owners and show tendency to revert to their pre-war standards. Is necessarily a good thing? Ought we not to use opportunity for a fresh approach? In greater don, for example, before the war there were ous ambulance services. The greatest was that the London County Council, operating within the undaries of the county. Outside those impassable undaries there were many small ambulance services ed by the boroughs and the counties. Borough bulances could take the patient from the borough to y hospital but not vice versa, and county ambulances re to be used only for the county hospitals. Rates payment were highly diverse: some ambulances re free, while some had a mileage rate, and the nt proceeding to a voluntary hospital in a L.C.C. bulance had to pay cash down or be taken willy-y to a L.C.C. hospital. Finally there were private bulances—more particularly those of the Joint ommittee of St. John and the Red Cross—which garded all boundaries and charged a moderate fee.

In the new health service the ambulances will presumably be free; so one problem at least will disappear. Indeed, the L.C.C. has already dropped its charge for journeys to hospital when the hospital calls the ambulance. But what of the boundary question? Presumably borough and county boundaries will disappear, for in a national service they will have no significance. Will they be replaced by regional boundaries? Since it has been said that regional boundaries are to be no bar to the movement of patients, presumably ambulances will be able to cross them. Up to this point the new system must of itself be an improvement, provided the larger ambulance services do not acquire a larger bureaucracy to hinder them. But there remains a risk that the present speed of dealing with cases will be accepted as a standard to maintain rather than as a basis for improvement. Despite the somewhat rosy statistics which are published, we have heard doctors complain of interminable delays in obtaining ambulances. Further information would be welcome, but it seems at least to be clear that an hour's delay before the ambulance starts is not unusual at any time of year—particularly at the "peak" hours of midday and evening—and that in winter the delay is often much greater. Admittedly, if the case is one of accident or can be certified as "life or death" an accident ambulance can be called, and this will start more or less at once. But the bulk of patients needing immediate admission to hospital are not in this desperate plight; so, though they may be very ill and the anxiety of their friends and doctor very great, they have to wait—to their medical disadvantage where (in pneumonia for example) active treatment should begin at once. Presumably this is because there are not enough ambulances to go round, and because old ones cannot be replaced. Is it, however, certain that a sufficient expansion is envisaged not only to ensure that patients shall not be kept waiting unduly, but also to meet the added requirements that the National Health Service will bring? There are various concealed requirements which rationalisation of hospital work will reveal more clearly. Thus it is evident that something will have to be done about the patient who needs outpatient treatment but is unable to travel to and from hospital, either because of his physical disability or (in the country) because public transport is lacking. Nowadays such a man either goes without the treatment or is given a hospital bed which could be put to better use. It looks as though the scope of the ambulance service must be enlarged to include the wide use of sitting ambulances, to work in connexion with outpatient departments.

Running a large ambulance service is a technical job which few are qualified to undertake; and it is not for the inexperienced to suggest how these necessary improvements should be made. The county health authorities, however, have great experience, and they are to bear the whole burden in the future. We trust that they are dissatisfied with the present service. and are planning boldly for something better.

Cholera and Hysteria

CHOLERA inspired the first attempt at international regulation of quarantine procedures, and the Egyptian cholera outbreak has revealed the flimsy foundation on which a hundred years of such efforts have been based. Since the first quarantine conference in 1851 those concerned with international quarantine have had a twofold purpose: on the one hand, they have sought to promote measures which would prevent the spread of disease from country to country, and on the other hand they have tried to obtain agreement on an upper limit of severity for such measures, which would prevent unnecessary interference with trade and travel. In the Egyptian outbreak the first of these objectives—the prevention of international spread—seems to have been achieved: for cholera has not so far appeared in any other country west of the Persian Gulf, and further epidemic extension is unlikely now that the incidence in Egypt has declined and the Mecca pilgrimage has been concluded. It is the second objective—the avoidance of undue dislocation of trade and travel—which has not been attained, and the story of the failure can be read between the lines of the official Weekly Epidemiological Record of the World Health Organisation and in the press.

For preventing undue interference with international traffic three things are necessary: (1) there must be early and accurate information about the onset and spread of the epidemic and the measures taken by the country of origin; (2) other countries must refrain from measures beyond the maxima laid down by the International Sanitary Conventions; and (3) the measures taken against the infected country must be promptly reported Though many governments deserve great credit for the way they have fulfilled their obligations, far too many others have failed under one or more of these heads. As regards notification, Egypt was prompt to report the outbreak as soon as it was bacteriologically confirmed; but lack of information about its progress and spread was certainly the reason for some of the excessive measures taken against her. It was also unfortunate that there was delay on the part of British military in notifying the Egyptian authorities of four cases in the Canal Zone—though these in no way supported the original allegation of importation from that zone. Again, some neighbouring countries do not seem to have realised the value of negative official reports as a means of countering false rumours, such as those alleging that cholera had arrived in Greece, Italy, and Turkey. (The excellent reports from Saudi Arabia concerning the pilgrimage were a notable exception.) But a second and greater failure lay in the imposition of control measures far in excess of those described in the conventions. Though the quarantine committee of the World Health Organisation Interim Commission had held a special emergency meeting, under the chairmanship of Dr. P. G. STOCK, and had specifically stated that the measures against cholera laid down in the conventions in force were adequate, certain countries—and not always those most at risk—actually closed their frontiers to all passengers and goods coming from Egypt. The process was a gradual one, in the nature of a vicious circle At first measures within the conventions were imposed, such as medical examination and surveillance of passengers and prohibition of importation of fresh food. Then alarmist rumours and press reports, not always accurate, of what other countries were doing roused public opinion, before which some health authorities seem to have given way. Thus it is reported that Italy eventually decided that arrivals from Egypt by air should be held under observation in a hotel in Ostia; the local inhabitants erected barricades, and the bus containing the travellers was turned back after something approaching a riot. France, after a short interval, abruptly forbade admittance to passengers and even mail from Egypt, not only to her metropolitan territory but to all her dependencies. Greece, after quite reasonably requiring sea and air traffic from Egypt to call at specified places, ended by suspending all such traffic. Austria prohibited the importation of all foodstuffs, not only from Egypt but from eight countries "threatened" with cholera. Other countries prohibited the import not only of foodstuffs but of Egyptian cotton, oblivious of the fact that they had been importing for years jute from Bengal and rice from China and Indo-China—the main endemic and epidemic centres of cholera—without any evil consequences: at one point it was even reported that ships could not be chartered to take to Egypt the Chilean nitrates on which the cro
depend. *In the third place*, many of these measu
taken against Egypt were not communicated prompt
or even at all, to the World Health Organisation
Geneva, as required by the conventions. Hence t
sea and air lines were unable to learn from an offic
central authority what they would be allowed to do.

Cholera has been called, in quite a different sen
the "disease of fear"; and certainly fear of it h
caused incalculable trade and traffic losses whi
were largely needless. The lesson will have to
studied carefully when the time comes for the Wo
Health Organisation to revise the conventions
seems clear, however, that it was not the conventio
that were at fault, and that what we have witnes
was a partial return to the "quarantine of the jung

The Enigma of Hæmophilia

WHY does hæmophilic blood not clot when it
shed? What part of the clotting reaction has fail
and can the defect be remedied by treatment?
completely satisfying answer to these questions
yet been found, but research in many countries
clarified our ideas.

It is agreed that the defect in hæmophilia lies in
failure of conversion of prothrombin to thrombin
the presence of ionised calcium and thrombokinas
the first clotting reaction. Two explanations of t
failure have been most popular. The first, associat
particularly with the researches of FONIO, is that
abnormality lies in the platelets; it is thought th
the blood-platelets are abnormally resistant to d
integration and fail to provide the necessary thromb
kinase. This hypothesis has in the past recei
much support; HOWELL, for example, conside
that there is in hæmophilia an inherited defect
the platelets or of the megakaryocytes from whi
they are derived. The second explanation invoke
deficiency in the plasma of thromboplastin (throm
kinase), the platelets being normal. As long ago
1905 SAHLI noticed that hæmophilic blood will c
promptly if a small amount of normal plasma
added, and in 1927 FRANK and HARTMANN[1] und
lined this observation by pointing out that t
coagulation-time of hæmophilic blood can be restor
to normal by mixing with normal plasma. PAT
and TAYLOR,[2] and BENDIEN and VAN CREVEL
isolated globulin fractions of plasma that had t
restorative property; and in 1939 HOWELL,[4] abando
ing the platelet hypothesis, stated that these resul
provide real evidence for the view that blood plas
normally *contains a specific substance* that accelerat
the clotting process, and that this substance is defici
in the plasma of hæmophilic patients. HOWE
proposed the name "plasma thromboplastin" f
this substance. It is essentially the same
MORAWITZ's "thrombokinase"; but this nam
suggests a protein substance of enzymic natur
whereas HOWELL was able to show that thromb
plastin can be freed of protein, and MERTZ, SEEGER
and SMITH[5] produced evidence that the reactio
prothrombin + Ca'' + thromboplastin = thrombin, is n

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1. Frank, E., Hartmann, E. *Klin. Wschr.* 1927, 6, 435.
2. Patek, A. J., Taylor, F. H. L. *J. clin. Invest* 1937, 16, 113
3. Bendien, W. M., van Creveld, S. *Acta med scand.* 1939, 99, 12
4. Howell, W. H. *Bull. N.Y. Acad. Med.* 1939, 15, 3.
5. Mertz, E. T., Seegers, W. H., Smith, H. P. *Proc. Soc. exp Bio N.Y.* 1939, 42, 604.

but a true chemical combination. The name "thromboplastin" is therefore more accurate. HOWELL also noted in support of the plasma-deficiency theory some experiments by GOVAERTS and GRATIA[6] suggesting that hæmophilic platelets only exhibit exceptional stability in hæmophilic plasma, and that in normal plasma they behave normally. In other words, the platelets themselves are normal.

This theory, though satisfactory in many ways, still leaves important points unexplained. How is the plasma thromboplastin brought into action? How is intravascular clotting avoided? Are the platelets denied all part—as LENGGENHAGER[7] has suggested—in the clotting process? In some recently published experiments QUICK[8] attempts to answer these questions. He starts from the observation of BRINKHOUS[9] that in hæmophilic blood prothrombin is only slowly converted to thrombin. and that after such blood has clotted much prothrombin remains in the serum. QUICK uses the consumption of prothrombin, rather than the coagulation-time of the blood, as a measure of the completeness of the first coagulation reaction. He confirms the finding that hardly any prothrombin is consumed in the clotting of hæmophilic blood, whereas in normal blood 80–85% has been converted to thrombin an hour after clotting. But the prothrombin in hæmophilic blood can be converted to thrombin just as readily as that of normal blood if thromboplastin is added. Either normal plasma or thromboplastin prepared from rabbit brain tissue is effective; but of course plasma thromboplastin does not cause clotting in vivo, whereas tissue thromboplastin does. In order to explain this difference, QUICK again explored the rôle of the platelets. An extract of platelets only slightly accelerates the clotting-time of recalcified oxalated plasma. suggesting that the platelet extract provides no significant amount of thromboplastin. Now in a platelet-free plasma conversion of prothrombin to thrombin is very slow; nevertheless such plasma added to hæmophilic plasma will still restore the normal conversion of prothrombin; in other words thromboplastin is still present. If the hæmophilic plasma is freed as far as possible of platelets by rapid centrifuging, then the addition to this plasma of platelet-free normal plasma will not bring about the relatively complete conversion of prothrombin to thrombin. QUICK explains this by saying that the thromboplastin in normal plasma exists in an inactive form, "thromboplastinogen," which is activated by an enzyme released by the platelets on disintegration. He thus restores the platelets to an active part in blood coagulation; and the defect in hæmophilia is that when platelets disintegrate, and liberate their activator, there is insufficient thromboplastinogen in the plasma to allow formation of enough thromboplastin for significant conversion of prothrombin to thrombin. But the state of affairs is not quite so straightforward, for it has repeatedly been noted by direct observation of shed hæmophilic plasma that platelets do not in fact agglutinate or disintegrate properly. QUICK quotes the findings of PINNINGER and PRUNTY[10] that proper agglutination and disintegration of platelets depends on the formation of a minimal amount of thrombin. In normal blood some thrombin is formed when plasma comes into contact with a foreign surface, but this does not happen in hæmophilic blood.

All the newer evidence is thus in favour of the hypothesis that hæmophilia is a congenital deficiency of plasma thromboplastin, and that all the observed consequences—failure of the blood to clot, non-conversion of prothrombin to thrombin, and even the unusual stability of the platelets—can be traced to this deficiency. It is thus clear that in treatment the provision of thromboplastin is the only correct method. This can be done by transfusing with normal blood or plasma, or by giving intravenously the thromboplastin concentrate known as antihæmophilic globulin, and so restoring the plasma to normal, even if only temporarily. A good case can be made out for giving transfusions before any operative measure, such as tooth-extraction. Since thrombin is the main hæmostatic agent, it is a reasonable contention of QUICK's that the measure of conversion of prothrombin to thrombin gives a better estimate of the likelihood of bleeding than does the simple coagulation-time. For local use thrombin preparations are the first choice.

There are still points to be cleared up, such as the mechanism of the clotting of hæmophilic blood without consumption of prothrombin; and more evidence is needed about the interaction of platelets and thrombin. But much progress has been made, and this should be reflected in simplification of the treatment of hæmophilia.

Service Medicine

No army designed for defence can hope to be fully prepared for war. The date of the conflict, its form. its place, and its scope—these determine the army's constitution, and they can only be guessed. But the guess should take full account of past experience.

The testimony of civilian doctors who worked in or with the Services during the war carries weight because they were in a position to judge the effect of the Service setting on the exercise of their skill. In the first of his Croonian lectures to the Royal College of Physicians last week Dr. E. R. BOLAND offered some friendly criticism on these lines. As a consultant with Allied Force Headquarters, C.M.F., he was impressed with the wastage of medical man-power by the maintenance of separate medical departments for each of the Armed Forces. In voicing the claim for a unified medical service, which has been repeatedly made in these columns,[1] BOLAND admitted that each of the Services has particular problems and needs; but these. he holds, could be met through special formations within the main service. Unification is in fact being considered. but he is not sanguine about the outcome; and he urges that at least medical procedure and documentation should be standardised. In war-time each of the Services uses the medical organisation of the others as occasion demands: and those who served will recall the irritation and confusion caused. particularly at hospital level, by differences in procedure between the three Forces. There will be strong support, too, for BOLAND's further recommendation that the head of the medical services, whether at the War Office or in the field, should be granted a higher status, and that control of these services should pass from the Adjutant-General to a separate branch of the General Staff. In pressing for increased opportunities for training and advancement in clinical work, as opposed to administration, he underlined a defect long plain to doctors both in and outside the Services. The clinician's chances of achieving high rank, though greater than formerly, are still too few; and the effect is to impair efficiency. BOLAND finds it significant that on the whole the men who have brought most lustre to the R.A.M.C. are the pathologists and hygienists, for whom the road to promotion is wider than for others. Openings for advancement, however, must be paralleled by opportunities for training,[2] and BOLAND favours the establishment at home and abroad of Service hospitals which would receive both Service and civilian men and women.

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[6] Govaerts, P., Gratia, A. *Rev. belge Sci. méd.* 1931, 3, 689.
[7] Lenggenhager, K. *Schweiz. med. Wschr.* 1946, 76, 411.
[8] Quick, A. J. *Amer. J. med. Sci.* 1947, 214, 272.
[9] Brinkhous, K. M. *Ibid*, 1939, 198, 509.
[10] Pinninger, J. L., Prunty, F. T. G. *Brit. J. exp. Path.* 1946, 27, 200.

[1] See *Lancet*, 1946, i, 349; *Ibid*, 1946, ii, 421; *Ibid*, p. 533; *Ibid*, 1947, i, 373.

Under modern conditions even more important than increased clinical efficiency is preparation of the Regular skeleton to bear the weight of a vast and rapidly growing body in time of war. Besides being strong, this skeleton must be flexible, and the high level of efficiency demanded of its components cannot be achieved without special training which anticipates the strains of war. On mobilisation, almost at a moment's notice the lance-corporal clerk is appointed chief clerk, and the quartermaster-sergeant is commissioned as lieutenant-quartermaster. Everywhere officers and men are assigned duties a step beyond what they would normally consider the limit of their capacity. But war-time expansion does not involve only advancement in a familiar field; for the quartermaster may find himself a registrar administering a hospital, while his Q.M.S. becomes second-in-command of a medical stores. If this transition is to be smooth, and if, as BOLAND hopes, medical man-power is to be saved in war-time by greater employment of non-medical officers, then preparatory experience is essential. In the Army the possibility of war-time expansion is, of course, acknowledged by training officers and others for duty in higher ranks; but the late war showed that senior N.C.O.'s and non-medical officers in the R.A.M.C. had not been versed in the "shadow" posts which they came to occupy with the outbreak of war. Their training, to be effective, calls for boundless prevision, and similar prevision is required for the curtailment of the medical officer's round of clerical work. In war there is no short-term remedy for the shortage of doctors; and in 1939–45 the needs of the civilian population were barely served. BOLAND suggests that with clerical help the Services could have dispensed with at least one in fifteen of their medical officers; and many, with bitter memories of long hours spent with pen in hand, may retort that this estimate is too moderate. However this may be, experience shows that the saving cannot be effected after war has broken out, for then clerks are at a premium. The time to start saving is now, and a possible solution would be recruitment to the Territorial service of more women clerks who could perhaps be tempted by the prospect of free clerical training.

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[2] *Ibid.* 1945, ii, 531.

Annotations

CALCIFEROL FOR CHILBLAINS

CALCIFEROL (vitamin D_2) is one of a series of prod formed when ergosterol is irradiated.[1] Windaus et found that the photochemical reactions involved w

$$\text{Ergosterol}\rightarrow\text{Lumisterol}\rightarrow\text{Tachysterol}\rightarrow\text{Calciferol}\rightarrow$$

$$\text{Toxisterol}\begin{cases}\nearrow\text{Suprasterol 1}\\ \searrow\text{Suprasterol 2}\end{cases}$$

Its administration in large doses has had much atten since Dowling and Prosser Thomas[3] in Britain, Charpy[4] in France proved that when thus give usually relieves or cures cutaneous tuberculosis. (the work on tuberculosis had been accepted, it inevitable that other uses for the remedy would be sou and equally inevitable that it would be tried for chilbl

Reviewing an enormous and unsatisfactory literat Winner and Cooper-Willis[5] note that many Contine doctors regard chilblains as manifestations of tube losis—a view not accepted here. They recall Almroth Wright[6] described diminished coagulabilit the blood in chilblain subjects, thus providing the l for the popular treatment with calcium, but Hallam[7] did not confirm Wright's findings and Percival and Stewart[8] showed that in these subj *the blood-calcium level was consistently normal.* T. appears, in fact, to be little scientific justification giving calcium (with or without vitamin D) for prevention or cure of the lesions. Yet many compe doctors aver that they often do good, and it will req something a good deal more weighty than the ob dicta of consultants and scientists to convince these that their clinical findings are erroneous.

Phelan[9] states that Tecoz, Lavril, Pelicier, and ot have successfully used calciferol in the treatment chilblains by giving 15 mg. (600,000 I.U.) in a si dose, and reports that of 14 cases 8 were cured an *improved by the oral or hypodermic administratio* similar doses of the vitamin. In a paper which publish this week Dr. Anning reaches the contr conclusion that calciferol is ineffective. The controve may perhaps continue until we adopt the Ameri expedient of ensuring an equable temperature in houses. Adequate central-heating banishes chilbla and in many parts of Canada and the United St where the weather can be very cold the word "chilblai has almost vanished from the vocabulary.[10]

In large doses calciferol is a dangerous substan and its dangers have been repeatedly *emphasised.*[11 1] Like the sulphonamides, it can be used carelessly w success on many occasions, so that the unwise physic begins to feel "what fools these clever men be"; a then there is an unexpected tragedy. Though ma people can take large doses for short periods witho apparent harm, a few are intolerant from the fi rapidly developing nausea, headache, vomiting, a prostration. Moreover calciferol can cause a quiesc tuberculous focus in the lungs to flare into activity, a its use is contra-indicated in persons with arterial renal disease. When given for chilblains in doses of, s 50,000 I.U. daily for two or three weeks, it does n carry much risk, provided the patient is health

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1. Goodman, L., Gilman, A. Pharmacological Basis of Therapeut New York, 1941.
2. Quoted by Goodman and Gilman (ref. 1).
3. Dowling, G. B., Thomas, E. W. P. *Lancet*, 1946, i, 919.
4. Charpy, M. J. *Ibid*, p. 400.
5. Winner, A. L., Cooper-Willis, E. S. *Ibid*, 1946, ii, 663.
6. Wright, A. E. *Ibid*, 1897, i, 303.
7. Hallam, R. *Med. Pr.* 1930, 180, 408.
8. Percival, G. H., Stewart, C. P. *Brit. J. Derm.* 1924, 39, 1
9. Phelan, J. J. *Lancet*, 1947, i, 160.
10. Johnson, R. E. *Ibid*, p. 160.
11. Dowling, G. B. *Ibid*, 1946, i, 590.
12. Bicknell, F. *Ibid*, p. 717.

it is probable that no-one who is not suffering from vitamin-D deficiency can take large amounts for several weeks without suffering some degree of temporary or permanent renal damage. Hence it is inadvisable to give a patient a prescription for calciferol and allow him to use it at his own discretion. If he gives himself several courses of treatment during a succession of winters he may require advice for symptoms far more serious than those of chilblains.

A SOCIAL RESEARCH COUNCIL?

LAST Saturday the Association of Scientific Workers met in London to consider a memorandum on the furtherance of the social sciences. Just over a year ago the Clapham Committee, which had been asked "whether additional provision is necessary for research into social and economic questions," recommended[1] the establishment of (1) a standing interdepartmental Economic and Social Research Committee, and (2) a subcommittee of the University Grants Committee to advise and foster the social sciences within the universities. The association agrees with both suggestions, but also favours the proposal made two or three years ago for the formation of an official Social Research Council, comparable with the Medical Research Council and others concerned with the physical and biological sciences. The Clapham Committee turned this proposal down: (1) because the chief needs of the social sciences are the strengthening of staffs and provision for routine research; (2) because at the present stage of the social sciences an official body might promote crystallisation of spurious orthodoxies: and (3) because the best men must not be diverted from active research to the coördination of research. The association does not dispute that staffs are insufficient, but it holds that in the scramble for trained personnel no unofficial body could adjudicate between the claims of Government and other research establishments. It rebuts the Clapham Committee's contention that existing research councils have never assisted, and are not suited to assist, research carried out as a normal routine function. Many sciences, it says, have fallen into spurious orthodoxies, irrespective of control by official bodies, and the key to safety lies in untrammelled discussion among workers. The danger that the best men may be diverted to duties of coördination is overshadowed, in the association's view, by the need to prevent overlap and to fill the most important gaps.

The association thinks that the Clapham Committee greatly underestimated the importance of increasing social research; and it wants to see teams formed to examine the factual background of social problems and to collaborate with the people who have to carry out social policies.

DICOUMAROL IN CORONARY THROMBOSIS

INCREASING evidence of the value of anticoagulant therapy in the treatment of coronary thrombosis is forthcoming from America. A recent report from the Mayo Clinic is based on a series of 50 cases of acute myocardial infarction admitted to hospital within a few days of onset.[2] In 40 cases dicoumarol was used alone, while in the remainder heparin was also given. The plan of dosage was that recommended by Barker et al.,[3] wherein the aim is to keep the prothrombin level between 10% and 30% of normal. This was achieved by giving 300 mg. of dicoumarol on the first day, and 30 mg. on the second. On each succeeding day that the prothrombin level was greater than 20% of normal 200 mg. was given in a single dose. If the proth level was less than 20% of normal, no dicoumarol w given on that particular day. While an immediate anticoagulant effect is obtained with heparin, there is a lag of 36–48 hours with dicoumarol. The only complications encountered were 1 case of spontaneous hæmorrhage into the knee-joint, which cleared completely, and 1 mild epistaxis; and microscopic hæmaturia was noted in 1 case. The importance of daily estimations of the prothrombin-time is indicated by the finding that in 12 cases the prothrombin level fell to less than 10%, and in 6 of these the intravenous administration of menadione bisulphite was necessary, while in 6 cases the level rose to above 30% for a few days and during this time a second myocardial infarct occurred in one of the patients.

In assessing the results of treatment a series from the same clinic reported by Nay and Barnes[4] was used as a control: of 100 consecutive cases of acute myocardial infarction, in which anticoagulant therapy was not attempted, thrombo-embolic complications ensued in 37%. In contrast to this, in Parker and Barker's 50 cases, treated with anticoagulants, there were only 2 instances of secondary thrombo-embolic complications. Even more interesting is the observation that in the 2 cases that came to necropsy neither pulmonary emboli nor mural cardiac thrombi were present, whereas pulmonary emboli were found in 5, and mural thrombi in 7, of the 11 cases which came to necropsy in the control series. The mortality-rate was not appreciably different in the two series: 10% in the patients receiving anticoagulant therapy and 13% in the control series. The Mayo Clinic report supports the impression from earlier accounts that dicoumarol is useful in the treatment of myocardial infarction.

THE NATIONAL HEARING-AID

IN response to a request by the Ministry of Health, the Medical Research Council appointed, at the beginning of 1944, a committee on electro-acoustics[5] to design a single type of electrically operated hearing-aid, and to determine specifications for pure-tone audiometers. The committee's design for an aid has already been approved by the Ministry of Health; and under the National Health Service this is to be issued free of charge to those found, after examination at special centres, to be in need of it.

In a report published this week,[6] the committee describe the investigations which preceded their choice of prototypes. Intelligibility for speech was regarded as the real measure of success; and theoretical consideration indicated that maximum speech intelligibility need not necessarily result from matching the amplification provided by the aid to the hearing loss of the user. This view was confirmed by practical work at Manchester University and at the National Hospital, Queen Square, London; and it was concluded that, while effective amplification must be provided for all sounds within the $3^{1}/_{2}$-octave range needed for good reproduction of speech, this amplification should increase smoothly with increasing pitch over the lower part of the range, and then either continue to increase at a slower rate or remain constant for the middle and higher-pitched sounds. Piezo-electric microphones were considered to be the most suitable; and a crystal microphone with a metal diaphragm was recommended as being stable under varying atmospheric conditions and as giving the required performance. Small crystal insert receivers are given a word of special commendation, but the committee's aid is designed for both this type and the earcap type. The receiver with a flat earcap advocated in the report is a modification of a miniature unit developed originally for the Fighting Forces; it weighs about an ounce. The battery replacement cost, according to the report, is about 1·1*d.* per hour of actual use with the external receiver type of aid; while with the insert receiver aid the running cost is about 0·6*d.* per hour.

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[1] Report of the Committee on the Provision for Social and Economic Research. (Chairman: the late Sir John Clapham.) Cmd. 6868. H.M. Stationery Office. 1946.

[2] Parker, R. L., Barker, N. W. *Proc. Mayo Clin.* 1947, 22, 185.

[3] Barker, N. W., Cromer, H. E., Hurn, M., Waugh, J. M. *Surgery*, 1945, 17, 207.

[4] Nay, R. M., Barnes, A. R. *Amer. Heart J.* 1945, 30, 65.

[5] The members are: W. G. RADLEY, C.B.E., B.SC., PH.D., M.I.E.E., controller of research, Engineering Department, General Post Office (chairman); Sir LAWRENCE BRAGG, O.B.E., M.C., M.A., D.SC., F.R.S., Cavendish professor of experimental physics, University of Cambridge; R. S. DADSON, M.A., National Physical Laboratory; C. S. HALLPIKE, M.B., F.R.C.P., F.R.C.S., Medical Research Council; Colonel D. MCMILLAN, O.B.E., B.SC., A.M.I.E.E., Post Office Engineering Research Station; L. C. POCOCK, M.SC., A.M.I.E.E., Standard Telephones & Cables Ltd., and T. S. LITTLER, M.SC., PH.D., University of Manchester (secretary).

[6] Hearing Aids and Audiometers. *Spec. Rep. Ser. med. Res Coun., Lond.* no. 261. H.M. Stationery Office. 1947. Pp. 71. *1s. 3d.*

FUMIGATION WITH METHYL BROMIDE

METHYL bromide is mainly used as a refrigerant, as a fire-extinguisher, and as a methylating agent. Recently it has become popular as a fumigant of ships, warehouses, and other premises to control insect pests, and in this connexion fatalities and poisonings have been reported. The chemical being highly toxic to human beings as well as to insects, the Home Office has issued a useful pamphlet[1] on the risks and precautionary measures.

Methyl bromide boils at a low temperature (4·5°C) and it is therefore usually distributed under slight pressure in cylinders containing the liquid, contact with which may cause severe blistering. Clothing contaminated with the liquid should instantly be removed because a high concentration of gas can arise from it. The gas is heavier than air and has greater powers of penetration through walls and sealing material than other common fumigants such as hydrogen cyanide or ethylene oxide. Deaths have resulted both from exposure to high concentrations of the gas and also from continued exposure to low concentrations. The gas is insidious because it has only a faint odour and also because the symptoms after exposure may be delayed for a day or more. The symptoms of poisoning are mainly referable to the nervous system and include headache, dizziness, diplopia, vomiting, and lethargy, with later convulsions and collapse.

The precautions taken should be at least as rigid as those taken when HCN is used, and it is recommended that a pungent lacrimatory gas such as chloropicrin (5%) should be added to methyl bromide so that its presence in the air can easily be detected.

In addition, all apparatus used for the delivery of methyl bromide gas into rooms should be tested before being used in practical operations. The halide detector lamp is recommended for detecting low concentrations of methyl bromide in the atmosphere. These lamps vary in sensitivity to the gas, some types probably not being sensitive enough to detect 17 parts per million of methyl bromide, the figure given as the upper limit of safe concentration. Advice on suitable types can be obtained from the director of the Pest Infestation Laboratory at Slough. It is desirable that the people carrying out fumigation operations should be given practical demonstrations of the performance of the lamps in known concentrations of methyl bromide. The lamps should be used to detect leaks at the time of fumigation, during the exposure period, and before a clearance certificate is issued.

Each operator or other person entering the space under fumigation must be provided with a protective apparatus of proved efficiency against methyl bromide. In high concentrations of the gas a self-contained (oxygen-generating) or a positive-pressure air-breathing apparatus is necessary, but in low concentrations canister respirators of an appropriate type may be used.

Before fumigation, rooms and other spaces should be sealed with an impervious material which should be of an even higher standard than for fumigations by HCN or ethylene oxide. All rooms, compartments, and all ways with walls common to those of the area to fumigated should be evacuated, and warning noti should be affixed. Fumigation staffs should consist of least two persons, and one of them at least should be attendance throughout the fumigation and airing peri Both persons should have adequate colour-vision a should be trained in the use of protective and detec apparatus and in first-aid. The dose of methyl brom should be injected from cylinders placed outside fumigation area. Airing should be conducted and c cluded before the entry of any person other than operators, who should work in pairs and wear th respirators until tests show that the concentration of is a safe one. At this stage a preliminary certificate clearance is to be issued and the fumigated area clo again for a period to guard against the risk of danger quantities of gas being subsequently evolved fr absorbent material. A final certificate of cleara should not be given until thorough tests have been ma Ships should never be fumigated until all persons h been taken off, and special care should be taken to the air in the holds before a clearance certificate is issu

TELEVISION IN SURGICAL OPERATIONS

LAST February surgical operations were televi for the first time at the Johns Hopkins Hospital, Ba more.[1] One camera was fixed 4½ ft. above the operati table, and the image was so sharp that the numbers a dollar bill placed on the table could be clearly read the projection screens. A second camera was instal in the gallery to give a general view of the theat and the surgeon provided a running commentary throu a microphone. The experiment is said to have prov conclusively that demonstration of operations to group of more than three or four is best effected television, even though, for the moment, reproduct is only in black-and-white.

BRITAIN'S HEALTH

THE results of the medical examination of men a women called to the colours in 1939–46 are summaris in a report from the Ministry of Labour and Natio Service.[2] It will be remembered that grades I and were deemed fit for military service, while grades and IV were not. Grade IIa consisted of those w though fit for service, were handicapped by defects visual acuity or by deformity of the feet. Of t 3,240,906 youths under 21, 91% fell into grades I and and 9% into grades III and IV; and of the age-gro 21–25 (1,085,908 men) 85% were fit and 15% un At ages 26–35 (2,045,480 men) the percentages we 79 and 21, and at 36–45 (805,480 men) they were and 35. One should be careful in using these figures a basis for conclusions about the health of the count as a whole, for the scale is heavily weighted at t younger end, where one would expect to find the majori in good health. It is perhaps encouraging, however, th of the relatively few men over the age of 36 the proporti adjudged fit for service was as high as 65%.

Women examined numbered 550,486—less than tenth of the total of men. They were volunteers the sense that they preferred joining the Forces entering industry, and as might therefore be expect they had a rather better health bill than the me though the difference in the proportions accepted a those refused was not great. Among the men e trouble and foot trouble were about equally prevalen but in the women deformities of the feet were not nearly five times as often as defects in visual acuity.

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[1] Fumigation with Methyl Bromide. H.M. Stationery Office. June, 1947. Pp. 8. 2*d.*

[1] Trimble, I. R., Reese, F. M. *Bull. Johns Hopk. Hosp.* 1947, 81 186.

[2] Report of the Ministry for 1939–46. Cmd. 7225. H.M. Stationery Office. Pp. 394. 7*s.*

THAT COLD VIRUS AGAIN

The common-cold virus, against which hostilities were for some years suspended, is now the object of a determined search by several groups of laboratory workers in different countries. At Harvard Hospital, Salisbury, the scientific staff of the Medical Research Council is making investigations with the aid of human volunteers.[1] Another group of workers, this time in the University of Texas, has recently recorded observations likewise based on that susceptible animal—the human volunteer. Pollard and Caplovitz[2] inoculated nasal washings from several cases of common cold into the chorio-allantoic cavity of 7-day-old developing chick embryos and passaged the allantoic fluids at 4-day intervals in further embryos by the same route. Bacterial growth was checked by addition of penicillin to the garglings, and the allantoic fluids were tested periodically by intranasal inoculation into human volunteers. The first "strain" gave negative results with materials from the [illegible] passage, the second was infectious for 2 passages but gave mild or negative reactions with 3rd or later passages, and the third "strain" (Spill) induced coryza-like symptoms after 9, 11, and 12 consecutive chick passages. The authors noted that the later passages of this strain induced milder symptoms than the earlier ones: indeed the reactions recorded with 11th and 12th passage material seemed to have scarcely any resemblance to the common cold, though five of the six individuals inoculated with material of the 9th passage might claim that their symptoms of stuffy nose, sneezing, and nasal discharge were equivalent to the natural disease. This part of the report seems convincing enough, though the absence of control volunteers makes the significance of the conclusions uncertain. We are next told, however, that six volunteers were inoculated intranasally with allantoic fluid of the Spill strain in its 9th chick passage, and that five developed colds. These five, together with five new volunteers, were inoculated subcutaneously, at weekly intervals, with two doses of infectious allantoic fluid of the same strain; and one week after the second inoculation they and two control uninoculated subjects received an "immunity test" by the intranasal inoculation of a Seitz-filtered pool of nasal washings from naturally acquired cases of common cold. Only the two "controls" developed symptoms.

Pollard and Caplovitz rightly refrain from commenting on their observations or from making any deductions; for an experiment as important as this might be must certainly be supported by better evidence before it can be accepted at its face value. No virus worker would place much reliance on an observation based on results in ten immunised animals compared with those in two controls. Moreover, the material used for the immunity test was a Seitz filtrate, though the previous cultivation work was based on unfiltered garglings. Finally, of the two control subjects, only one had symptoms severe enough to be classed as a cold for more than twenty-four hours. Much as one would like to welcome these experiments as promising better times in the prevention of the common cold, it cannot be said that they do more than indicate a repetition with more stringent controls. Perhaps it would be as well to add: "Over to you, Salisbury!"

MEETING THE MINISTER

On Dec. 2 and 3 the Negotiating Committee will meet the Minister of Health and hear his response to the argued case they have placed before him. The profession has not yet been informed of the arguments advanced on its behalf, though Dr. Dain has reiterated his opinion that an amending Act is necessary. In difficult circumstances we trust that both sides will nevertheless aim at a reconciliation of views, enabling doctors to enter the service with a degree of good will which has not yet been encouraged to develop.

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[1] See *Lancet*, 1946, i, 680.

[2] Pollard, M., Caplovitz, C. D. *Science*, 1947, 106, 243.

To

SIR CHARLES SHERRINGTON, O.M.

On his 90th birthday, November 27, 1947

Man shapes the patterns of his mind
As models of the world without,
But to himself he long was blind
And found no answer to his doubt.

You first within the brain discerned
The meaning of its ordered ways,
And man of his own nature learned
To thread the labyrinthine maze.

Poet, you saw the vibrant nerves
Subdued to metrical control,
By which each one in rhythm serves
The guiding purpose of the whole.

These lines a homelier homage bring
Than all the laurels time has brought—
A wish as birthday offering
From world-wide children of your thought.

May age, which clouds the body's eye,
Still leave undimmed the inward sight
That reads life's secret poetry
With timeless wonder and delight!

W. RUSSELL BRAIN

Special Articles

GERIATRIC REHABILITATION *

L. Z. Cosin
F.R.C.S.
MEDICAL SUPERINTENDENT, ORSETT LODGE HOSPITAL,
ESSEX COUNTY COUNCIL

Nurses to attend the aged sick are very scarce, and likely to remain so. It therefore behoves us to diminish the number of aged patients needing much nursing care. This can be achieved by geriatric rehabilitation.

For many patients over sixty years of age progressive deterioration is inevitable, but others may be expected to improve—rapidly or slowly. With an active approach to the problem more and more can receive treatment in bed preparatory to the restoration of assisted or unassisted ambulation. By including this method of treatment at Orsett Lodge Hospital during a recent two-year period, we found that of 780 patients over the age of sixty 45% were rehabilitated, while 35% died and only 10% remained bedfast after six months. (Transfers and more recent admissions account for the remainder.)

AIMS AND METHODS

During the late war we saw how the group encouragement provided in rehabilitation units of the Armed Forces and industry accelerated individual recovery. In these units there were facilities for occupational therapy, physiotherapy, and remedial exercises, with a cheerful and happy environment. This solution suggests that every patient of whatever age and disease needs a hopeful environment for his well-being or recovery; without it convalescence is delayed or deferred indefinitely.

The chief factor in geriatric rehabilitation is the visible improvement of other patients similarly incapacitated, while efficient medical and surgical care are very important subsidiaries. The rehabilitation of our aged patients must begin on admission to hospital, so that the physical and mental deterioration induced by long-continued recumbency does not take place. Tacit acceptance of a poor prognosis—not always accurate—has been responsible for many avoidable deaths from pulmonary embolism in the bedfast.

The aim of geriatric rehabilitation is to restore the maximum degree of painless movement by means of active physiotherapy and remedial exercises, resulting in the maximum of personal independence; we can no longer be satisfied with merely removing pain. If the patient reaches a stage of weight-bearing, assisted or unassisted, so much the better. Utilising simple physiotherapy for a sufficiently long period the proportion of patients who are bedfast can be dramatically reduced. No longer do we label our patients irremediable, incurable, chronic, or senile; instead we make a prognosis based both on diagnosis and on an assessment of the particular person's physical capacities. We recognise that deterioration inevitably accompanies certain irremediable diseases, and that a time must come when the patient will have to remain in bed throughout the 24 hours; but it is surprising how long this point can be postponed. Many patients with advanced malignant disease are happier and complain less of pain when encouraged to get out of bed for a part of each day to help themselves. With few exceptions, in which I include the final inevitable deterioration, the inability of a permanently bedfast patient to feed and generally look after himself is to be regarded as a medical reproach.

FOUR CATEGORIES

Using this method we can recognise that most aged patients fall into certain broad categories.

1. Those patients who cannot provide their own feec and residential arrangements but are otherwise fully con tent to attend to their own needs. They feed themsel dress themselves, and help about the ward. They req no night attention, are continent, and are capable completing light occupational tasks.

2. The frail ambulant who is in need of increased per of rest but can usually cope for himself. (I am adop the provocative attitude of including among these a l proportion of cases of senile dementia and cerebral arte sclerosis; for the criterion of bedfastness should be a suffic physical disability—a condition not obvious in most of t patients.)

These two categories need minimal nursing supervi and extra physical help, for which ward orderlies car employed. Many of those in the first group should no in an institution at all if they could be provided suitable homes.

3. The physically disabled bedfast patient who fe himself, generally looks after himself, and may be cont This class of patient does not make a very heavy call u our nursing service, and we should aim at reabling bedfast patients into this group.

4. The physically disabled permanently bedfast pat who needs every nursing care and attention. In my opi the number in this category, swollen by previous med neglect, should and could be much reduced.

A good medical, surgical, and nursing service al will not reduce the proportion of bedfast patients t minimum unless it embodies the principle of geria rehabilitation. In these days of rapid social change revolt against recumbency must be made successful.

DYNAMICS OF THE CEREBROSPINAL FLU

In a Honyman Gillespie lecture in Edinburgh Nov. 13, Dr. E. A. Carmichael (London) said that original conception of Munro and Kelly of the cran vertebral system as a closed and rigid container h had to be modified in the light of the observed fluct tions in pressure of the cerebrospinal fluid (C.S. Dr. Carmichael and his associates had thought it necess to examine the parts played by the various elastic possibly elastic structures—the arteries, veins, and cap laries, and the meninges—in allowing fluctuations pressure.

Manometric observations were made, mainly on su jects in the erect posture. In most the pressure in t lumbar sac was equal to the distance between the nee and the cisterna magna. Jugular compression did n affect the increase in the lumbar pressure on chan *from recumbent to erect posture.* Thus distension *cranial veins is not itself the factor producing the lumb* pressure in the erect position. *Abdominal compressi* increases the lumbar fluid-pressure in the recumbe subject, but if the subject is raised to the erect postu abdominal compression does not cause further increa The lumbar fluid-pressure appears to reflect the pressu in the lumbar veins. In a patient with a spinal tumo in the lower cervical region which caused comple subarachnoid block, abdominal compression with t subject in the recumbent posture raised the pressu in the lumbar sac to the level of the cistern—i.e., abo the level of the block—and the same change was foun in the erect posture. In other words the patient reacte in the same way as the normal subject. The hypothes that the rise in lumbar pressure in the erect posture associated with dural collapse in the cervical region an distension in the lumbar region was thus refuted; t rise is rather to be attributed to change in pressure the lumbar veins.

A series of studies was made of the spontaneou fluctuations in intracranial pressure in patients wit craniotomy openings. Pressure fluctuations take plac with respiration; little change is recorded durin inspiration, but towards the end of expiration intracrani pressure first rises and then falls. With the subject i bent posture jugular and arm venous pressures during deep inspiration, but in the erect posture the jugular venous pressure does not vary even with deep respiration, and it is evident that variations in intrathoracic pressure during respiration in the erect subject are not transmitted back to the intracranial veins and are not the cause of the fluctuations in intracranial pressure.

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* Read before the International Conference of Physicians in London, September, 1947.

In the erect posture both intraventricular pressure and cisternal pressure show a rise during deep inspiration, followed by a pronounced and prolonged fall with expiration. It can be shown that, when a spinal tumour wholly blocks communication between the cistern and the lumbar sac, the respiratory fluctuations in the pressures in these two parts are in opposite directions and must be due to different mechanisms. The changes in the lumbar sac appeared to be in response to pressure changes in the abdominal and lumbar veins, but the pressure changes in the cistern could not be related to changes in intracranial venous pressure. During deep inspiration the systolic arterial pressure rises, and it then falls during expiration. Similarly and at the same time, the cisternal pressure rises and falls. If the subject is agitated by the posing of a difficult arithmetical problem the systolic blood-pressure and the cisternal pressure rise. It was shown that these changes are not due to vasoconstriction or vasodilatation of the cerebral vessels. Furthermore, changes in blood oxygen and carbon-dioxide content, although altering C.S.F. pressure, do not do so rapidly enough to be involved in the fluctuations associated with respiration.

Dr. Carmichael concluded that with the subject in the erect position the fluctuations in the cisternal fluid pressure are due to fluctuations in arterial blood-pressure; but fluctuations in pressure in the lumbar sac are due to changes in venous pressure as influenced by respiration. He contended that the dura is not an elastic structure and that the rise in lumbar pressure with the assumption of the erect posture is not due to cervical dural collapse and lumbar dural distension.

GENERAL MEDICAL COUNCIL

PRESIDENT'S ADDRESS

THE 172nd session opened last Tuesday with an address from the president, Sir HERBERT EASON. He spoke with regret of the death of three former members of the council: Dr. Cecil Wall, Sir Norman Bennett, and Mr. J. A. Woods. The King's *Birthday Honours* list in June included the names of Prof. J. A. Gunn and Dr. Wilfred Fish, who were appointed C.B.E. Professor Gunn, as an original member since 1928, and chairman since 1939, of the British Pharmacopœia Commission, has long been associated with the council. Dr. Fish has been a member since 1942. The president also congratulated Mr. J. J. Robertson, M.P., a Crown nominee to the council, on his appointment as joint parliamentary under-secretary to the Secretary of State for Scotland. He introduced Mr. C. P. Harvey as legal assessor at the new session.

The President has received from the Home Office a letter calling attention to the number of thefts of dangerous drugs and other poisons from cars left unattended by doctors. The Home Office has pointed out that time would be saved and the public safety increased if all doctors would remove poisons from their cars when unattended, or alternatively would lock their cars.

The President regretted that owing to pressure of other business there is no certain prospect of a draft Bill amending the Medical Acts being considered during the present Parliamentary session. "The short draft Bill submitted by the Council to the Government included not only important provisions based on the recommendations of the Goodenough Committee, but also provisions giving practitioners a right of appeal to the Courts against penal erasure from the Medical Register; giving the Council statutory power, which they do not at present possess, to restore the names of practitioners to the Register after penal erasure; enabling the Council to take evidence on oath and to compel the attendances of witnesses by subpœna; and enlarging the direct representation of the profession on the Council. The enactment of such provisions as these would, I believe, commend itself alike to the profession and to the public."

The council then proceeded to the consideration of other business.

LONDON'S VOLUNTARY HOSPITALS

THE practical interest of the public in the voluntary hospitals of London is again well demonstrated in the Annual Statistical Summary for 1946 just published by King Edward's Hospital Fund for London. The total maintenance income (including all free legacies) of the 161 hospitals reached a record figure of £7,360,000. In addition, £195,000 was given for endowment, and £287,000 for building and equipment, making a grand total of £7,842,000—£363,000 more than in 1945 and £2,117,000 more than in 1938, the last complete pre-war year. Income from subscriptions and donations rose by £91,000 to £1,364,000 (1938, £1,091,000): patients' contributions by £224,000 to £1,343,000 (1938, £1,021,000); and contributory schemes by £49,000 to £961,000 (1938, £689,000). Legacies produced £551,000, compared with £676,000 in 1945 and £595,000 in 1938.

Ordinary income amounted to £6,809,000, which was obtained from the following sources: public authorities (25·7%); subscriptions and donations (20%); contributory schemes (14·1%); investment property (10·9%); ordinary patients (9·9%); pay patients (9·8%); central funds (5·2%); fees, &c. (4·4%). Maintenance expenditure amounted to £8,666,000—£2,193,000 more than in 1945 and £3,717,000 more than in 1938—leaving a deficit (after the inclusion of free legacies) of £1,306,000. In 1945 there was a surplus of £410,000, and in 1938 a deficit of £140,000.

A considerable increase over the previous year in the volume of work is recorded. The number of new inpatients rose from 237,000 in 1945 to 266,000 in 1946 (1938, 308,000), and the average number of beds occupied daily from 12,881 to 13,713 (1938, 16,211). New outpatients totalled 1,858,000, compared with 1,635,000 in 1945 and 2,042,000 in 1938, and outpatient attendances 8,925,000, compared with 7,872,000 in 1945 and 10,343,000 in 1938. The summary reflects the enormous increase in the cost of hospital service. In 1938 the average cost of a bed was £233 per annum: in 1946 it was £490, an increase of 110·3%. The average cost per 1000 outpatient attendances in 1938 was £110: in 1946 it was £209, an increase of 90%.

SHORT FORM OF BIRTH CERTIFICATE

A NEW and short form of birth certificate, showing only name and surname, sex, date of birth, and (where possible) place of birth, will be obtainable at a cost of 6*d*. from Monday, Dec. 15. In the case of births registered in England and Wales application may be made to the superintendent registrar of the district in which the birth took place, or to the General Register Office, Somerset House, London, W.C.2. A short certificate may also be obtained from the local registrar at the time of registration of the birth. Where births have been registered abroad and entered in Army, Air Force, Consular, or Marine records deposited with the Registrar-General, certificates may be had only from the General Register Office; and this applies also to certificates relating to adopted children.

The effect of the new certificate is to remove the disability imposed on those of illegitimate birth, who have hitherto had to submit the full certificate, with details of parentage, when required to establish the date of their birth.

In England Now

A Running Commentary by Peripatetic Correspondents

NOTHING could have been less peripatetic than your correspondent between 6.30 A.M. and 12.30 P.M. on Thursday last week as he stood immobile with his solar plexus pressed against an iron rail and his other sides compressed by a solid mass of humanity.

I had come, more or less straight, from a decidedly wet celebration at "the local" of my ship's defeat at both soccer and darts by a sister ship, and had arrived at about 12.30 A.M., when things were still quite lively in the Strand and Square. One could sustain life at the coffee-stalls or on chestnuts, tomatoes, grapes, or even ice-cream. Already the kerbs were strewn with forms in every conceivable attitude of uncomfortable sleep. An enterprising merchant was selling bits of sacking at a bob to keep the chill off. I relied on newspaper as an antihæmorrhoidal and antirheumatic, and between rather frequent visits to the station dozed fitfully with my back against a stanchion.

Between 2 A.M. and 5 things were comparatively quiet, but long before dawn there was a mysterious, incessant twittering, and, as the sky paled, flocks of innumerable starlings swept across the Square, from which the pigeons were entirely ousted by the gradually increasing crowds.

At about 6 I took up my stance on the rails. In my immediate neighbourhood were a most voluble Irishwoman, who persistently cajoled the police with sweets, two ladies in heavy furs, another suffering from a thick leather jacket and pediculosis capitis fulminans, and several children with impetigo very contagiosum.

With the ever-increasing pressure came the faintings, fast and furious. Of the two methods of extrication the Compression Method seemed better on the whole than the Elevation. In the former the patient was forcibly squeezed through the seemingly incompressible mass, and, after being bent double under the rails, emerged flushed and breathless. In the latter they were somehow hoisted above the heads of the crowd and rolled by hand to the St. John's men at the perimeter. I imagine their chief concern was the loss of valuables.

In my vicinity at any rate the B.R.C. was conspicuous by its absence, but St. John had never a dull moment and had even to rope in Scouts as stretcher-bearers.

Maybe this pandemic of syncope was partly due to faulty nutrition. Could it possibly have been aggravated by the surprisingly lugubrious music of the Royal Marine band, whose only inspiration was "O, what a beautiful morning!"? Occasionally one had the impression that the diagnosis might have been feigning rather than fainting, so rapid was recovery when a better view seemed probable. Other opportunists were certainly not slow to take advantage of any disturbance of the mass.

But on the whole the temperament was of a warm-hearted, give-and-take character. I saw a tallish man try really hard to comply with the persistent entreaties from the rear to make himself smaller. I, even I, compressed myself to such an extent as almost to suffer the lamentable fate of Judas I.

As to the pageant itself, in the oft-reiterated phrase of some girls behind me, "It was luv-ly—ain't she luv-ly." And was it worth the effort? Yes, a thousand times yes. But what psychological motivation prompted one to the experience or was satisfied thereby 'twould not be easy to say.

* * *

I have just had my first experience of general practice, and the humour and friendliness of my Welsh patients struck me very much. I found there were two predominant reactions to my arrival: the curious majority said, "Let's go and see what he's like; maybe *he'll* cure us," whereas the cautious minority said, "Let's wait till our own doctor comes back." The strongest supporter of class II was the wifey who asked for Dr. X at the surgery and on being told about me announced with feeling, "I'm not seeing *him*"; and neither she did. I was surprised at the range of cases one sees in a short time—medical, surgical, eyes, ears, noses, throats, fevers, sick kids, and the biggest group of all, those up for "sustifickits."

The people appeared to appreciate being chatted with, about this, that, and the others, and if a G.P. had sufficient time I'm sure he would get much interest out of hi patients. There was the lad who, on being asked about hi work, replied, "I don't work, I'm a student." And th old lady, almost totally bedridden for eleven years, wh got some excitement whenever Dr. X's holiday came roun by thinking to herself "I wonder what this year's locu will be like." I felt sorry for the man who had waite patiently for an hour in the crowded surgery when hi wife phoned: "Is my husband there? Send him hom immediately, and tell him to bring the cat with him. So off he went, with the cat still tucked inside his jacke I don't know whether I was to have seen him or the ca And lastly the doctor's small son. He was very worrie about how I was to go on my rounds, for I had no ca of my own. He asked the dispenser, tearfully, with hi slight lisp: "The new doctor ithn't going to uthe my ne thcooter, ith he?"

* * *

For many years I have done what little I could t curb the use of abbreviations by my students. But had no idea how far this pernicious habit had sprea until I encountered Cecily C. Matthews's new *Dictionar of Abbreviations*.

I am still awaiting the reactions of my friends amon the officials of the Royal Society of Medicine (not to b confused with Regimental Sergeant-Major, Royal Schoo of Mines, or Royal Scottish Museum) to the entr "F.R.S.M. Fellow of the Royal Society of Medicine." Fellows of the Royal Society will be interested to lear that their distinguished initials are claimed by "Federa Reserve System (U.S.A.); Friends' Relief Service Fuel Research Station," but they may be somewha disconcerted by the entry "F.R.S. (L.) Fellow of th Royal Society (London)." Their distinguished presiden shares honours with "Performing Right Society; Proportional Representation Society; Protestant Reformation Society." I had always recognised that my M.D was a stock abbreviation in the psychiatric world, but I had never appreciated its many other uses: "Managing Director; Market Day; 'Medicine and Duty'; Memorandum of Deposit; Mess Deck; Message-Dropping (R.A.F.); Metropolitan District (rly.); Metrology Department; Middle Dutch; Military District; Mine Depot (nav.); Monroe Doctrine"! The B.M.'s among us score heavily compared with the mere M.B.'s: "*balneum marinum* (sea-water bath—med.); Beach Master (R.A.F.); *Beata Maria* (Blessed Mary); *Beatæ Memoriæ* (of blessed memory—Lat.); bench mark; bending moment; Bishop and Martyr; breech mechanism; Brigade Major; British Museum; Bronze Medallist; Brotherhood Movement; Burgomaster." Our friends in Tavistock Square are *paired off* with the Bobbin Makers' Association and British Marine Aircraft.

I had never realised what a wonderful collection of letters our dental colleagues could possess, and I give them full marks for modestly abbreviating their L.D.S. R.C.S. Eng. to a mere L.D.S. For length combined with variety, however, they must be prepared to give way to some of the trade-unions. What, for instance, could be better than Z.C.R.G.S.M.W.S.? which I leave you to interpret for yourself.

* * *

These new-fangled terminologies are very confusing to old fogies like ourselves. The other day I asked the resident anæsthetist what he had given the patient. "Seven point five millilitres of soluble thiopentone" was the astounding answer. I suppose he saw I was startled, for he asked me if I didn't approve of the International System of Weights and Measures. "If you mean the metric system, why not say so?" I retorted peevishly. He was horrified—"But, sir, the metre is a hopeless standard of length, it is supposed to be a certain fraction of the circumference of the earth as calculated. . . ." "Oh, all right," I said wearily, "let it go."

It rather looks as if our light literature will read like this in future.

> That night matters came to a head at the inn. Tom, who had drunk not wisely but too well, spied Dave as he sauntered up to the bar. Heaving his 15 stone (95·45 kg.) off his stool, he flung a pint (568 ml.) of liquor into his face with every ounce (28·4 g.) of his strength. Spluttering with rage and beer, Dave grabbed his heavy riding whip and roared: "You scoundrel, I'll thrash you within an inch (2·54 cm.) of your life."

Letters to the Editor

PENICILLIN IN CASES OF CLOSED ORAL SEPSIS

SIR,—In the past, many teeth have been sacrificed on the altar of systemic disease. Though of recent years more balanced judgments have prevailed. I feel that, with the use of penicillin, the pendulum is tending to swing too far in the opposite direction.

Penicillin does not influence the growth of organisms in areas which have little or no blood-supply. The cases recorded below show that penicillin-sensitive organisms can thrive in a dead tooth pulp, or even in an apical dental granuloma, while a patient is undergoing treatment with massive doses of systemic penicillin. The importance of this in diseases such as bacterial endocarditis and metastatic osteomyelitis cannot be too strongly emphasised. It seems in many such cases that relapse after penicillin therapy is due to "a bacterial leak" from an infected tooth, or possibly tonsil, after the penicillin has been discontinued.

CASE 1.—*Osteomyelitis of rib.* Blood-culture gave *Staph. aureus.* Penicillin 2,700,000 units was given in twenty seven days. Then two infected incisor teeth were removed. Cultures from the pulp of one of these teeth yielded a fully penicillin-sensitive *Staph. aureus.*

CASE 2.—*Septic arthritis of both sacro-iliac joints, with multiple sinus formation.* Three years' history. Cultures yielded a staphylococcus and a hæmolytic streptococcus. The patient was given penicillin 48,000,000 units, in three courses over a period of twelve months. A dead upper molar was extracted during the last week of the third course. Organisms cultured from the pulp yielded a staphylococcus and a *Strep. viridans*, both of them penicillin-sensitive. A week later the sinuses were dry. Six months later they are still dry and the patient is back at work.

CASE 3.—*Bacterial endocarditis.* Penicillin 25,000,000 units was given in twenty-five days. Then an upper premolar was extracted. Cultures from the centre of an apical granuloma yielded a scanty growth of *Strep. viridans*, fully penicillin-sensitive.

The penicillin was continued for a further seven days, and the patient was discharged from hospital shortly afterwards. Four months later she is awaiting admission to hospital for further dental extractions, for cosmetic reasons, under a penicillin "umbrella."

CASE 4.—*Dental abscess*, which had been treated with penicillin 100,000 units a day for three days. When I first saw the patient on extraction, cultures of the pus were sterile, but those from the tooth pulp yielded *Strep. viridans* and a few *Staph. albus* and diphtheroids, all fully penicillin-sensitive. The diphtheroids were probably contaminants.

Numbers of "sterile" reports were received on cultures from teeth roots in similar cases. Not a few of these were probably due to excessive zeal in the flaming of the outer surface of granulomata before dividing them for culturing from their centre. The proportion of sterile findings and positive ones was about equally divided.

I wish to thank Dr. E. T. Baker-Bates, Dr. C. Astley Clarke, and Mr. J. P. Heron, who have given me every assistance with their cases; and Dr. W. K. Taylor for his invaluable bacteriological work.

Liverpool. JOHN W. HALLAM.

TUBOCURARINE IN TETANUS

SIR,—The use of curare in the treatment of tetanus was suggested nearly seventy years ago, and in 1934 and 1935 Cole[1] reported cases in which it was employed with some success. The difficulty encountered at that time was the lack of standardised preparations, and therefore the establishment of a suitable dose was impossible. Further, there is only a narrow margin between the dose which will be effective in controlling the spasms and that which will affect seriously the respiratory muscles.

The introduction of tubocurarine and the wide experience gained in its use as an adjuvant to anæsthesia prompted its administration in a recent case. Although this case ultimately proved fatal, the injections of tubocurarine produced symptomatic improvement and were much appreciated by the patient, who repeatedly asked for them when the next dose was due.

The opportunities of treating tetanus in London are rare, and the purpose of this note is to indicate the dose of tubocurarine which was found satisfactory. The patient was a woman, aged 38, having an estimated body-weight of 7 st. Tubocurarine chloride 7·5 mg. by intramuscular injection every two hours produced maximum muscular relaxation without having any apparent effect on the respiratory mechanism.

Other features of interest in this case were that the patient had cut her finger in a hop-field one week before admission to hospital. The first symptoms, observed four days after the cut, were nasal regurgitation of fluid and difficulty in swallowing when having lunch. These symptoms were predominant throughout the duration of the condition, and the accumulation of saliva and mucous secretion in the mouth and pharynx was very troublesome. On the other hand, although there was considerable muscular rigidity, the spasms were relatively mild and infrequent and caused little evidence of exhaustion.

During the eleven days the patient survived in hospital it was impossible to administer any fluid or nourishment by mouth, but in spite of this there was no dehydration. The general condition was well maintained by the continuous intravenous infusion (great saphenous vein above the internal malleolus) of 5% glucose in $^{1}/_{5}$th normal saline, 2500 ml. every 24 hours. Heparin 10 mg. was added to each 1000 ml. Large doses of tetanus antitoxin (total 573,000 units) and penicillin (total 1,710,000 units) were administered in the drip infusion. As a sedative, paraldehyde 6 ml. every four hours was given by intramuscular injection.

The fatal termination of this case was attributed to the fact that early bulbar symptoms developed before treatment with antitoxin could be instituted, and in spite of the control of spasms by paraldehyde and tubocurarine.

Mile End Hospital, London, E.1. W. GORDON SEARS.

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[1] Cole, L. B. *Lancet*, 1934, ii. 475; *Quart. J. Med.* 1935, 4, 300.

THE HEALTH OF AUTHORS

SIR,—Mr. Harold Nicolson's lecture before the Royal College of Physicians, published in your Nov. 15 issue, was delightful reading—such indeed as one expects from Mr. Nicolson. Its appearance in your journal, too, is a welcome relief from considerations of erythroblastosis fœtalis et al.

In his cogent and lucid exposition of the Nature of Inspiration, Mr. Nicolson defines inspiration as "a sudden flash or fusion between sense and fantasy, between reason and imagination," but he is careful to explain and to illustrate that it may vary in intensity and in degree, producing a physical revolt or reaction on the more acutely sensitive temperaments. And such a temperament is, as he says, most often found in the favoured, or afflicted, of the Muses.

Now Mr. Nicolson confines himself, and rightly, to his own chosen sphere—the art of letters. But so far as his lecture might be taken to imply by omission that the divine afflatus and oneiromancy are the peculiar prerogatives of poets and writers only, I would suggest that precisely similar phenomena have been experienced by mathematicians and scientists *pur sang*—and not without comparable stupendous flowering of result.

Two years ago—up to which time I had myself so wrong a notion—I came across Father Henry Gill's (S.J.) book *Fact and Fiction in Modern Science.* His very first chapter is headed Flashes of Genius, and two mathematicians of international repute, Sir William Rowan Hamilton and Henri Poincaré, are adduced to speak in the matter for themselves. While Father Gill is content to cite two examplars of inspiration, and dream, whose best work was due to such external influence, it may be presumed that they were no exceptions to what after all may be an inherent susceptibility in what some call "the human organism."

It is a commonplace that the practice of medicine is an art rather than a science; but a gathering of our profession may be said to approximate more nearly to a convention of scientists than a galaxy prostrate at the feet of the Muse. It is as scientists that we may find a little reflection salutary, even if Mr. Nicolson refrained from asking whether we needed an apologia ourselves. At any rate with him we can be that much more on the side of the angels; and free to some extent at least from Sinclair Lewis's gibe when he called us "the men of measured merriment."

Finally, in renewing my thanks to Mr. Nicolson for a most enlivening and invigorating paper, may I take leave to ask him why he omitted mention of Christopher Smart and his *Song to David*? Sublime poetry and stark lunacy here go merrily hand in hand for dozens and dozens of stanzas. Selene and Euterpe may it seems bed together in silver peace. Perhaps someone else will tell us whether Urania sleeps alone? Or her fledglings the psychiatrist and the psychologist?

Cheslyn Hay, Staffordshire. L. Dillon Malone.

TREATMENT OF BOILS

Sir,—With reference to the letters by Dr. Valentine (Nov. 15) and Dr. Foot (Nov. 1), I wish to say that I have been using systemic penicillin for boils and carbuncles for over nine months.

During the last six weeks alone I have dealt with seventeen patients suffering from boils and carbuncles situated in various parts of the body. The treatment consisted of one injection into the vastus lateralis muscle of 10 ml. oil-wax suspension of penicillin calcium, 125,000 units per ml. They all invariably noticed subsidence of pain and swelling, commencing between four and six hours after the injection, and all were discharged fit for work within 7 days. The reactions were pain radiating down the limb during the injection, followed sometimes by a severe fainting bout. There was stiffness of the injected limb, which lasted up to a fortnight. On the 8th day, in two cases, a gross swelling of the thigh and an itchy erythematous rash developed, which subsided in 3–4 days without any treatment. A few months ago I had two cases of urticarial reaction spreading over the whole body, following penicillin injection; one case I described in The Lancet of July 5.

One word about local treatment—none. A piece of dry lint or gauze was placed on the discharging area, if any. This was replaced daily if the discharge was profuse. If there was a large sloughing area, a few grains of crystals of urea were sprinkled on daily.

Many of these patients had had previous attacks of boils and carbuncles, usually lasting for weeks, or even months, and these patients were all impressed by the dramatic improvement following the penicillin injection, and also by the absence of local treatment.

During the last six months I have noticed an enormous increase of boils and carbuncles. Next to the common cold, furunculosis has been the most prevalent disease amongst the patients attending my surgery, and I wonder whether other practitioners have had an experience similar to mine.

Sheffield. I. Gottlieb.

TYPHOID CARRIERS TREATED WITH PENICILLIN AND SULPHATHIAZOLE

Sir,—We have previously reported observations on two typhoid carriers treated with penicillin and sulphathiazole.[1] A further report is now presented to cover the first year after treatment.

Frequent specimens of early-morning urine and specimens of almost all stools passed were cultured for *Bact. typhosum* on Wilson and Blair's medium, and on desoxycholate agar plates inoculated direct and after incubating a portion of each specimen in selenite F. Many specimens of fæces and urine were also inoculated direct on MacConkey plates. Some 2500 culture plates were examined in each case. *Bact. typhosum* has not been isolated from any specimen. Agglutinations of sera against *Bact. typhosum* H, O, and Vi have also been carried out in both cases.

Case 1.—This patient died on Nov. 1, 1946, from intercurrent pneumonia followed by lung abscess. Post mortem, there was no evidence in the organs of continuing typhoid infection. Bacteriological cultures from gut, biliary and urinary tracts, spleen, and lungs did not yield *Bact. typhosum.* From the first negative cultures during the course of treatment to death 198 days later, 534 samples from 137 stools and 27 samples of 136 urines did not yield the organism.

Results of serum agglutinations may be summarised follows: *Bact. typhosum* H, initial titre 1/125 declined to 1/4 on Sept. 27, 1946; *Bact. typhosum* O, initial titre 1/50 rose to maximum of 1/320 and then fell to 1/160 on Sept. 27, 1946 *Bact. typhosum* Vi was further reduced from the lowest valu previously reported (+ in 1/5 dilution) to a trace (±) 1/5 dilution on Sept. 27, 1946.

Case 2.—This patient is alive and well, her physical con dition being substantially better than before her treatmen During the year following the first negative cultures in th course of treatment bacteriological examination of 491 sampl from 146 stools and of 314 samples from 157 urines did n yield *Bact. typhosum.*

Results of serum agglutinations: *Bact. typhosum* initial titre 1/500 fell to 1/80 on June 12, 1947; *Bact. typhosu* O, initial titre 1/50 rose to 1/160 and then declined to 1/20 June 12, 1947; *Bact. typhosum* Vi, titre has remained roughl as previously reported, + being found in 1/5 dilution June 12, 1947.

These two patients, both of whom before treatme freely excreted *Bact. typhosum* in their fæces, are regarde as having been cured of the typhoid carrier state, much reliance being placed on the change in agglutinatio titres as on the negative bacteriological findings. Th increase in *Bact. typhosum* O agglutination titre followin the decrease in Vi titre observed in these cases h also been observed by one of us (W. W. K.) in one oth typhoid carrier successfully treated with penicilli sulphathiazole. It is hoped to report and discuss the and other agglutination results in detail on some futu occasion.

We wish to thank Dr. L. C. Cook, medical superintende of Bexley Hospital, for his continued interest; and the sta responsible for nursing the patients and our technical sta in particular Mr. L. W. Tuttle and Mr. C. R. Wright, for the painstaking coöperation.

C. H. Comerford

Bexley (L.C.C.) Hospital. H. Richmond.*

Epsom Pathological Laboratory (London County Mental Health Services). W. W. Kay.

DEPERSONALISATION SYNDROME

Sir,—I read with interest and concern Dr. Shorvon' article in your issue of Nov. 15.

The cases he quotes in favour of prefrontal leucotom seem to me not at all convincing. The price his patient have paid for their symptomatic improvement seems be the loss of an essential human quality. For exampl of case 4, a woman of 26, he reports: "Six weeks aft the operation her father died suddenly, and she took in an off-hand manner and was 'surprised.' Her attitud to her brother had completely altered, and she gets o well with him. 'I don't worry about him. I don' worry about anything any more.'"

As regards this brother she had experienced a dee unresolved conflict, for which she received "eight electr convulsion shocks and a course of modified insulin an narcosis without success." Later she "derived no benef from psychotherapy, vasodilators, vitamins, amphet amine, epanutin, and narco-analysis."

Psychotherapy is often quoted in similar vein "psychotherapy and a course of deep insulin had littl effect."

Psychotherapy is not yet another method of treatment; it is an essential orientation. Depersonalisatio is a defensive reaction against an unbearable conflict— problems of the patient's life which he is unable to face The question is whether we are willing and able to fac them with him, or not. This would remain *no less* tru even if we know the pathology of the depersonalisatio syndrome on the somatic level, which we do not. W cannot talk about this condition as attacks whic descend upon the patient—e.g., "he felt ill and weak afte the onset of unreality," and "the 2 who had recovered immediately had had previous clear-cut attacks o unreality," and so on.

It is true that these cases are difficult to treat successfully, and that even for prolonged psycho-analytic treatment the prognosis is not too good. The psychoanalysis of such cases is a matter for specially skilled and qualified analysts and requires daily sessions over a period of three years; and it could therefore in any case be obtained only by a very few. If the necessary skill for analysis is present only in a few, this must be even more true for the general run of psychiatrists. Abbreviated treatment is even more difficult and demands even more experience, and it is still too time-consuming under our present conditions. My sympathy goes out to Dr. Shorvon and all harassed colleagues in their race against time and the overwhelming claims of this type of patient, particularly if they appear in numbers. It may well be that such emergency treatment as he reports is inevitable under present conditions. Moreover, it might be the only practicable measure for selected cases with a very unfavourable prognosis.

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[1] Comerford, C. H., Richmond, H., Kay, W. W. *Lancet*, 1946, ii, 343.

* Dr. Richmond has died since this communication was sent to us.—Ed. L.

But this does not alter the fact that these patients are often exceedingly good material for psychological approach, if they are approachable at all; and all those I have seen have proved to be so. Dr. Shorvon's own beautiful quotations bear this out, but one can well believe him that "they have the utmost difficulty in describing their symptoms and in being understood."

In view of all this it seems to me of particular interest to mention that I have seen several such cases in group analysis, and all of them did exceedingly well, and that on genuine grounds. They regained their feelings, developed constructive insight, were able to see and face their problems, and showed self-progressive powers of integration. In short, they left treatment in a better state than they would have been likely to achieve if they had never developed "attacks of unreality." In at least three cases the depersonalisation syndrome was the outstanding feature, but it should be mentioned that they were all above average intelligence. Two of them stayed with their respective groups for under a year and had only one individual session per week in addition to the group session. One such case, diagnosed as "essential" or "primary" depersonalisation, attends at the present moment at St. Bartholomew's Hospital a weekly group analytic session—together with seven other patients—and she progresses very well indeed, without any supplementary individual session.

These results are due in no small degree to the superior power of the group situation, if it can be harnessed to the service of therapy.

London, W.1. S. H. FOULKES.

STREPTOMYCIN IN INFLUENZAL MENINGITIS

SIR,—Dr. Cormac's letter in your issue of Nov. 8 necessitates a reply from me.

In a disease such as influenzal meningitis in infancy, which had a mortality of almost 100% before specific therapy was introduced, an obvious clinical response to massive doses of penicillin in 3 cases, despite the bacteriological reports that the organisms were insensitive to penicillin, was suggestive that this "insensitivity" was merely relative to the concentration of penicillin used in the test. This was, in fact, confirmed by Dr. E. N. Allott in our last 2 cases, when he found the bacteria to be markedly sensitive to higher concentrations of penicillin; but the strains varied widely in their sensitivity. The clinical study of 4 cases of influenzal meningitis was therefore sufficient to prove that this disease will respond to massive doses of penicillin and that the view originally held, that *H. influenzæ* was insensitive to penicillin, was incorrect. Later, when reviewing the literature, I came across the paper by Gordon and Zinnemann,[1] who had made a similar observation in their laboratory on examination of eighteen different strains of *H. influenzæ*. They found all these to be inhibited by high concentrations of penicillin, but in very varying degree. Our clinical experience and independent conclusion was thus entirely in keeping with their bacteriological findings.

I therefore maintain that the use of streptomycin in the treatment of influenzal meningitis does not appear to be justified at present, owing to its limited supply, until penicillin in massive dosage has at first been tried and found ineffective. It seems to me to be more reasonable to confine its use at present to the treatment of as many cases as possible of the hæmatogenous forms of tuberculosis and for a clinical trial against infections due to other sulphonamide-resistant and penicillin-resistant bacteria.

St. Alfege's Hospital, London, S.E.10. B. GOTTLIEB.

HORMONE TREATMENT BY IMPLANTING PELLETS

SIR,—In reviewing at the moment my cases of Simmonds's disease for detailed reporting, I am reminded that the general statement I made in my letter published on Oct. 11 applied to the more usual use of testosterone in eunuchoid cases, and I should be obliged if you would permit me to add that testosterone tablet implantations in Simmonds's disease, in women, are less well tolerated than in eunuchoidism, and not infrequently are extruded from the site of implantation.

It would appear, therefore, that not only the physicochemical properties of the implanted hormone but also the reactivity of the tissues are important; and that this reactivity is, at least to some extent, dependent upon the particular endocrinopathy.

London, W.1. S. L. SIMPSON.

RENAL CIRCULATION

SIR,—In their letter (Nov. 22) Dr. Trueta and Dr. Barclay state that at the meeting of the Physiological Society on June 15, 1946, they—

> "exhibited photographs and photomicrographs of kidneys that 'incline us to believe that the by-passing is effected, at least in part, via the vasa recta.' We demonstrated vasa recta with their loops *arising from glomeruli at the base of the cortex and at that time, called them basal glomeruli.*"

It is most unfortunate that this last sentence, especially that part which I have italicised, or its equivalent, was omitted first from their report in the proceedings of the Physiological Society (*J. Physiol.* 1946, 105, 27) and secondly from their preliminary communication in THE LANCET (1946, ii, 237). Permit me to quote the pertinent paragraphs from these communications. In the first-mentioned they concluded:

> "Evidence . . . shows that short-circuiting of various degree can occur in the kidney and . . . that it can be accompanied by functional cortical ischæmia. This suggests a much greater degree of short-circuiting than could be accounted for by anatomical evidence so far published, and our investigations, though they are not yet complete, incline us to believe that the by-passing is effected, at least in part, via the vasa recta."

In the second they wrote:

> "The above observations show that as a result of appropriate nerve-stimulation the blood may be diverted wholly or partly from the cortex and short-circuited through medullary (especially subcortical) blood-channels. The large potential capacity of these by-passing channels enables them to transmit the whole of the renal blood inflow whenever the supply to the cortex is diverted and the latter thereby rendered ischæmic.
>
> "To locate the by-passing channels histologically, particulate material was injected in place of dyes, and was found to fill vasa recta and their loops, as well as a subcortical plexus of vessels (also of very much more than capillary calibre) suggesting that these two sets of vessels were the anatomical channels involved. These histological studies are being continued."

In brief, at first they considered the by-passing to be "effected, at least in part, via the vasa recta," and later they demonstrated "vasa recta and their loops, as well as a subcortical plexus of vessels . . . suggesting that these two sets of vessels were the anatomical channels involved."

There are two kinds of vasa recta in the kidney—vasa recta vera and vasa recta spuria. There is no indication which was thought to be concerned. Furthermore, in a matter affecting a short-circuit in the circulation in the kidney, a thing so fundamental as the glomerular or non-glomerular aspect of the short-circuit is omitted; indeed neither the word "glomerulus" nor "glomeruli" appear in either communication. However it was stated that the investigations were not yet completed and that the histological studies were being continued.

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[1] Gordon, M., Zinnemann, K. *Brit. med. J.* 1945, ii, 795.

Such then was the declared stage when my letter appeared (*Lancet*, 1946, ii, 436) in which, following argument and examples, anatomical, physiological, and pathological, and finally mathematical, I stated:

> "... from a consideration of the hæmodynamics of the renal circulation in the rabbit, it is possible to suggest that the degree and character of the altered renal circulation, as outlined by Dr. Trueta and his colleagues, and the 'redistribution of blood-flow within the kidney' discussed by Professor Maegraith (p. 213), could be maintained by a circulation via the deep (subcortical or juxtamedullary) glomeruli only, the cortex being relatively avascular, by vasoconstriction of the peripheral arterial vessels in response to afferent (sciatic or other) stimuli."

My experimental work was first reported to, and demonstrated at, a meeting of the Pathological Society of Great Britain and Ireland held in July, 1941. This was the year in which I described the *juxtamedullary glomeruli*, as I mentioned at the recent meeting of the Royal Society of Medicine.

North Middlesex County Hospital,
London, N.18.

J. F. HEGGIE.

SPIRILLUM MINUS TREATMENT OF G.P.I.

SIR,—The records of the experiment in therapy described here were lost during the Malayan campaign. Dr. W. R. Logan, who investigated the cases clinically and made elaborate records of the progress of the patients, lost his life at the Alexandra Hospital when it was stormed by Japanese troops a few days before the surrender of Singapore. His death was a serious loss to psychiatry in the Far East and to many friends who appreciated his ability and personal charm.

General paralysis of the insane (G.P.I.) is by no means rare in the Federated Malay States. In 1940–41, when this investigation was carried out, we identified more than 100 cases by clinical and serological criteria in a population of rather more than 3000 patients at the Central Mental Hospital. The patients included Chinese, Malays, and Indians, the first-named predominating. Syphilis is prevalent among the Chinese and Indians in the cities and towns, but relatively uncommon among the riverine Malays, who are however subject to yaws.

The treatment of G.P.I. in Malaya presented two special difficulties. First, patients seldom reached the Central Mental Hospital until they were in an advanced state of physical and mental deterioration. Most of them had received no antisyphilitic therapy since they were first infected. About half the cases in this experiment were beyond treatment and could only be regarded as forlorn hopes. Only a few patients, who had held clerical appointments in the government service or had been in some other position that brought them to hospital relatively early in the course of their complaint, could be considered in any way promising material. The second difficulty was that most of the patients had had malaria, wherefore the possibility of successful malaria therapy was remote. Further, in the presence of anopheline mosquitoes capable of transmitting malaria there was the risk that other patients might be accidentally infected. Since we had no apparatus for inducing hyperpyrexia, we had to try some other method.

Sporadic cases of rat-bite fever (sodoku) are not uncommon in Malaya. During the latter part of 1940 one of us (J. O. P.) saw 2 cases. In the first case, though cultural methods failed, the infection was easily established in guineapigs. Two experimental infections made with guineapig blood did not give rise to an adequate fever, and this strain, though maintained for a while, was not used again. In the second case the infection was again established in guineapigs. Since this strain appeared to be more virulent it was used for the remainder of the experimental infections of cases of G.P.I.

No difficulty was encountered in maintaining the strains by passage in guineapigs. The animals were inoculated by the intraperitoneal route and about a week later became feverish, their eyes bloodshot, and their appetites poor. For one or two months their condition would slowly deteriorate, with loss of weight and an increasingly mangy appearance. They were then killed, and blood or liver emulsion from them was introduced into other animals. In this way an ample supply of blood for the inoculation of patients was always available.

Spirillum minus was repeatedly identified in the blood and livers of the guineapigs, both in wet and in stained preparations. The morphology of the two strains appeared to be identical, the spirilla varying greatly in length, number of spirals, and number of flagella.

Forty experimental human infections had been completed when war ended the investigation. In the first 6 cases guineapig blood was introduced into the skin of the arm. In 2 of these cases the development of fever was accompanied by serious ulceration spreading from the point of inoculation. In one case the ulcer spread until its diameter was about 6 in. and it had involved the underlying muscle to such a degree that the humerus was almost exposed. The healing that followed treatment with neoarsphenamine was remarkable, the scarring being far less than one could have believed possible. This method of introducing the infection was abandoned, and in the remaining cases a few drops of guineapig blood or liver emulsion diluted ten times with saline were injected into the antecubital vein with a fine needle, every effort being made not to allow any of the infected fluid to contaminate the skin or subcutaneous tissue. In a few cases a small ulcer developed at the site of inoculation, but in the remainder there was little or no local reaction.

The incubation period was seven or eight days in nearly all cases. A few patients had premonitory symptoms on the fifth or sixth day, and in a few others the onset of symptoms was delayed by a few days. Only in two or three cases was there a failure to infect at the first attempt, and in none of these was a second inoculation unsuccessful. The fever produced was satisfactory in a high proportion of cases, reaching a peak of 104°F, usually on the third evening after the onset of symptoms. In 2 cases a maximal temperature of 106°F was achieved. The fever was accompanied by considerable prostration, and the condition of some of the patients at this time was rather alarming because of their collapsed state and rapid and almost imperceptible pulse; yet no patient died during the febrile phase, and the recovery in their condition as the fever passed was remarkable. The temperature never remained high for more than 72 hours.

Most of the patients showed the typical dusky maculo-papular rash during the fever, and in a few instances a hot bath revived the rash a day or two after it had apparently cleared. In those cases in which a leucocyte-count was made during fever there was a well-marked neutrophil leucocytosis and often an increased proportion of eosinophils. The second bout of fever usually occurred about the sixth day after the first and was usually as severe as the first and in a few instances more severe. In most cases the third cycle showed a falling off, and it was our usual practice to terminate the infection the day before the fourth or fifth rise of temperature was expected. In some cases one injection of neoarsphenamine 0·5 g. was insufficient, and in a week or so the temperature rose again. Three injections of 0·5 g. at intervals of five days never failed to terminate the infection.

Albuminuria was usually present during the pyrexial period, often with casts, and it tended to persist, though diminishing, even after the fever had been terminated. Four patients died in uræmia, and the tendency to a progressive nephritis was a serious drawback to this method of fever therapy. In view of the fact that *Treponema pallidum*, *Sp. minus*, and arsenic all have a predilection for inflicting renal damage it is perhaps surprising that there were not more deaths from uræmia. It is most unfortunate that the organs removed post mortem from these cases and preserved were never studied.

In about 6 cases spectacular improvement in the mental condition was judged by Dr. Logan to have taken place. One previously intelligent Malay, who had held a position of some responsibility in the government service and, though in an early stage of dementia at the time of treatment, was in good physical condition, apparently recovered completely; but his subsequent history is unknown. Some other patients also showed evidence of improvement. For about half the patients, many too advanced to be a fair test of the treatment, the only result was a further decline in their physical condition.

J. ORDE POYNTON.

Adelaide.

THE CHRONIC PARETIC

SIR,—I was interested in Dr. Kirman's article last week as I had made a similar investigation on a small series of 15 cases, the result of which was summarised in the *Annual Report of the Board of Control* (1933, part 2, p. 71). I then found that the minimum interval after malaria therapy for the establishment of negative reactions in the cerebrospinal fluid (C.S.F.) was eleven months. The Meinicke clarification reaction appeared to be the most sensitive and remained positive in the blood and C.S.F., but I have no doubt this too became negative after the lapse of more years. It is interesting to note that in Dr. Kirman's series nearly 50% showed negative blood Wassermann reactions. In my series they all became negative, but of course the number was too small for accurate statistical conclusions.

The important point to stress—I do not think this is too well known by general practitioners—is that the attainment of negative reactions by no means guarantees a cure.

Park Prewett Mental Hospital,
Basingstoke.

I. ATKIN
Medical Superintendent.

TEACHING APPOINTMENTS

SIR,—Possibly I am attaching too much importance to the unsigned letter on the above subject which appeared last week; but the accusation that medical schools have appointed unsuitable persons to professorships of medicine is a serious one which appears to call for an answer, however irresponsible the accuser.

"M.R.C.P." tells us that he knows "from personal experience and the opinions of interested friends" that the teaching of medicine in many schools is of poor quality, and he apparently attributes this in large part to the appointment of "research-workers" to chairs of medicine. I cannot claim personal knowledge of all medical schools in the country; but I greatly doubt the validity of the writer's adjective, "many." And I can say, from personal acquaintance with numerous teachers in several schools and from knowledge of their students' opinion of them, that it is to those very teachers against whom "M.R.C.P." directs his criticism that I myself should turn to find examples of most of those qualities which he rightly implies to be desirable in those responsible for medical teaching—"knowledge of general medicine, clinical experience, ability to lecture, enthusiasm, and flare [sic] for teaching." "M.R.C.P." tells us that research-workers are often bad clinicians and poor teachers. That may be; but it is not from among this group, however valuable their contribution to society, that medical schools make their appointments to chairs of medicine.

The University, Sheffield.

J. G. McCRIE
Dean, Faculty of Medicine.

SIR,—Your anonymous correspondent "M.R.C.P." has done well in directing public attention to the disastrous consequences of appointing teachers who cannot teach. Yet in the name of progress this policy has been adopted by our universities. In so doing, they have abandoned the first principles of education as known to western civilisation. To make this clear beyond a peradventure, I would quote a profound thinker and the *greatest prose writer of the last century*, Cardinal Newman[1]:

> "... when the Church founds a University, she is not cherishing *talent, genius, or knowledge, for their own sake*, but for the sake of her children, with a view to their spiritual welfare and their religious influence and usefulness, with the object of training them to fill their respective posts in life better, and of making them more intelligent, capable, active members of society.
>
> "Nor can it justly be said that in thus acting she sacrifices Science, and, under a pretext of fulfilling the duties of her mission, perverts a University to ends not its own, as soon as it is taken into account that there are other institutions far more suited to act as instruments of stimulating philosophical enquiry, and extending the boundaries of our knowledge, than a University. Such, for instance, are the literary and scientific 'Academies' which are so celebrated in Italy and France, and which have frequently been connected with Universities, as committees, or, as it were, congregations or delegacies subordinate to them. . . . The nature of the case and the history of philosophy combine to recommend to us this division of intellectual labour between Academies and Universities. To discover and to teach are distinct functions; they are also distinct gifts, and are not commonly found united in the same person."

After Newman's stately prose I have nothing to add, save to answer in advance him who shall say: "You can't put the clock back." If your clock is wrong you put it right; and if you are approaching the brink of a precipice you go back—or perish.

London, W.8.

HALLIDAY SUTHERLAND.

FLARE-UP IN THE GLASS HOUSE?

SIR,—The feast of jugged hair (Nov. 22, p. 773) was suitably illumined by the weird glow of the flare in the next letter with its "flare for teaching." Spelling apart, we do not speak of "flair," but only of "*a* flair," and it means a keen nose for scenting the not very obvious; it does not mean a gift in general.

Prof. Pomfret Kilner himself is not quite blameless, for he writes "inapt": this is rightly condemned as a bastard blend of "inept" and "unapt."

AQUARIUS.

HANDKERCHIEFS IMPREGNATED WITH DISINFECTANT

SIR,—The possibilities of treating textiles with disinfectants are of considerable general interest.

We have recently had an opportunity to try out a relatively simple method of impregnation applicable to both cotton and woollen fabrics and capable of large-scale adaptation. In this method the fabric is first immersed in a solution of a soluble disinfectant—such as phenyl mercuric acetate—and this is followed by treatment with a solution capable of precipitating the disinfectant within the textile fibres in a relatively insoluble form: in the example quoted, sodium bromide would precipitate phenyl mercuric bromide.

A disinfectant suitable for this purpose would have to possess a very high phenol coefficient, as relatively little would diffuse out, and it would also require to be non-toxic. Preliminary tests with phenyl mercuric bromide have shown that a practical disinfecting action can be obtained on cotton handkerchiefs, but further investigation is necessary to exclude the possibility of toxic or irritant effects of this substance.

Although this method is still in the experimental stage, we thought its inherent possibilities and its potential importance in public health of sufficient interest to bring to your notice.

National Institute for Medical Research
Common Cold Research Unit, Harvard
Hospital, Salisbury, Wilts.

K. DUMBELL
J. E. LOVELOCK
E. J. LOWBURY.

Public Health

Tuberculosis in Lancashire

IN 1946 only 3·7% of all deaths in Lancashire were due to tuberculosis. Notifications of new pulmonary cases, which apart from a check in 1945 have risen steadily since 1939, reached 1663, the highest figure since 1927; men between 20 and 34 were chiefly affected, and Dr. F. S. Bradbury,[1] the central consultant tuberculosis officer, mentions the probable influence of war service in some of these cases. Deaths from pulmonary tuberculosis, though more numerous than in 1945, were lower than in the previous year. The chief rise in both sexes was in the age-group 35–44, whose responsibilities are most likely to interfere with treatment. In the age-group 15–24 there was a 13% reduction in pulmonary deaths: and this is attributed to earlier discovery of cases, in which mass radiography is held to have played a leading part. Notifications of non-pulmonary cases were only 104, the lowest figure on record, and 16% less than in 1945. Deaths from non-pulmonary tuberculosis also reached a new low record.

Sanatoriums were hampered by lack of staff, but have somehow managed to keep their beds full and their waiting-lists fairly short. In September, 1947, the completed and that the histological studies were being continued.

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[1] The Idea of a University. 3rd ed. London. 1873. Pp. 12 and 13.

[1] Report of the Tuberculosis Services of the Lancashire County Council. 1946. Preston: T. Snape. 1947. Pp. 42.

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The incubation period was seven or eight days in nearly a cases. A few patients had premonitory symptoms on th fifth or sixth day, and in a few others the onset of symptom was delayed by a few days. Only in two or three cases wa there a failure to infect at the first attempt, and in non of these was a second inoculation unsuccessful. The feve produced was satisfactory in a high proportion of case reaching a peak of 104°F, usually on the third evening afte the onset of symptoms. In 2 cases a maximal temperatur of 106°F was achieved. The fever was accompanied b considerable prostration, and the condition of some of th patients at this time was rather alarming because of thei collapsed state and rapid and almost imperceptible pulse yet no patient died during the febrile phase, and the recover in their condition as the fever passed was remarkable. Th temperature never remained high for more than 72 hours.

Most of the patients showed the typical dusky macul papular rash during the fever, and in a few instances a h bath revived the rash a day or two after it had apparentl cleared. In those cases in which a leucocyte-count was mad during fever there was a well-marked neutrophil leucocytos and often an increased proportion of eosinophils. The secon bout of fever usually occurred about the sixth day after th first and was usually as severe as the first and in a few instance more severe. In most cases the third cycle showed a fallin off, and it was our usual practice to terminate the infectio the day before the fourth or fifth rise of temperature wa expected. In some cases one injection of neoarsphenamin 0·5 g. was insufficient, and in a week or so the temperatur rose again. Three injections of 0·5 g. at intervals of five day never failed to terminate the infection.

Albuminuria was usually present during the pyrexi period, often with casts, and it tended to persist, thoug diminishing, even after the fever had been terminated. Fou patients died in uræmia, and the tendency to a progressiv nephritis was a serious drawback to this method of feve therapy. In view of the fact that *Treponema pallidum* *Sp. minus*, and arsenic all have a predilection for inflictin renal damage it is perhaps surprising that there were not mor deaths from uræmia. It is most unfortunate that the organ removed post mortem from these cases and preserved wer never studied.

In about 6 cases spectacular improvement in the ment condition was judged by Dr. Logan to have taken plac One previously intelligent Malay, who had held a positio of some responsibility in the government service and though in an early stage of dementia at the time o treatment, was in good physical condition, apparentl recovered completely ; but his subsequent history i unknown. Some other patients also showed evidenc of improvement. For about half the patients, many to advanced to be a fair test of the treatment, the onl result was a further decline in their physical condition

J. ORDE POYNTON.

Adelaide.

aggravated the condition and therefore the claim failed. There was a similar result in the case of X.Y. v. Minister of Pensions last December. A soldier on embarkation leave had refused his fiancée's request that he should marry her before he went overseas. On return to his unit he received a letter from her in which she broke off the engagement. Four days later he shot himself in a military camp with a Service revolver. The pensions appeal tribunal held his death not to be attributable to war service. A military court of inquiry found that he met his death by his own hand while the balance of his mind was disturbed. The Ministry contended that the issue to him of a revolver and ammunition was an occasion for him to turn them against himself but not the cause of his so doing. The judge ruled that the cause was his trouble with his fiancée, a factor entirely extrinsic and unrelated to his Service life. These two cases perhaps were easier to decide, but even here the popular verdict might have gone the other way.

Parliament

FROM THE PRESS GALLERY

More about Our Calories

In the House of Commons on Nov. 17, on the motion for the adjournment, Mr. E. P. SMITH pointed out that the British Medical Association's report on nutrition in 1933 demanded 3400 calories as the minimum daily diet to maintain working efficiency, and for people doing heavy work 3500–4000 calories were thought desirable. In his brave but dispiriting speech on the Address, Sir Stafford Cripps had assessed our average daily intake of calories at 2870 which he admitted would have to be reduced. Mr. Smith thought that that reduction had probably taken place since the introduction of potato rationing. The Ministry of Food had stated that from rationed and pointed foodstuffs our daily average intake was 1530 calories, but very few of us, Mr. Smith believed, could in fact obtain the other 1340 calories from unrationed foodstuffs. The system of calculation used by the Ministry of Food had the essential demerit of over-simplicity. It consisted in dividing the amount of unrationed food consumed in the country—itself a notional figure—by the number of the population: and it included all meals consumed in restaurants and canteens, so that a poor old couple in a country village, who had no access to restaurants or canteens, were estimated to be receiving 2870 calories daily when, in fact, their intake was probably less than 2000 calories. A man in gaol, Mr. Smith concluded, received 2923–2955 calories daily, and a woman 2541–2605 calories: a boy in a borstal institution 2987–3051, and a girl 2521–2585 calories daily. In a dietetic sense, therefore, it paid nowadays to be an inhabitant of a gaol.

Dr. EDITH SUMMERSKILL, parliamentary secretary to the Ministry of Food, reminded Mr. Smith that the method of taking the amount of food consumed and dividing it by the population was devised not by her department but by the Scientific Committee set up during the Coalition Government by the Combined Food Board. Whatever its shortcomings it was a valuable means of comparing one period with another and the conditions prevailing in one period with those prevailing in another.

She also thought that Mr. Smith did not appreciate that the consumption levels quoted by her department were generally the average because they were asked for the average. There were of course wide variations in individual intake; when it was suggested the average calorie intake of the whole population was 2800, that included the intake of 900 calories by an infant and 4500 by a heavy worker. In quoting the number of calories consumed by a prisoner Mr. Smith was taking a specific number of calories consumed by one man doing a particular job. That could not be justly compared with an average for the whole country. Again, the average intake of an adult man might vary from 2500 calories to 4700 calories daily, and of an adult woman from 2000 to 3000 calories. The nursing mother, for instance, got 3000 calories a day. One hot meal a day, Dr. Summerskill added, equalled 900 calories, and one snack 500 calories, and when the average of a family was taken, it must be remembered that where the wage-earner was feeding outside the food he would otherwise consume was consumed by the family.

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Mr. E. G. WILLIS asked the Minister of Labour if he would consider the establishment of an Industrial Rehabilitation Centre in Scotland.—Mr. NESS EDWARDS replied: It is hoped to open early in 1948 two industrial rehabilitation units attached to Government training centres in Scotland: one at Hillington, Glasgow, and one at Granton, Edinburgh. Each unit will have accommodation on a non-residential basis for 100 persons.

Government Grants for Cancer Research

Mr. P. FREEMAN asked the Lord President of the Council what was the total grant made from Government funds for the purpose of cancer research in each of the last 20 years; and in what form it was proposed to continue these grants after the Public Health Act, 1947, came into operation.—Mr. H. MORRISON replied: Expenditure on cancer research from the parliamentary grant-in-aid for the work of the Medical Research Council has been at the rate of approximately £6000 per annum during the greater part of the period mentioned, this provision being of course supplementary to the much larger expenditure from the endowments and other resources of unofficial organisations concerned with this particular field. Expenditure from the same source in the financial year 1946–47 was about £12,000, and expenditure in the present financial year is estimated at £31,000 (including £14,000 of a non-recurrent nature). Substantial additional expenditure in the future has been approved for research on applications of atomic physics to the treatment of cancer. These activities are not affected by the National Health Service Act, 1946.

Mr. SOMERVILLE HASTINGS: Is the sum mentioned sufficient for the legitimate demands of those who are engaged in this research?—Mr. MORRISON: I think so, in the light of the useful activities which can be conducted. Considerable sums are being spent elsewhere in the field of research under the auspices of the Ministry of Health, hospitals, and what not. I do not think there is any difficulty about money, but I would be prepared to consider further developments if useful avenues of research were available to us.

Future of Private Homes

Mr. H. CHANNON asked the Minister of Health whether, in drawing up detailed plans for the National Health Service, he could give an assurance that everything would be done to assist and encourage the provision of private registered nursing and maternity homes to supplement the main hospital scheme.—Mr. A. BEVAN replied: Private homes are outside the scope of the National Health Service Act, and their future must therefore depend on the demand for private treatment outside the service.

Accommodation for Mental Defectives

Mr. W. R. SORENSEN asked the Minister what progress had been made during the past twelve months in providing accommodation for mental deficients; and approximately how many mental deficients were now awaiting suitable institutional accommodation.—Mr. BEVAN replied: Premises acquired by local authorities will provide 160 beds in the immediate future. Further accommodation will be available in the new year in three mental deficiency colonies released by Service departments. Mental defectives awaiting institutional accommodation were 3890 on Jan. 1 last.

waiting-list was 138 for the county, representing 10% of the number of beds occupied; and this percentage is much lower than the figure for England and Wales as a whole.

Poliomyelitis and Polioencephalitis

During the week ended Nov. 15 the fall in notifications of poliomyelitis, 186 (198), was again small, and there was a slight rise in those of polioencephalitis, 15 (12). Figures for the previous week are shown in parentheses. Notifications of poliomyelitis in London were 12 (16); and there was a small reduction in most of the southern counties except Kent 15 (4) and East Sussex 9 (3). The northern counties also showed reductions for the most part, but there was a slight upward trend in East Anglia and the west.

Infectious Disease in England and Wales

WEEK ENDED NOV. 15

Notifications.—Smallpox, 0; scarlet fever, 1947; whooping-cough, 1217; diphtheria, 195; paratyphoid, 8; typhoid, 11; measles (excluding rubella), 2355; pneumonia (primary or influenzal), 582; cerebrospinal fever, 40; poliomyelitis, 186; polioencephalitis, 15; encephalitis lethargica, 2; dysentery, 95; puerperal pyrexia, 117; ophthalmia neonatorum, 58. No case of cholera, plague, or typhus was notified during the week

Deaths.—In 126 great towns there were no deaths from enteric fever, 2 (0) from measles, 3 (1) from scarlet fever, 3 (0) from whooping-cough, 2 (1) from diphtheria, 61 (4) from diarrhœa and enteritis under two years, and 13 (2) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 196 (corresponding to a rate of 25 per thousand total births), including 28 in London.

Medicine and the Law

Death or Injury "attributable to war service"

IN a lengthening series of appeals under the Pensions Appeal Tribunals Act of 1943 Mr. Justice Denning has had to decide whether a death or injury was "attributable to war service." This is not exclusively a medical question; the element of causation introduces arguments on which an appeal tribunal may misdirect itself. Two recent cases, decided in the present month, illustrate the difficulty. In one a man who had served in a balloon crew claimed that his hernia was a war injury. The conditions of his duty exposed him to the catching of a cold; he developed a cough, and a fit of coughing produced the rupture. One cause, perhaps a predominant cause, was the weakness of the abdominal wall: but one of the operative causes was his war service, and he was allowed a pension. In the other recent case, Monaghan *v.* Minister of Pensions, a man, 42 years of age, was working in Holland in the Pioneer Corps on the erection of a Bailey bridge. Some Canadians, it was alleged, gave the pioneers some gin, saying that it came from an abandoned Red Cross barge; the man drank and died two days later in hospital, having been admitted suffering from gin poisoning. The judge held that the cause of death was the drinking of raw spirit, an act entirely within his own personal sphere; the war service was only part of the surrounding circumstances. The pensions appeal tribunal rejected the widow's claim, and the judge refused to interfere.

Monaghan's case indeed was not unlike the Wedderspoon case, decided some months earlier, where a surgeon lieutenant on board his ship took a dose of chloral hydrate because he suffered from insomnia. He died in his sleep; post-mortem examination showed that he suffered from a weak heart. Mr. Justice Denning held death not to be attributable to war service. If the doctor had carelessly given an overdose to a member of the ship's company, the man's death would have been attributable to war service. But this dose was taken by the deceased in prescribing for himself. It was "the case of a man, who happened to be a doctor, taking too large a sleeping draught in his personal capacity . . . no more attributable to war service than the consequences of drinking too much or playing a game of squash."

The element of casuistry is intriguing. The leading decision of the judge is the Chennell case of last year. A boy found an incendiary bomb, took it into a Chertsey street, and played with it. There was an explosion whic injured a girl who was passing by. The Ministry rejecte her claim that it was a war injury entitling her to com pensation. The pensions appeal tribunal allowed th claim and the judge approved. The dropping of th bomb by the enemy was a cause; the boy's inter ference was not so powerful an intervening cause as t supersede it.

The problems of causation are probably hardest whe the ætiology of a disease is uncertain. A year ago, i the Donovan case, the judge found himself able to allo the widow's claim where her husband had died fr Hodgkin's disease. Recently, in James *v.* Minister Pensions, there was evidence that the claimant had swelling on the right side of his neck which graduall spread. He was sent to hospital, where Hodgkin disease was diagnosed; he was then discharged from th Army on this account. He claimed a war pensio having apparently heard of the Donovan decision. H case, said the judge, was shortly and simply this: " I have never known any illness prior to entering th Forces, and as medical science has not been able to fin out how Hodgkin's disease is contracted, I think I hav more right to say that it is due to war service than yo have in saying it is not!" His claim was rejected by th Ministry; he died, and his widow claimed again in vai The claim was out of time and the right to a rehearin required decision, so that the final result is still awaite In giving leave to appeal, the judge observed that would be hard if Donovan's claim succeeded and that James was rejected.

Can medical science establish that cancer is a disea attributable to war service? In Miller *v.* Minister Pensions, decided last July, the illness of an Arm officer serving in the Middle East had been diagnosed carcinoma of the œsophagus. He was flown back England and died soon after his arrival. The clai was regarded as a test case and was referred to S Ernest Rock Carling as an independent medical expe The pensions appeal tribunal concluded that the prob bilities as a whole were that war service played no pa in the disease, though it was recognised that there was possibility the other way. The judge, reviewing th evidence and some previous decisions, observed that th ætiology of disseminated sclerosis was unknown, b experience indicated that external factors could influen its onset and development; claims in respect of th disease had therefore been allowed. On the other ha schizophrenia seemed likely to be, in the great majori of cases, essentially independent of external cause claims in respect of schizophrenia had therefore be rejected. "If nothing else appears except that t cause [of death or injury] is unknown, then the on proper conclusion is that the Minister cannot dischar the burden of proof, because the unknown cause may a cause incidental to war service."

Finally two neurosis cases may be mentioned. T facts in W. *v.* Minister of Pensions (1946) were that man was discharged from the Army as permanent unfit by reason of severe and chronic anxiety due to h domestic marital affairs. Here the judge held that t war service played no active part; the neurosis w caused by the wife's conduct: his war service had n aggravated the condition and therefore the claim failed. There was a similar result in the case of X.Y. *v.* Minister Pensions last December. A soldier on embarkation ave had refused his fiancée's request that he should arry her before he went oversea. On return to his nit he received a letter from her in which she broke off e engagement. Four days later he shot himself in a ilitary camp with a Service revolver. The pensions peal tribunal held his death not to be attributable to r service. A military court of inquiry found that he et his death by his own hand while the balance of his ind was disturbed. The Ministry contended that the ue to him of a revolver and ammunition was an casion for him to turn them against himself but not e cause of his so doing. The judge ruled that the use was his trouble with his fiancée, a factor entirely trinsic and unrelated to his Service life. These two es perhaps were easier to decide, but even here the pular verdict might have gone the other way.

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Mr. Somerville Hastings: Is the sum mentioned sufficient for the legitimate demands of those who are engaged in this research?—Mr. Morrison: I think so, in the light of the useful activities which can be conducted. Considerable sums are being spent elsewhere in the field of research under the auspices of the Ministry of Health, hospitals, and what not. I do not think there is any difficulty about money, but I would be prepared to consider further developments if useful avenues of research were available to us.

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Obituary

WILLIAM SEAMAN BAINBRIDGE

M.D., SC.D.

WE have received from Mr. Sampson Handley the following tribute to Dr. W. S. Bainbridge of New York, who died on Sept. 22. "In the years before the first world war," Mr. Handley writes, "Bainbridge was a frequent visitor to Europe, and wherever he went his kindly personality, his abounding energy, his open-mindedness, and his genius for friendship made him the welcome ambassador of American to European surgery. Dr. Bainbridge's book, *The Cancer Problem*, gave a catholic account of its subject, with full and fair recognition of English workers, such as Bashford, Murray, and Lazarus-Barlow, and of the clinical work of British and Continental surgeons and of its author. It was translated into French, Italian, Spanish, Polish, and Arabic. In both world wars he served in the American Navy, and as medical inspector and commander Reserve Force had much to do with the training of young American naval surgeons. His many honours, governmental and academic, included decorations from 18 nations. Bainbridge lived a full life, and his work survives him to mould the future."

ROBERT CARMICHAEL WOOD

M.B. EDIN., M.R.C.P.E.

Dr. R. C. Wood, who died on Nov. 23, graduated at the University of Edinburgh in 1932 and took his M.R.C.P.E. four years later. After qualifying he held resident appointments in Edinburgh at the Royal Maternity Hospital, the Hospital for Sick Children, and the Royal Infirmary. During the late war he served in the R.A.M.C., with the rank of major, as a medical specialist at a general hospital in the Middle East, and in 1945 (with K. C. Dixon) he published a paper on tick-borne relapsing fever in Cyprus.

G. A. G. P. and R. W. D. T. write: "Many war-time friends will regret the early death of Bertie Wood, in addition to the wide circle in Edinburgh and, of course, his patients. He had more than his share of service overseas and none longed more deeply to be home again. In those trying days he was a great colleague; not only a good physician, hard working, reliable, and loyal, but one of those whose companionship made all the difference to his friends. We shall miss him sadly down the years."

Births, Marriages, and Deaths

BIRTHS

COX.—On Nov. 14, the wife of Dr. P. J. N. Cox—a daughter.

EVANS.—On Nov. 11, at Worcester Park, the wife of Dr. E. A. Evans—a son.

GARROD.—On Nov. 19, in London, the wife of Dr. Oliver Garrod—a son.

KING.—On Nov. 19, at Wellington, New Zealand, the wife of Dr. A. S. King—a son.

LISTER.—On Nov. 17, the wife of Mr. Arthur Lister, F.R.C.S.—a son.

PALEY.—On Nov. 16, the wife of Dr. R. G. Paley—a daughter.

TODD.—On Nov. 14, at Bath, the wife of Dr. W. A. Todd—a daughter.

MARRIAGES

BROADBENT—LLOYD.—On Nov. 15, John Dennis Broadbent, M.R.C.S., to Judith Lloyd.

BUSH—FARNSWORTH.—On Nov. 1, at West Norwood, John Peter Bush, M.R.C.S., to Edith Mary Farnsworth.

NICHOLSON—MARSHALL.—On Nov. 15, David Percy Nicholson, M.B., to Mary Marshall.

WHOWELL—MURRAY.—On Nov. 15, in London, William Brian Whowell, M.B., to Joy Murray.

DEATHS

ATKINSON-FLEMING.—On Nov. 14, in London, Frederick Charles Atkinson-Fleming, M.C., B.A., M.B. Dubl., major, R.A.M.C. retd.

BENTALL.—On Nov. 16, William Charles Bentall, O.B.E., F.R.C.S.E., aged 72.

COSGROVE.—On Nov. 17, at Sydney, Australia, Charles Cosgrove, M.C., L.R.C.P.E.

EAVES.—On Nov. 21, Elizabeth Cowper Eaves, M.D. Lond., D.P.M.

FARQUHARSON.—On Nov. 16, in London, George Sinclair Farquharson, M.B. Lond., aged 84.

KNIGHT.—On Nov. 18, at Painswick, Charles Voughton Knight, M.D. Lond., aged 75.

MOFFAT.—Robert Unwin Moffat, C.M.G., M.D. Edin.

MONTGOMERY.—On Nov. 19, at Wolstanton, Staffs, Anna Pauline Montgomery, M.D. Lond.

Notes and News

COMMITTEE ON CERTIFICATES ISSUED BY PRACTITIONERS

A COMMITTEE has been appointed jointly by the Ministe of Health and the Secretary of State for Scotland to investigat "how far it would be practicable to reduce the number o certificates to be signed by medical practitioners." Th committee comprises: Mr. Archibald Safford, recorder o Faversham (chairman); Dr. J. C. Arthur, Gateshead; Mi Florence Hancock, chairman of the general council of th Trades Union Congress; Dr. Walter Jope, Glasgow; Mr. A. W Neville, former principal assistant secretary in the Ministr of Health; and Mr. R. L. Briggs, Ministry of Healt (secretary). The medical members were nominated by th British Medical Association.

FOOD AND HEALTH

IN the latest edition of his textbook[1] Prof. Henry C Sherman, of New York, makes some points that are especiall germane to the present situation. Having spent a life-tim thinking and writing on his subject, he looks at the wood a well as the trees, and the landscape as well as the woo He is attracted to Smuts's "holism," pointing out that evolu tion has proceeded among organisms availing themselv of the whole of other living organisms, and suggests th we are flying in the face of nature if we make use of highl refined commercial food products. Instead of asking for, an providing, more protein, calories, vitamins, and miner elements, we should demand more milk, eggs, fish, fruit, an green vegetables—whole foods rather than their chemic constituents.

What is the advantage of adopting sound nutrition Professor Sherman gives many answers, one of them quantit tive. At Harvard, he says, King found that the chance an infant being essentially a perfect specimen and showin robust health was four times greater when the mother's di had been superior (graded "good" or "excellent"); an that the risk that the infant would have a low health ratin was twenty times greater when the mother's diet had bee inferior (graded "poor" or "very poor"). If these Harva findings applied throughout the country, better nutrition American homes would mean that well over a million babi each year would start their lives at a higher health level.

To those pessimists who fear the tendency among civilis peoples towards communities with an excess of middle-ag and elderly people, he points out that individuals most oft attain their opportunities for highest service at about 45- years of age—i.e., when there remains but a third of t traditional span. The shortness of individual lives sets limit to the actual use by man of the knowledge he h accumulated and the institutions he has built and develope Sound life-long nutrition adds to the period of the flowerin and fruiting of human intelligence, and therefore to t permanent well-being of the human race—a stimulati thought for those "past meridian."

HOMES OF ST. GILES

THE dread of the leper is largely misplaced. As we ha lately noted,[2] only a small proportion of lepers are ev potentially infective, and of the two or three hundred in th country the few who are infective can be taught to mana their disease so that it is not dangerous to others. For tho who are unable to live at home one small colony exists—t Homes of St. Giles. This little-known charity was found in 1914, and in an account of it[3] Dr. J. M. H. MacLeo the chairman, tells how it was first housed in tempora buildings on a small farm in Essex. Now the tempora buildings have given place to comfortable brick bungalow each with its own bed-sitting-room, kitchenette, and bathroo A larger communal bungalow houses dining-room and kitche and a medical bungalow is equipped with an operating-roo The recreation hall is furnished with a billiards-table and stage, and the patients have wireless sets in their bungalow Occasionally the wives of non-infective patients are able come to live with their husbands in the bungalows, a share in the nursing and domestic work of the colony. The also a guest-house, and a chapel has been made in the farmstead barn.

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[1] Food and Health. New York and London: Macmillan. 19 Pp. 290. 20s.

[2] *Lancet*, 1947, i, 487.

[3] The Homes of St. Giles for British Lepers. 1947. Obtainal from the secretary, 170, Bishopsgate, London, E.C.2.

The medical work is done by two visiting medical officers who live near by, advised by consultants from London. The nursing, originally undertaken by an Anglican sisterhood, is now the charge of sisters from the community of the Sacred Passion who have the care of lepers in East Africa. At present the homes take 10 men and 3 women, and also has a few non-infective cases as outpatients, and nearly [illegible] patients have been treated since the homes opened.

The homes are a limited-liability company trading without profit, and are managed by an executive committee appointed by a council. Unaided by any Government grant, they depend for support on subscriptions and donations. Hard times are affecting the means, though probably not the will, of givers, and new subscribers are urgently needed. Those who wish to help should send their contributions to Mr. [illegible] Stanley, the secretary, at 170, Bishopsgate, London, E.C.2.

KEEPING THE ENGINE WARM

A MECHANICALLY minded peripatetic correspondent, writing in 1942,[1] urged some enterprising manufacturer of electrical equipment to produce a gadget for starting a car off the mains—via a 12-volt transformer—and at the same time keeping the engine really hot when not in use by means of immersion heaters in the radiator. His hopes have partly been fulfilled, for immersion heaters for the radiator are now on the market. A simple form is that made by Messrs. [illegible] Electrical Products, of Manchester, in which the heater screws into the hole for the drain tap at the bottom of the radiator. When the car is in the garage the heater is connected to the mains, via a 12-volt transformer which also keeps the battery charged. If the car is left standing in a car-park or elsewhere the heater can be worked by the battery. The current consumption is 100 watts from the mains and 300 watts from the battery. Apart from ensuring easy starting such an immersion heater should save the petrol used in warming up the engine.

Two simpler types of heater are worth considering, though they will not charge the battery. One—"Peter the Heater"—hangs inside the bonnet like a Davy lamp. Made by L. G. [illegible], of Drury Lane, it consists of an element enclosed in a perforated cage, and runs from a light plug. The other is the Belling Air-warmer, a non-luminous type of heater made in cast-iron, which can be fixed horizontally to the garage wall. A number of projecting fins provide a large heating surface, and this device is both compact and safe. To the doctor who has often to start his car in the middle of the night even in winter, a heater is a valuable ally.

University of Cambridge

On Nov. 15 the degree of M.D. was conferred on E. B. [illegible] and N. D. Compston.

University of Sheffield

Prof. H. N. Green, who occupies the chair of pathology, has been granted the additional title of director of cancer research.

Having retired from the position of medical officer of health for Sheffield, Dr. John Rennie has resigned from the university chair of public health.

Royal College of Surgeons of England

A course of 72 lectures on anatomy, applied physiology, and pathology will be given at the college from April 5 to May 25 daily at 3.45 and 5 P.M. Practical demonstrations in these subjects will also be held daily from March 22 to June 11 from 10 A.M. to 1 P.M., and from 2 to 3.30 P.M. The demonstrations will only be open to those attending the lectures and will be limited to 40 students: preference will be given to those unable to obtain practical instruction elsewhere, and to ex-Servicemen. Applications should be sent to the secretary of the postgraduate education committee of the Royal College of Surgeons, Lincoln's Inn Fields, London, W.C.2, before Feb. 2 for the demonstrations, and before April 3 for the lectures.

Owing to the rise in costs, from Jan. 1 the charge for the monthly college dinners will be increased from £1 1s. to £1 5s.

Royal Institute of Philosophy

The King has accorded the title of Royal to the British Institute of Philosophy.

British Association of Allergists

At a meeting held at Oxford on Nov. 15, it was decided to form this association, and the first general meeting will take place at St. Mary's Hospital, London, on Jan. 24. The speakers will include Dr. John Freeman and Mr. Frank Coke. Dr. A. W. Frankland, Wright-Fleming Institute of Microbiology, St. Mary's Hospital, Paddington, W.2, is the secretary of the new association.

Production of Penicillin

The penicillin factory at Speke which has been operated by the Distillers Company, as agents for the Minister of Supply, since December, 1945, will become a commercial undertaking on Dec. 1. A new company, the Distillers Company (Biochemicals) Ltd., has been formed especially for the purpose, and arrangements have been made for the entire output of penicillin (sodium and calcium salts), to be distributed by the following pharmaceutical houses: Allen & Hanburys, Boots Pure Drug Co., The British Drug Houses, Burroughs Wellcome & Co., Evans Medical Supplies, Imperial Chemical (Pharmaceuticals), Pharmaceutical Specialities (May & Baker).

Specialist Appointments in the L.C.C. Service

The London County Council last week approved a scheme for the enlargement of specialist staffs in the council's hospitals. In general, one position of medical superintendent, deputy medical superintendent, or senior resident medical officer has been abolished for each new specialist position. The following promotions have been made:

Senior physicians (superintendents), on a salary scale of £1500–£100–£1800 and house valued at £150 or allowance in lieu:

J. C. Evans, M.R.C.P., W. Feldman, M.R.C.P., W. G. Sears, M.R.C.P., B. A. Young, M.R.C.P. (all commencing at £1800).

Senior physicians (deputies to superintendents), on a salary scale of £1500–£100–£1800 with no emoluments and £50 a year as deputy:

Major H. C. Aston, M.R.C.P., R. D. Green, M.R.C.P., T. St. M. Norris, M.R.C.P., D. W. G. Smith, M.R.C.P., M. I. Toohey, M.R.C.P., C. E. W. Wheaton, M.R.C.P.

Senior physicians, on a salary scale of £1500–£100–£1800 with no emoluments:

J. A. Cardno, M.D., B. Freedman, M.R.C.P., B. Gottlieb, M.R.C.P., P. Harvey, M.R.C.P., Major A. Kahan, M.D., Wing-Commander J. H. G. Mason, M.R.C.P., Lieut.-Colonel H. E. S. Pearson, M.R.C.P.

Surgeon specialists (superintendents), on a salary scale of £1500–£100–£1800 and house valued at £150 a year or allowance in lieu:

W. P. Greenwood, F.R.C.S., R. A. V. Lewys-Lloyd, F.R.C.S., J. M. Milloy, F.R.C.S., J. R. M. Whigham, F.R.C.S. (commencing at £1800); J. E. Piercy, F.R.C.S.E. (commencing at £1500).

Surgeon specialists (deputies to superintendents), on a salary scale of £1500–£100–£1800 with no emoluments and £50 a year as deputy:

H. L. Cochrane, F.R.C.S., G. S. Ferraby, F.R.C.S., J. Gabe, F.R.C.S., J. C. Gillies, F.R.C.S.E., S. W. Holmes, F.R.C.S., I. W. Matheson, F.R.C.S., I. I. Price, F.R.C.S., K. F. D. Waters, F.R.C.S.E.

Surgeon specialists, on a salary scale of £1500–£100–£1800 with no emoluments:

T. J. Eason, F.R.C.S., Major A. N. McCrea, F.R.C.S., H. K. Vernon, F.R.C.S.

Physician superintendents, on a salary scale of £1500–£100–£1800 and house valued at £150:

J. S. Anderson, M.D., J. V. Armstrong, M.D., H. S. Banks, F.R.C.P., N. D. Begg, M.D., F. J. Bentley, F.R.C.P., W. C. Fowler, M.D., J. Watt, M.D. (commencing at £1800); J. C. Blake, M.B., William Gunn, F.R.C.P., W. H. Kelleher, M.D., M. H. Logg, M.D., G. W. Ronaldson, M.D., W. E. Snell, F.R.C.P. (commencing at £1700).

Assistant senior physicians (deputies to physician superintendents), on a salary scale of £1000–£50–£1400 with no emoluments and £50 a year as deputy:

Robert Swyer, M.R.C.S. (commencing at £1300); G. E. Breen, M.D., L. J. M. Laurent, M.R.C.P., J. C. McEntee, M.R.C.P. (commencing at £1250); J. W. Healey, M.D. (commencing at £1200); A. M. Ramsay, M.D. (commencing at £1150); W. J. P. Lillis, L.R.C.P.I., J. J. McCann, M.R.C.P., D. Porter, B.M., W. F. Richards, M.R.C.P. (commencing at £1050).

Assistant surgeon specialist (deputy to medical superintendent), on a salary scale of £1000–£50–£1400 with no emoluments and £50 a year as deputy:

R. Glyn Thomas, F.R.C.S. (commencing at £1150).

As announced last week, Brigadier R. H. Metcalfe, F.R.C.S., and Lieut.-Colonel R. C. F. Catterall, F.R.C.S., have been appointed to the service as surgeon specialists; their salary scale is £1500–£100–£1800 with no emoluments.

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[1] *Lancet*, 1942, i, 304.

London Association for Hospital Services

Dr. W. Russell Brain has been elected chairman of this association in succession to Sir Bernard Docker, who will continue to serve as a member of the council.

Indian Obstetrical Congress

The fifth All India Obstetric and Gynæcological Congress will be held in Bombay from Dec. 25 to 29 under the presidentship of Sir A. Laxman Swami Mudaliar.

Medical Drawings

For the past year a group of students in the commercial art department of the St. Martin's School of Art (L.C.C.) have been trained in pathological drawing. They have also obtained practical experience by making drawings in operating-theatres of London hospitals. Surgeons or hospitals who may wish to employ them are invited to get in touch with the principal of the school, 109, Charing Cross Road, W.C.2.

Services Award

The North Persian Forces memorial silver medal for 1946 has been awarded to Dr. J. N. McArthur for his article, Malaria Transmission in Borneo, which was published in THE LANCET (1946, ii, 117). The medal is awarded for the best paper on tropical medicine or tropical hygiene published by a medical officer of under twelve years' service in the Royal Navy, Royal Army Medical Corps, Royal Air Force, Indian Medical Service, or Colonial Medical Service.

Speech Therapy Conference

The College of Speech Therapists is holding a conference in London from Sept. 20 to 24, 1948, when there will be sessions on the following subjects: Aim and Scope of Speech Therapy, Speech Disorders arising from Head Injuries, the Speech Clinic and the Speech Defective Child, and the Rôle of Emotional Problems in Producing Disorders of Speech. It is hoped that during the conference an International Federation of Speech Therapists will be set up again. The conference secretary's address is 68, Queen's Gardens, W.2.

Appointments

BONNIN, J. G., M.B. Melb., F.R.C.S., M.R.C.O.G.: first assistant, orthopædic and accident service, Oldham Royal Infirmary.

CAPLIN, MAXWELL, M.R.C.S.: tuberculosis officer, London Chest Hospital.

CUNLIFFE, A. C., M.A., M.D. Camb: asst. bacteriologist and lecturer in bacteriology, King's College Hospital, London.

DEAN, J. H., B.A., M.B. Camb.: university asst. pathologist, Addenbrooke's Hospital, Cambridge.

DEAN, JOHN, M.B. Camb.: Wander scholar and registrar, Westminster Children's Hospital.

FINLAYSON, A. A., M.B. St. And., F.R.C.S.E.: otorhinolaryngologist, Hospital of St. Cross, Rugby.

JOULES, F. E., M.D. Lond., M.R.C.P.: chief assistant in medicine, Harefield County Hospital, Middlesex.

SUTHERLAND, CATHERINE, M.B. Edin.: asst. M.O., maternity and child-welfare department, Birmingham.

WALSH, BRIDGET, M.B. N.U.I., D.P.H.: medical director, mass-radiography unit, Leeds.

WOOLGROVE, C. G., M.B. Birm., D.P.H.: senior asst. school M.O., Coventry.

Queen Elizabeth Hospital for Children, London:

EVANS, C. F., F.R.C.S., D.L.O.: ear, nose, and throat surgeon.
HARRIS, E. C., M.B. Lond., F.R.C.S.: ear, nose, and throat surgeon
SWAIN, V. A. J., F.R.C.S.: surgeon.

Bristol Eye Hospital:

BARTLETT, C. H., B.A., M.B. Camb., F.R.C.S.: surgical registrar.
WEAR, A. R., M.B. Leeds, D.O.: ophthalmic registrar.

West Bromwich and District General Hospital:

CANT, W. H. P., M.D. Lond., M.R.C.P.: pædiatrician.
WILLIAMS, G. E. O., M.D. Lpool, M.R.C.P.: physician.

London County Council Mental Health Service:

DUNKLEY, E. W., M.B. Lond., D.A., D.C.H., D.P.M.: second asst. M.O., St. Pancras Hospital mental observation unit.

FRYER, G. J. F., M.B.: asst. M.O., St. Bernard's Hospital, Southall.

LANTIN, HAROLD, M.B. Belf.: asst. M.O., Long Grove Hospital, Epsom.

MAY, P. R. A., M.B. Camb., D.P.M.: second asst. M.O., Cane Hill Hospital.

NICHOLSON, BERNARD, M.R.C.S.: asst. M.O., Banstead Hospital, Sutton.

SAINSBURY, PETER, B.A., M.B. Camb., D.P.M.: asst. M.O., Bexley Hospital.

VINCENZI, J. E. G., M.R.C.S.: asst. M.O., Claybury Hospital.

Colonial Service:

ALMOND, ISABELLA, M.B. Sheff.: M.O., Malaya.
EMMERSON, E. N., M.R.C.S., D.T.M. & H.: M.O., Tanganyika.
FERNANDES, H. P., M.R.C.S., D.T.M. & H.: health officer, tuberculosis, British Guiana.
RAM, L. M., M.B. Punjab, M.R.C.P., D.P.H.: M.O., Malaya.
SAMPEY, A. W., M.R.C.S.: M.O., Kenya.
WASE-BAILEY, B. N. V., M.D. Edin., D.T.M. & H., D.P.H.: senior M.O. (health), Sierra Leone.

City of Plymouth Mental Hospital

This hospital, previously known as Blackadon, has bee renamed Moorhaven Hospital. The early treatment unit wi continue to be known as Moorfields Hospital. The post address of both is Ivybridge, South Devon.

Faculty of Homœopathy

On Thursday, Dec. 4, at 5 P.M., at the London Homœopathi Hospital, Great Ormond Street, W.C.1, Mr. Harold Dod will speak on Five Ailments Aggravated by Present Austerit Conditions.

Dr. Arthur Metcalfe, Australian director-general of healt and quarantine, is reported by B.U.P. to be leaving Austral on Dec. 14 for a three-months tour of Britain, Canada, an the United States. He will investigate methods of quarantin in relation to air travel.

CORRIGENDA: *Estimation of renal activity.*—The l sentence of the third paragraph in Mr. Cole's letter last wee (p. 774) should have read: "Where U is the urinary concentr tion, P the plasma concentration, and V the minute-volum of urine, the clearance, represented by UV/P, can remain th same although U rises."

Malaria transmission by blood-transfusion.—The name the correspondent who wrote a letter to the Editor on th subject last week (p. 772) was Dr. K. S. Rodan.

Diary of the Week

NOV. 30 TO DEC. 6

Monday, 1st

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
3.45 P.M. Dr. A. Peacock: Middle Ear and Eustachian Tub
5 P.M. Dr. J. Douglas Robertson: Disordered Metabolism Thyrotoxicosis and Myxœdema.
WESTMINSTER HOSPITAL, Horseferry Road, S.W.1
5 P.M. (Meyerstein lecture theatre.) Clinicopathological demo stration of osteogenic sarcoma.

Tuesday, 2nd

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Prof. H. A. Harris: Anatomy of the Bladder an Prostate.
5 P.M. Prof. G. Payling Wright: Pathology of Primary Tube culous Infection. (First lecture.)
INSTITUTE OF DERMATOLOGY, 5, Lisle Street, W.C.2
5 P.M. Dr. R. M. B. MacKenna: Erythema Group of Eruption

Wednesday, 3rd

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Mr. H. F. Lunn: Flexor and Extensor Retinacula Wrist and Ankle.
5 P.M. Prof. Payling Wright: Pathology of Primary and Tube culous Infection. (Last lecture.)
ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
2.30 P.M. *History of Medicine.* Dr. E. Ashworth Underwood Charles Creighton (1847–1927)—Scholar, Historian, an Epidemiologist. Prof. M. Greenwood, F.R.S.: Epidem logy of Creighton.
8 P.M. *Surgery.* Sir Gordon Gordon-Taylor, Mr. R. McWhirte Sir Stanford Cade: Carcinoma of the Breast.
SOCIETY OF CHEMICAL INDUSTRY
7 P.M. *Food Group with Society of Public Analysts and oth Analytical Chemists.* (Burlington House, Piccadilly, W.1, Mr. G. E. Forstner, A.R.I.C., Mr. G. W. Monier-William PH.D., Mr. W. F. J. Cuthbertson, A.R.I.C., Mr. N. L. Allpor F.R.I.C., Mr. D. E. Garratt, PH.D.: Occurrence, Physi logical Importance, and Estimation of Metallic Contam nants in Foodstuffs.
ROYAL FACULTY OF PHYSICIANS & SURGEONS, 242, St. Vincen Street, Glasgow
5 P.M. Dr. William Evans: Heart Murmurs. (Finlays lecture.)

Thursday, 4th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Dr. D. V. Davies: *Osteology of the Base of the Skull*
5 P.M. Dr. W. Feldberg: Vasodilatory Nerve Mechanisms.
ROYAL SOCIETY OF MEDICINE
8 P.M. Mr. W. Grey Walter, D.SC.: Electro-encephalogram i Organic *Cerebral Disease.*
INSTITUTE OF DERMATOLOGY
5 P.M. Dr. R. T. Brain: Filtrable Viruses.

Friday, 5th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Prof. J. D. Boyd: Development of the Liver an Pancreas.
5 P.M. Prof. R. Hare: Source and Transmission of Nasophary geal Infection.
ROYAL SOCIETY OF MEDICINE
10.30 A.M. *Otology.* Mr. I. Simson Hall, Dr. A. Young: Pen cillin Treatment in Acute Suppurative Otitis Media.
2.30 P.M. *Laryngology.* Mr. G. H. Bateman: film on Organ Disorders of the Larynx. Mr. V. E. Negus: Bell Telephon film of the Laryngeal Movements.
5.30 P.M. *Anæsthetics.* Dr. J. K. Hasler: Posture in Anæsthesi
LONDON CHEST HOSPITAL, Victoria Park, E.2
5 P.M. Dr. S. Roodhouse Gloyne: Pneumoconiosis.

TEACHERS OF MEDICINE *

F. M. R. WALSHE
M.D., F.R.S.
PHYSICIAN TO THE NATIONAL HOSPITAL, QUEEN SQUARE, LONDON; PHYSICIAN IN CHARGE OF THE NEUROLOGICAL DEPARTMENT, UNIVERSITY COLLEGE HOSPITAL

It is fifteen years since Wilfred Trotter stood where I now stand and opened the session of 1932–33 in an address whose ripe wisdom, large humanity, and eloquence remain an inspiration and delight. His title was Art and Science in Medicine, and his theme one that he had adorned on more than one occasion. I shall not seek to challenge comparison with it; but, since the art and science of medicine presuppose the existence and activities of artists and scientists in medicine, let me for a few moments, with such knowledge and sympathy as I can command, consider that particular category of artists and scientists in medicine upon whose shoulders rests the burden—the privilege if you will—of training the medical student.

ORDER AND CHANGE

In the world of the teaching hospital and its school, a little world perhaps, but one that grows very dear to those who like myself have moved in it for more than half a lifetime, teacher and student each occupies his appointed place in that educational plan which is so inadequately subsumed under the title of the curriculum. Over twenty-five years on the active staffs of both undergraduate and postgraduate schools have given me a healthy respect for all three—teacher, student, and curriculum—but equally have left me with few illusions about any of them. For there are times when one's fellow teachers can seem very tiresome, one's students incredibly dumb, and the curriculum a colossal folly. All three, indeed, have come under the heavy fire of criticism in our day, but we must in justice allow that all three have emerged with no mean credit from the major ordeals of our generation.

It is so easy to be critical, particularly of the past; and most easy of course for those who are muddling the present and mortgaging the future. Yet, if the achievements of medicine in our time have been remarkable, as we may fairly claim, then the methods and principles of our predecessors in the teaching of medicine cannot have been altogether futile or misguided. For let us not forget that it is standing on the shoulders of our forbears that we view the fair perspectives of advance that open before us. We are the inheritors of their long and devoted fostering of medical knowledge, and of that academic and practical freedom that they have won for us: freedom we shall do well if we hand on intact to those who follow us.

Of late years medical education has been the theme of long, ardent, and learned debate, and it is not necessary within these walls to recall the major contributions thereto made in their so different fashions by Wilfred Trotter and Thomas Lewis. I am not going to inflict a further chapter of this long and seemingly unending serial story upon you but to sketch in brief outline what I picture as the character and outlook of the ideal teacher of medicine in any adequate scheme of medical education.

I have acknowledged the great debt we owe to our predecessors and have submitted that their labours were not without merit, but this should not be taken to imply that their methods or outlook are incapable of betterment, or are adequate to our educational responsibilities today. Progress necessarily involves change—orderly change. Indeed it has been said that "the art of progress is to preserve order amid change, and to preserve change amid order." For by itself order is not sufficient, and if it is not to degenerate into mere dead repetition it must be continuously infused by novelty. This orderly infusion is progress.

It is because this is so that there is always something interesting to be said about medical education, and it is in the spirit of readiness to accept change, where it is an orderly evolution from what is and has been, that I approach my subject.

WHAT KIND OF DOCTORS?

I know of no better definition of the objects of a teaching hospital than Nathaniel Faxon's, which Professor Himsworth recently brought to my notice—namely, "to advance knowledge, to train doctors, and to set an example of practice." This is no mere abstract proposition, but one that states in unequivocal terms what must be the activities of the teacher and what his purpose.

Of these three items I propose to consider the second one first—namely, "to train doctors." In the words "to train doctors" the one calling first for definition is "doctors," for until we have agreed what these are and should be we can hardly discuss their training.

What a rich and varied pattern of activities the word brings before our minds today: general practitioners, doctors in industry, in the civil, armed, and colonial services of the Crown, medical officers of health, bacteriologists, pathologists, specialists of every variety, medical and surgical, neurologists, and administrators—from the sublime to the less obviously sublime.

How, we may ask, are we to find a common plan of education to meet the needs of so diverse a collection of specialists and experts? Various solutions have been offered to us. Some would solve the problem for us in a sequence of what they would call self-evident propositions—namely, that most doctors become general practitioners, that the general practitioner is the backbone of the profession, and therefore that the scheme of training should be so designed as to concentrate upon his mass-production, leaving all else to postgraduate studies. But those who have done their anatomy will not need to be reminded that there is no more forlorn object of study, no more aimless piece of humanity, than the isolated backbone.

A balanced medical profession must contain every necessary kind of doctor. I shall not embark therefore upon a fruitless discussion as to which field of medical activity is best or most essential. The diversity we now see, a diversity which has very considerably reduced the proportion of general practitioners in the total body of qualified medical men and women, is the natural growth of two factors: the increase and differentiation of relevant knowledge, and the corresponding increase and diversity in the fields of usefulness of the doctor. Therefore, to argue that the general practitioner is more or less important than any other kind of doctor is as futile as to debate whether the comma is more or less useful and important than the semicolon.

Surely, what we need is a common educational plan providing a basis from which all the different specialists we need may ultimately most readily emerge. We must have a less rigid formula than that of a scheme concentrating exclusively upon the training of the general practitioner as we have seen him in the past.

My proposition is then that we need a plan of teaching and a body of teachers of medicine that will best allow the student to develop his bent and find that field of activity best suited to his gifts. For surely it is obvious that no-one really knows, when he embarks upon the study of medicine, to what branch of medical work he is going to feel called, what particular line of study and activity is going to stir his imagination and stimulate his energies.

I had been a medical student for four years before I knew what I wanted to do with my life, and my course was determined when, in 1907, I opened the pages of Sherrington's *Integrative Action of the Nervous System*, which Professor Bayliss had put into my hands. This book, one that later ages will, I firmly believe, acclaim as one of the few imperishable books in the history of medicine and physiology, was no part of the curriculum of the day; and, had my teachers taken the narrow view that nothing should be imparted to me but what was of proven value to the general practitioner as he was then known, I might well have missed one of the most exciting mental experiences of my life, and one which more than any other has coloured and rendered so satisfying to me my years of neurology.

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* Opening address of the session of the Medical School, University College Hospital, on Sept. 30, 1947.

I ask your pardon for this brief lapse into autobiography—an exercise for which by modern standards I am far too old—but one's experiences are all that one has to offer of one's own, and I choose this one to make my point against any narrowly designed "utility" scheme of training for doctors of the future.

THE TEACHER'S TASK

Now I have promised not to harass you with discussion of the curriculum, but some general ideas as to what is asked of the teacher of medicine must be framed and expressed.

In seeking to do this I cover ground already trodden by Trotter and by Lewis, and can scarcely hope to avoid being an inadequate plagiarist. In brief, the student has to learn certain practical arts, to acquire certain techniques of applied science, to gain familiarity—by handling it—with his material, the human subject well and ill; and to acquire, if he is able, that intuition of reality which in the difficult problems of diagnosis and prognosis will enable him to choose, and to choose correctly, as often as is humanly possible the interpretation to place upon the scattered and incomplete clues that nature may provide. All this comprises what has been called his vocational training.

Knitting all this together and making of it as near an approach to coherent and orderly knowledge as is possible, the student also needs some general ideas and some fundamental definitions. The importance of the latter in logical thought in any field of endeavour cannot be over-emphasised. For example, what confusion we observe in medicine between what is abstract and what concrete, what is an idea and what an event or a thing? Thus, how many of us make it clear to our students that what we speak of as a "disease" is not something concrete that doctors discover, as Columbus discovered America, but is a general notion about like illnesses in different persons? In nature we do not encounter diseases, but only sick persons. Within the covers of a book, which has the depressing title *Influenza*, published some twenty-five years ago in London, there is an illuminating essay, entitled Method and Thought, by the late Dr. F. G. Crookshank, a former student of this school, in which this confusing business of thoughts, words, and things is faithfully and clearly expounded. I earnestly commend its reading to every student whose aspirations rise above a successful and enjoyable trip to that soft-currency area in Queen Square where sits the Conjoint Board.

In the matter of general ideas, too, the student must be given some knowledge of those general laws exemplified by the main modes of functional and structural reaction in disease, as these are seen in symptoms and in objective signs.

Finally, surely it is an ideal always to be aimed at, if but seldom realised, that we should seek to impart to the student a desire—a passion if possible—for understanding what he sees, a desire to know, as far as it may be known, the nature of the phenomena that come under his observation. For it is out of this desire to understand, and from it alone, that can be born the urge to add to knowledge, to break new ground.

EXAMPLE OF PRACTICE

So much for the training of the doctor. We come to another of Faxon's objects: "to set an exampl practice." I take this to include the demonstratio action before the student of the application of wha has learned of art and of applied science—in short, use of judgment and that careful and experie balancing of probabilities that is at the root of medical practice. I should wish it also to include humane outlook on the doctor-patient relationship bids the doctor respect human personality, and see understand it. I have never believed that these th can be taught by precept, nor by hours spent liste to lecturers descanting upon normal and abno psychology. These may, indeed, provide some fr work of ideas, but no more. It is only in our path thr life and in the hard school of experience that this difficult aspect of medicine can be mastered. T are also ethical aspects of practice that I should inc under this heading of Faxon's.

To what ignoble tasks we may today be asked to our skills, the medical and lay press leaves us i doubt: that macabre horror of the sickroom mis euthanasia; and the still more repellent busine artificial insemination employing the anonymous d What in his depravity the body-snatcher was to teaching of anatomy a century ago, so today in med is that furtive and loathsome creature, the anony semen donor, whom some of our profession have c into existence; a fitting symbol of the disintegr of Christian civilisation.

It is not without reason, therefore—though, I too late—that I make a plea for the place of ethi this matter of setting an example of practice.

ADVANCEMENT OF KNOWLEDGE

Finally, and to relieve my listeners from that a embarrassment and discomfort that any mention of et sanctions now evokes, let me return to the first of Fa postulates—namely, the advancement of knowledge.

No-one will dispute that this must occupy a pri place in the activities of any school of medicine, is not to degenerate into a sort of medical polytec Stated in this way the issue is simple, but the adva ment of knowledge implies the presence of research, there are few words around which more misconcep have arisen than this.

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Again, it has come increasingly to be associated our minds with highly organised team activity, o subsidised by large organisations which command budgets. What in the world of commerce is pathetic called the "small man" has his opposite number in t of medicine and science, but we hear less and less ab him, for in any medical school or research institute has been crowded out by the large departments; however brightly there may burn in his soul the to add to knowledge, he will find it hard, if not impossi to get a foothold unless he joins "the big unions."

No-one will deny the intellectual gifts demanded first-class research, or the necessity in medical as other fields of organised large-scale investigation. us not however fall into the vulgar error of suppo that only vast organisations can conduct research, t only the rare genius can add to knowledge, and that independent worker in whom the impulse to do orig research is present cannot labour fruitfully in this fi Discoverers of genius are as rare as poets or painter but this has never deterred the man with the in him from fulfilling himself in verse or on canvas. re the truth is that in medicine most men of intelligence do feel the craving for some adventures ught, the urge to pass the frontiers of the known and hed, and beyond them to chart at least some regions of the unknown, and to throw the light of curiosity upon some dark corner of human ce.

one who puts his observations together to exemplify them some law of nature, to detect some persistent or some ordered recurrence in events, is doing h and seeking to advance knowledge. It is in those who work in clinical medicine in this spirit nature gives the opportunities of new knowledge, e of their intellectual vigilance and preparedness em in the stream of experiences the significant ena and events as these float by.

bmit, therefore, that some infusion of this reasoned ty, some interest in the relation of stubborn facts ral principles, is a vital element in the endowment true teacher of medicine.

us not shrink from the conclusion to which this on, if we accept it, must lead us. It implies he teacher who has not at some time and instinc-, as it were, sought to make some contribution wledge lacks the divine spark and cannot therefore it in his students. Insensibly and inevitably he the descent from the status of educator to that of tructor in techniques.

king back over forty years to my own teachers in hospital and school, they fall naturally in my tion into two categories: those who forced me and gave me something to think about, over bove the factual knowledge they communicated; hose who gave me facts alone. I am grateful to for both were inspired to give the best of what they nd they gave it generously and graciously; but too who it was that influenced me most, who ne the spirit of emulation and the deep desire to some small offering, however modest, upon the of knowledge as I passed by. Such a man was Rose Bradford. Wilfred Trotter was another, was impossible not to be aware of, or not to be ted by, their intellectual distinction. There were too, to whom the debt of my generation in this was great; all were alike in that they were men their time had broken new ground in medicine and richer than it had been before their day.

spirit of inquiry, therefore, is *the* vitalising element life of a medical school. It can flow only from achers; and whether these are academic teachers in large-scale organised experiment, or inde-t workers following their problems as opportunity t, and perhaps also engaging in the private practice cine, does not seem to me to matter greatly. *spirit that counts*, the interest in new observation, apacity for the steady contemplation of facts, of generalising from them, and an unwillingness pompously and incuriously through life along rmanent way of established arts and techniques.

THE TEACHERS

brings me to my last consideration. An anti-has been made, in discussion on medical education, n theoretical and vocational teaching. That this real distinction in thought and in the method of g is apparent. Yet how disastrous it would if teachers were to allow themselves to lapse into or other category of teaching exclusively; if, for ple, the teacher of the practical arts and techniques to content himself with this and felt no obligation etrate to fundamentals, to view medicine philo-ally or as a body of knowledge in which coherence was to be sought; or, on the other hand, if the teacher of theoretical medicine lived in a world of principles and of abstract ideas about disease and ceased to be actively interested in practical arts and techniques, in the intellectual aptitudes developed by diagnosis and prognosis in individual cases, or in the humane side of medicine in which the doctor faces and seeks to understand the personality and the human needs of his patient.

Thomas Lewis clearly foresaw such a danger and warned against it; but it is clear that the presence in the modern medical school of two categories of teacher, the practising consultant and the salaried academic teacher, opens the door to this disastrous dichotomy. The practising teacher is familiar in his everyday work with the individual seen against the backgrounds of his home, his family, and his work. The full tide of human needs and distresses bears down daily upon him, and the arts and techniques of medicine are his constant and exhausting preoccupation. He may cease to look beyond them.

For the cloistered academic teacher life is different. He gets his patients washed and tidied and laid out in rows in hospital wards; their importunate and exacting wives and mothers-in-law do not intrude upon his profound cogitations. No unpleasant smells or noises break in on his ordered eloquence; house-physicians and nurses wait on his bidding and tremble at his voice, and all those seeming irrelevances that are so necessary to the balanced comprehension of the patient's total situation are carefully tidied away out of his sight. He does not miss them, for he has never known them. He is rather like the florist who can arrange the plucked blooms, from which the dead leaves and the dirty roots have been removed and the earwigs shaken off, into all the combinations of form and colour his fancy dictates.

I feel sure our clinical professors will greet this simple and faithful picture of their austere lives with sentiments of happy recognition.

The practising teacher, on the other hand, is the toil-worn gardener, who has to bend his proud back and soil his hands; but his reward is that he does know the plant as a structural and functional unity, and knows too something of the soil and the floral community in which it has grown and lived. Would it be surprising, therefore, if the former became the somwhat dryly theoretical teacher and the latter a rather pedestrian vocationalist?

We dare not, therefore, separate these two aspects of teaching. Each one of us must seek to be the artist, the man of science, and the humanist of Trotter's imagination and of his example.

Finally, it is not amiss to say that every teacher is the better for knowing how to teach. Oddly enough, the university grade of teacher receives no training in the pedagogic art and has to teach by the light, often intermittent and smoky, of nature.

CONCLUSION

You have listened very patiently while I have been building castles in Spain; you have had to bear with the painful reality depicting the unattained ideal. The cynics among you, however, and they must be many in this disillusioned age, must have found some satisfaction in the sad contrast, and therefore I need not apologise.

But my situation also has not been without its charms; for, as my argument has rocked to and fro, somewhat alarmingly at times I fear, swaying now to one point of view and now to another and contrary one, I have had the opportunity of noting the play of conflicting emotions in the more informed and critical of my audience. But I have sought to give everyone the satisfaction, and I know of few greater, of hearing something from which he could heartily and angrily dissent, and I trust something also to which he could scarcely refuse to agree. What could be fairer or more exasperating?

was determined when, in 1907, I opened the pages of Sherrington's *Integrative Action of the Nervous System*, which Professor Bayliss had put into my hands. This book, one that later ages will, I firmly believe, acclaim as one of the few imperishable books in the history of medicine and physiology, was no part of the curriculum of the day; and, had my teachers taken the narrow view that nothing should be imparted to me but what was of proven value to the general practitioner as he was then known, I might well have missed one of the most exciting mental experiences of my life, and one which more than any other has coloured and rendered so satisfying to me my years of neurology.

I ask your pardon for this brief lapse into autobiography—an exercise for which by modern standards I am far too old—but one's experiences are all that one has to offer of one's own, and I choose this one to make my point against any narrowly designed "utility" scheme of training for doctors of the future.

THE TEACHER'S TASK

Now I have promised not to harass you with discussion of the curriculum, but some general ideas as to what is asked of the teacher of medicine must be framed and expressed.

In seeking to do this I cover ground already trodden by Trotter and by Lewis, and can scarcely hope to avoid being an inadequate plagiarist. In brief, the student has to learn certain practical arts, to acquire certain techniques of applied science, to gain familiarity—by handling it—with his material, the human subject well and ill; and to acquire, if he is able, that intuition of reality which in the difficult problems of diagnosis and prognosis will enable him to choose, and to choose correctly, as often as is humanly possible the interpretation to place upon the scattered and incomplete clues that nature may provide. All this comprises what has been called his vocational training.

Knitting all this together and making of it as near an approach to coherent and orderly knowledge as is possible, the student also needs some general ideas and some fundamental definitions. The importance of the latter in logical thought in any field of endeavour cannot be over-emphasised. For example, what confusion we observe in medicine between what is abstract and what concrete, what is an idea and what an event or a thing! Thus, how many of us make it clear to our students that what we speak of as a "disease" is not something concrete that doctors discover, as Columbus discovered America, but is a general notion about like illnesses in different persons? In nature we do not encounter diseases, but only sick persons. Within the covers of a book, which has the depressing title *Influenza*, published some twenty-five years ago in London, there is an illuminating essay, entitled Method and Thought, by the late Dr. F. G. Crookshank, a former student of this school, in which this confusing business of thoughts, words, and things is faithfully and clearly expounded. I earnestly commend its reading to every student whose aspirations rise above a successful and enjoyable trip to that soft-currency area in Queen Square where sits the Conjoint Board.

In the matter of general ideas, too, the student must be given some knowledge of those general laws exemplified by the main modes of functional and structural reaction in disease, as these are seen in symptoms and in objective signs.

Finally, surely it is an ideal always to be aimed at, if but seldom realised, that we should seek to impart to the student a desire—a passion if possible—for understanding what he sees, a desire to know, as far as it may be known, the nature of the phenomena that come under his observation. For it is out of this desire to understand; and from *it alone*, that can be born the urge to add to knowledge, to break new ground.

EXAMPLE OF PRACTICE

So much for the training of the doctor. We con to another of Faxon's objects: "to set an exam practice." I take this to include the demonstrat action before the student of the application of w has learned of art and of applied science—in sho use of judgment and that careful and exper balancing of probabilities that is at the root o medical practice. I should wish it also to includ humane *outlook on the doctor-patient* relationshi bids the doctor respect human personality, and s understand it. I have never believed that these can be taught by precept, nor by hours spent li to lecturers descanting upon normal and ab psychology. These may, indeed, provide some work of ideas, but no more. It is only in our path t life and in the hard school of experience that thi difficult aspect of medicine can be mastered. are also ethical aspects of practice that I should i under this heading of Faxon's.

To what ignoble tasks we may today be asked t our skills, the medical and lay press leaves us doubt: that macabre horror of the sickroom mi euthanasia; and the still more repellent busin artificial insemination employing the anonymous What in his depravity the body-snatcher was t teaching of anatomy a century ago, so today in me is that furtive and loathsome creature, the anon semen donor, whom some of our profession have into existence; a fitting symbol of the *disinteg* of Christian civilisation.

It is not without reason, therefore—though, I *too late—that I make a plea for the* place of eth this matter of setting an example of practice.

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MBERS OF PATIENTS IN DIFFERENT OCCUPATIONS BEFORE ILLNESS AND AT FOLLOW-UP

Before illness	At follow-up										
	P	B	H	C	S	US	T	R	SO	U	I
P 7	6	..	..	..	..	..	..	1	..	..	..
B 10	..	3	..	..	..	1	..	1	3	..	2
H 12	..	..	10	..	..	..	..	..	1	..	1
C 10	..	..	..	3	..	..	..	..	2	3	2
S 8	..	..	..	..	4	..	..	..	2	1	1
US 11	..	..	..	..	..	6	1	..	2	1	1
T 10	..	..	..	..	1	2	2	..	4	..	1
tal 68	6	3	10	3	5	9	3	2	14	5	8

ore than half the patients could earn their living, d more than three-quarters were usefully employed. ore than half the patients had the same occupations before their illness, or similar ones, the other half ving gone down on the occupational scale. In view of e length of their illness and of their absence from me and the labour market, and the relatively young e of some at the outset of their illness, these figures e very satisfactory.

We also found that there was a greater tendency to eterioration, as regards occupation, in the schizo-hrenics than in the non-schizophrenics, which is what ne would expect.

Of 31 statements made by relations about the quality of the patient's work 18 said they worked well, 11 escribed the work as poor or deteriorated, and 2 men-tioned recent improvement. On the other hand, 9 out of 10 patients emphasised how well they worked, and one said that they found it difficult to take up work ain. Some patients lacked judgment about their ilities, and it is reasonable to suspect that professional andards were often reduced or lost, as the following amples suggest:

> patient described himself as a salesman and supervisor is father's firm, but his father wrote: "I am sorry he not found a useful occupation yet; being the son of the ctor he wanted to be appointed to a managerial post which cannot possibly undertake. He travels to the city about e days weekly and is helping in the business for about hour, when he will go off for coffee, return for a little while, go for lunch, returning usually to his home in the early noon."

> nother patient worked as a finisher in a dress factory. employer reported: "Her work is most unsatisfactory, , and inaccurate. Whenever a remark is made on this ount, she is most offensive and will say 'You can dismiss f you don't like it.' She is most uncritical towards her evements and does not try to do better."

> mployer's report on a librarian-secretary: "Patient was sed because she was considered incapable of doing job. The informant would show patient how to do a certain job. She might do this correctly once or twice, but would then lapse back into her own way of doing it and forget all the things he had told her. Informant added that she thought she knew all there was to know about library work. She would not be taught. She was always perfectly satisfied with what she had done and never asked for help."

In 8 cases we heard about the patients' initial difficulty in being in time for work and appointments but also that this difficulty, prominent in the first year, had disappeared later.

In 7 cases the relations complained about lack of discrimination in money matters: "She denies herself over pennies, giving generous presents or taking expensive holidays. . . ."; "Before, the patient would say 'We can't really afford that.' He never has said so since the operation." On the other hand, the majority seemed to manage their money matters well. Even when gambling and betting were mentioned, they were done only on a small scale.

An interesting feature is the frequent change of jobs: 11 patients had had more than two jobs, some up to five, since their discharge. This may be partially due to dismissal because of inefficiency, but the patients did not take this view:

> A motor mechanic wrote a year after leaving hospital: "I have got on well since I left. I have been doing nursery work and find it interesting. Before this I worked as a gardener at a hospital here, as a mechanic, also as a sheet-metal worker under a friend of mine, and as a farm labourer."

One is inclined to blame the restlessness apparent in other fields of behaviour for some of these changes. This is supported by the frequency with which younger patients wrote of plans to emigrate.

Interests and Hobbies

In their hobbies and interests we found signs of the same restlessness. Of 18 patients 17 reported that their interests were the same as before their illness, but 10 of 22 relations reported that the patient's interest had changed. Most remarkable, however, were the diversity and multiplicity of hobbies and interests in one patient:

> "I still have my large flights full of birds. I have 40 canaries, also budgerigars and British birds. I keep them mostly for shows. Also I read a lot of books. I have my four hives of bees to look after as well. And I still have my music practice, as I have played a piano accordion for three years now."

To this list his sister added:

> "He has many hobbies, wireless. . . . He also has a few ducks which he hopes to sell at Christmas. He goes to the picture hall, also goes two or sometimes three nights a week to play darts and dominoes from eight to ten. He likes country walks too and takes our dog for a stroll every evening. As soon as he is finished at the shop and had his tea he is away into his tool-shed doing all kinds of jobs."

This is perhaps an extreme case, but many of the same sort could be quoted from our material.

Most of the patients preferred sports and light entertainment. Outings of various sorts were in great favour, 18 relations and 16 patients reporting that they "enjoy going places."

> "She is taking dancing-lessons, practises the piano every day, embroiders her Christmas presents, goes to celebrity concerts, and is determined, as she says, 'not to miss anything.' She keeps an engagement book, as she does not want her dates to clash."

It is probably not accidental that sports and light entertainment played such a large part in the letters of relations and patients, many of whom had formerly serious interests in art, literature, religion, or politics. One patient wrote:

> "A great many strong opinions that I used to have seem to have disappeared altogether. I had, in spite of certain

Yet behind the angularities and imperfections of my address there does rest with me the profound conviction that the responsibilities of the teacher of medicine have never been heavier than now, nor his opportunities greater; and each of us must bear constantly in mind that it is his individual duty to advance knowledge, to set an example of practice, and so to train doctors that there will always be among our pupils those whom we have *inspired and fitted to bring these ideals nearer to* realisation than we have done.

Let there be no mistake; if we accept narrower aims than these, our medical schools will sink to the dead level of polytechnics, and the torch of living and growing medicine will pass from our hands to separate research institutes, to which all that is best in the coming generation of potential teachers and investigators will turn, and the prestige of the medical school and teaching hospital as we have known them will have departed for ever.

PERSONALITY CHANGE AFTER PREFRONTAL LEUCOTOMY

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CRICHTON ROYAL, DUMFRIES

Reporting on the immediate results of prefrontal leucotomy performed in Crichton Royal, Berliner et al. (1945) and Moore (1946) pointed out that closer studies of the postoperative personality changes would be necessary, especially before leucotomy could be recommended in recent mental illness. The same was suggested by the Board of Control (1946) in a pamphlet which surveys 1000 cases operated on in British hospitals up to 1945. This number shows to what extent the treatment has been applied and no doubt is still being applied in this country. About a third of the patients collected in the pamphlet have been discharged from hospital, but little has so far been published about their lives in the family and community; follow-up studies are obviously needed.

An ideal study of this kind should assess the patient's prepsychotic personality, follow the changes due to his illness up to the operation, and compare them with the postoperative changes. Since improvement may take place as late as two years after the operation, the follow-up should cover at least two years. Even necropsy findings should be included, in view of the different positions of the cut in the brain reported by Meyer and Beck (1945).

In the present investigation the patients who responded most successfully to the treatment—i.e., those who were discharged to their homes—were specially studied. The disadvantage of the relatively small numbers of cases available from one hospital is counterbalanced by selection and diagnosis by the same team of physicians, standard operative procedure and postoperative treatment, rehabilitation in the same surroundings, and discharge according to the same principles.

MATERIAL

Of the first 170 patients operated on between February, 1943, and June, 1946, 77 were discharged from hospital; 9 had to be readmitted after being at home from two to twenty months. The remaining 68 patients were 28 men and 40 women. In our total of operated patients the number of males and females was almost equal. The sex-distribution is at variance with the larger material of the Board of Control (1946), which shows a higher proportion of men successfully treated; but one would expect women to be taken out of hospital more easily than men after a long illness. Of our patients 14 had lived at home more than two years, 28 between one and two years, and 26 less than a year.

Three-quarters of the cases were long-standing scl phrenia of the catatonic and paranoid types; 9 obsessional neurosis, 7 melancholia, and one recur mania; 9 patients had been ill less than three years, remainder longer; 18 had been ill more than ten ye

In cases with a duration of illness less than three y the less drastic methods of treatment, including trically induced convulsions and insulin coma, had *tried without success, and there was no reasonable h* of spontaneous remission. Before the operation patients had been in hospital from one to five ye and 12 for more than five years; 11 patients were oper on within the first year of their stay in hospital, but had been invalids at home for many years. The len of stay in hospital after leucotomy was three mo in 7 cases, from three to nine months in 51, and over months in 10.

METHOD

Since the patients came from all parts of the Bri Isles, a personal follow-up of all cases was impractical but many discharged patients and their relations tinued to correspond with us. We therefore attemp a follow-up by letter, well aware of the shortcoming this method. We saw 8 patients personally; this gr served to check the information obtained from letters. They were either within easy reach for interview or visited the hospital from time to ti thus providing an almost complete picture of th progress. They were representative of the whole se as regards diagnosis (6 cases of schizophrenia, 1 melancholia, and 1 of obsessional illness) and as rega the length of time since discharge.

In view of the suggestibility of any lay person on efficacy of medical treatment and cure, we did not *a questionnaire but sent a letter of general* inqui The questions dealt only with the patient's prevaili mood, his occupation, and social behaviour. The let was first addressed to the patients; later a simi letter was sent to the relations.

The method used for assessing the replies was develop by Mr. J. Raven, director of psychological research the hospital. After the replies had been classifi according to whether they were patients' or relatio descriptions each statement was tabulated in such a w that the frequency of any item could be read vertical while a horizontal reading gave a brief picture of ea patient. The drawback is that the table only gives t frequency of the statements, which is not necessar the same as that of the items mentioned. The meth therefore resembles more that of a historian rec structing a past age from contemporary letters than th of an observer counting facts.

RESULTS

Nearly all the patients replied; no patient seem to resent the inquiry. In a few cases the relations wit held our letter from the patient, being afraid of remindi him of the operation. Most patients' letters were sho and simple, some even childish in style, though mo of the patients had been well educated and accustom to writing. The simplicity of the patients' letters w *striking* when compared with the full and elabora descriptions received from their relations. How comple was this written information from the relations is show by the fact that, when the letters were compared with t results obtained by interviewing *the patients*, there w conformity on all important points.

Work and Occupation

The *working capacity* of these patients, who witho operation would have been chronic invalids, is shown the accompanying table. Among the professions were 1 lecturer, 3 teachers, 2 nurses, and 1 barrist the last *now living in retirement*. The business group included independent owners of businesses as well reflection of the moral standards of the middle-class group from which our patients were drawn, and of the constant care they received in their homes after discharge.

Physiognomy

A changed physiognomy was often reported. This referred not only to the common increase in weight or to greater care in dress, &c., but also to a greater freedom in demeanour and bearing. The patients emphasised their feeling of good health and well-being, their splendid appetite, and their sound sleep. Only 1 patient complained of insomnia. The ravenous appetite slowly subsided in time; none of our patients discharged for more than a year showed this symptom. Similarly the excess in weight disappeared after some months or years.

Mood

Most striking to the eye, and reported in 63 letters, were the patient's visible happiness and all-pervading cheerfulness:

> "Her outstanding qualities now are her gaiety of spirits, her energy and love of life."
>
> "She has been happier and more contented than I have known her for the last twenty years."
>
> "I find after all the world a nice place to be in."

Only in 2 cases did we hear that the patient was temporarily unhappy.

The patients had no doubt about their success in life after their return home. Increased self-esteem and lack of self-criticism were only too obvious both in letters and in interviews. They cared little for what others thought or said and were convinced that what ey did was right. One can easily realise that the people und them tended to minimise or even to suppress less easant features, seeing the patient so happy and pleased th himself.

COMMENT

From these data it is possible to sketch the character a patient after leucotomy.

The patient is physically healthy, a good eater and eeper, with considerable euphoria. His prevailing ood is cheerfulness; he does not worry, is happy and ntented, and shows it. He has a high opinion of himself d his abilities. He may take his responsibilities too sily or may shirk them altogether. He leads an active fe, is restless, and likes movement and change. His terests and hobbies are varied and variable, with a reference for light entertainment and superficial astimes. He is easy-going, a good mixer, and fond of cial life and of being on good terms with everybody.

On the other hand, his relations with the people round im are often without depth of feeling. He shows little ympathy or consideration for his next of kin or anybody lse. He neither regrets nor repents for whatever he may ave done or said. He may be self-willed, headstrong, and nable to see the other person's point of view. He tends o quickly passing outbursts of temper. He may attend o his work as before or may do less well, but he invariably hinks he does well; he is not a perfectionist.

This picture is, in any particular case, modifiable y special features traceable to the personality before peration. Positive symptoms of the former psychosis, delusions, hallucinations, obsessional ideas, and rituals were mentioned in some letters but seemed on the whole to be insignificant. Of the 14 letters mentioning persisting symptoms 8 were from obsessionals and their relations. In almost every instance the number of obsessions and rituals had diminished. Guilt feelings and anxiety had disappeared. The obsessional ideas had lost their predominant influence on the patient's behaviour.

It may be objected that hyperactivity, shallowness of affect, impulsiveness, and lack of judgment are symptoms of the schizophrenic illness from which three-quarters of our patients suffered, and that even if they exist as a background to the cheerful, outgoing, and sociable personality as described—which is certainly not schizophrenic—they are nevertheless remaining symptoms of the illness. A comparison of the frequency of these traits in schizophrenics and non-schizophrenics shows that the 17 manic-depressive and obsessional patients contributed in the same proportion as the schizophrenics to these traits as they did to all the principal features from which the composite picture was developed.

DISCUSSION

In clinical terms the main features of this composite picture are symptoms of frontal-lobe damage after head injury (Feuchtwanger 1923) or lobectomy for tumour (Rylander 1939) in man, and after experimental removal of the area in primates (Fulton 1943). In the emotional field are euphoria, fatuous equanimity, absence of finer emotional response, rudeness, and tactlessness. In the motor field are hyperkinesis, restlessness, and distractibility. In thinking there are turning towards the "concrete" (Goldstein and Scheerer 1941), impairment of "synthesis" (Brickner 1936), and lack of insight (Guttmann 1931). These symptoms may be much milder after leucotomy than after gross cerebral injuries; but the difference is only one of degree. Immediately after the operation we find other frontal deficiency signs—ravenous appetite, disturbance of memory and retention, apathy and laziness, irritability, and lack of emotional inhibition; symptoms which seem to disappear in time and under proper rehabilitation.

From this analogy it follows, and is suggested as a theory of the treatment, that the operation, if successful, provides the patient with a new framework of personality caused by the isolation of his prefrontal areas. If the post-leucotomy patient's mental life has to be reconstructed within a new framework, one can hardly expect this to be accomplished in a few weeks or months. In 31 letters it was mentioned spontaneously that the patients were still improving, some of them two years after the operation. Neurosurgeons know of the slowness of adaptation when larger parts of the brain have had to be removed; one also remembers the time-consuming work of the head-injury institutes and special schools after the 1914–18 war in which penetrating injuries of the head were so common.

In the light of our theory the original prepsychotic personality should not have a decisive influence on the final result. Unfortunately our material does not allow a definite answer on this point. There was often only scanty information about the patient before his psychosis which had begun many years previously. But some of our patients who had been abnormal since adolescence have done unexpectedly well though they had not matured before illness to anything that could be called an adult personality.

The following practical conclusions can therefore be drawn.

(1) *Selection of Cases*

Hebephrenics showing only lack of initiative, affective blunting, and facetiousness are too akin to the frontal syndrome to permit any improvement after operation. After a few disappointing results, we, like many other workers, have given up considering the treatment in this kind of case.

In severe obsessional illness crippling the patient's life for years leucotomy seems the only way out of chronic invalidism and admission to hospital. Thus, 11 patients severely handicapped by their illness, some after years of unsuccessful psychotherapy, have been operated on and returned home or are ready for discharge.

In chronic affective psychoses periodicity has been abolished and more than three-quarters of the patients have recovered; but our number in this group is small.

intelligent doubts, great religious faith, but now I seem to have no enthusiasm for any kind of religion."

Similar observations were reported by Hutton (1947).

Where old interests were kept up there were sometimes signs of a lowering of standards in taste or cultural level: "His former love for music has not returned." Poetry was hardly mentioned; reading mainly referred to factual matters. A mother wrote: "She is not yet able to read the heavier type of books she used to read." On the other hand, one of our younger patients showed a remarkable talent for original drawing which, according to her mother's letter, was well maintained after the operation; she continued to attend the art school with much zeal.

Social Life

In contrast to the reserve and withdrawal during the illness, the patients, after operation, took a definite part in the social life of the community: 22 relations' and 11 patients' letters mentioned that they were sociable. Many were described as popular, taking part in all social events, helping in clubs and societies, being friendly with everybody, and liking to entertain. Social activity seemed often to be an outlet for the patient's restless drive.

"She had a party the other evening and entertained her friends. She played the piano, played duets, games, &c., and it reminded me of similar evenings many years ago. Maud's friends think that a miracle has happened. She is like the person she was before she became ill—except that she is a much happier edition. A favourite phrase is 'I laughed and laughed' as she relates some joke."

"He takes part in all the social events in the neighbourhood, goes to dances, to the cinema, whist drives, or invites people to the house for cards. He has won quite a number of prizes at whist drives and also puts small sums of money on horses."

On the other hand, individual personal friendship was hardly mentioned in the letters. When we put this question to the interviewed patients and their relations, we received rather characteristic answers: "She has not made any new friends"; "Nobody would be bothered with her"; "Nobody would make a pal of her, she considers herself first always"; "She is not a person you could either like or dislike. She is completely colourless"; "There is a kind of vacancy about her."

Family Life

Shortcomings of this kind would be expected to be more obvious in the family life of our former patients: 48 letters commented on the patients' behaviour towards their relations, all patients contending that they got on very well. However, 10 out of 29 relations found it difficult to live with the patient. Three main reasons were given for this difficulty: (1) shallowness of feeling and lack of affection and of consideration for others, even for children; (2) domineering manner, self-willed stubbornness, and inaccessibility to reason; and (3) outbursts of temper and irritability.

Lack of affection was especially distressing to people who had shown the utmost consideration for the patient returning after a long absence. They found that the patient accepted it without any appreciation as a matter of course. Wives and children felt the emotional estrangement and indifference, and suffered under it.

"He is not like his old self; for instance he does not take the interest he should in our little girl, aged 3 years. He doesn't play with her like other fathers."

"He seems very shallow in his feelings and incapable of affection. He cares for no-one but himself."

"Kitty, our daughter, greeted her mother's return with enthusiasm; but, so far as I could see, her mother eventually killed Kitty's enthusiasm for her companionship. After spending the Easter holidays with her, Kitty wrote to her house-mistress asking for permission to return to school a day earlier with the new girls and wrote that she had n been so miserable in her life."

Stubbornness and inability to see another's p were considered by some relations to be a return the patient's behaviour in adolescence; by othe completely new trait:

"She used to be quite the opposite."

"Her domineering manner, maintenance of her opinion, &c., make her a difficult person to get on One got the impression that the domineering and diff character of her youth was accentuated."

"She was always adventurous, difficult to advise, somewhat self-willed. Now she is quite unaware of obst to what she wants to do . . . they don't exist, and her is completely closed to advice or suggestion; she speak such advice in an impersonal way, as if it does not con itself in her mind with her actions."

"There is one thing, she is never repentant in any when she has done any wrong."

"Everything she says and does is right in her own m Always it is my daughter and I that are in the wrong."

Outbursts of temper were the least disturbing, bec the 13 letters recording it also noted how short-lived t were. Irritable excited scenes "seem to pass im diately, and she is at once as though nothing unu had occurred." Improvement of irritable react with the passing of time since the operation mentioned in several letters:

"I was apt, after my return home, to allow my ten to get the better of me."

"He sometimes loses his temper over a mere trifle (often) and gets excited, but I notice if I take no heed of it passes over soon, in a few seconds, maybe; he is not b tempered afterwards, but his usual self again."

The changed emotional behaviour was, however, always considered disturbing in the family gro Some relations saw its positive value: 15 wrote t the patient never worried, not even in grave situatio

"Obstacles seem not to exist if he wants something, he takes good care that he gets it. Everything he does is ri in his own mind; he is never repentant nor shows sign regret."

"She never in the past worried much, but now she definitely free from any worry. This is the most mar difference in her condition. In fact, occurrences or po bilities which would be expected to alarm her hardly app to affect her at all. For instance, early this year my daugh caught anterior poliomyelitis, but I do not think my w realised the danger."

"The patient is so far from worrying that he seems treat without much gravity really serious circumstanc He behaved with his usual calm during a rather unpleas miscarriage I had in the spring, and attended his badmint club, the cinema, and a fishing excursion just as usual."

Sex and Married Life

After leucotomy there was little indication of ir sponsible behaviour among our cases. This is remarkal in view of their relatively young age, 26 being und thirty and 20 under forty at the time of dischar Three-quarters of our patients were single—24 men a 27 women. In 1 man only was excessive sexual indulgen reported. This being an entirely new trait, it great shocked his respectable family. In none of the unmarri women was there any evidence of sexual promiscuity 2 men were reported to be considering marriage; 1 h married much against the desire of his family. Of t 2 married women under forty-five in our material o was expecting a child. The wives of 2 of the 4 marri men had become pregnant since the patient's retu home, one of them for the second time.

Finally, there was no report of any serious confli with law and order. This important negative findin together with the restraint in sexual matters, may be

THERAPEUTIC ABORTION

BY MEANS OF SOFT-SOAP PASTES

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SEVERAL German writers in the 'thirties reported on the dangers of introducing soft-soap pastes into the uterus to terminate pregnancy. More recently Weilerstein (1944) in America has drawn attention to these dangers, adding that he understands that the method is ineffective in half the cases. On the other hand Doderlein, quoted by Riddell ([illegible]), said that he had used such a paste on 35 occasions and had been more than satisfied with the results.

In this country attention has been drawn to this method by Browne (1946) and Barnes (1946). While in no way wishing to minimise its risks, I believe it to be justified when carried out under ideal surgical conditions by experienced gynæcologists.

The original pastes used on the Continent were named 'Interruptin' and 'Provocol.' Provocol contains, in slightly different proportions, the same ingredients as does the '[illegible]us' paste, used at University College Hospital in 1939. It consists of olive oil 32%, cocoa butter 2·66%, caustic potash 4·8%, caustic soda 1·86%, thymol 0·07%, tincture of [illegible] 2·66%, benzoic acid 1·33%, metallic iodine 0·66%, potassium iodide 2·0%, and distilled water 51·96%. The paste we now employ is: stearic acid 10%, arachis oil 20%, [illegible] solution (consisting of potassium hydroxide 9·5 parts, sodium hydroxide 3·75 parts, and water to 100 parts) 20%, 'Lanette wax SX' 1·5%, chlorocresol 0·05%, and water to 100%. The paste is sterilised in the autoclave.

TECHNIQUE

The patient is admitted to hospital and prepared for vaginal operation. Premedication with 'Omnopon' gr. $^1/_3$ and scopolamine gr. $^1/_{150}$ is given an hour before the operation.

The patient is taken to the theatre and placed in lithotomy position. Anæsthesia is not needed. The vulva and vagina are cleaned with a solution of 'Dettol,' and sterile towels are applied. Bimanual examination is made to confirm diagnosis and to determine the position of the uterus. The cervix is exposed and grasped with a pair of sponge-holding forceps and again painted with dettol solution. The sterile paste, previously warmed to 100°F, is injected into the lower part of the uterine cavity using a 20 ml. syringe and a Forsdike's intra-uterine tube. The tube is inserted just through the internal os of the cervix, care being taken to avoid touching the vaginal walls with the tube during its introduction, and the paste is injected very slowly and without any force, about a minute being taken to inject each 5 ml. The tube is withdrawn, and the cervix is inspected to see that the paste does not return.

TABLE I—INDICATIONS FOR THE TERMINATION OF PREGNANCY

Indication	Duration of pregnancy (weeks)				Total no. of cases
	12 or less	13–16	17–20	More than 20	
Pulmonary lesions:					
Pulmonary tuberculosis ..	20	7	0	2	29
Bronchiectasis	0	0	0	1	1
Chronic bronchitis and asthma	0	0	0	1	1
Cardiovascular lesions:					
Valvular disease	5	9	0	1	15
Hypertension	0	1	0	0	1
Thyrotoxicosis	1	1	0	0	2
Psychiatric conditions:					
Mental instability	6	4	2	3	15
Renal lesions:					
Recent nephrectomy ..	1	0	0	0	1
Renal calculi	1	1	0	0	2
Chronic nephritis	0	1	0	0	1
Chronic pyelitis	1	0	0	0	1
Miscellaneous lesions:					
Recent radical mastectomy for carcinoma	1	0	0	0	1
Bilateral congenital dislocation of hips	1	0	0	0	1
Total	37	24	2	8	71

The amount of paste injected has varied with the operator and the duration of the pregnancy. As a working rule it is suggested that the amount should be 5 ml. plus 1 ml. for each week of pregnancy.

A few hours after the operation the patient is given 1 or 2 oz. of castor oil.

RESULTS

Table I shows that in the present series of 71 cases in which the paste was used the indications for terminating pregnancy were mainly pulmonary and cardiac lesions, in which avoidance of inhalation anæsthesia is an advantage. Table II shows that in 56 (nearly 80%) the method was successful without other operative procedures needing general anæsthesia. In most the abortion was complete, but in a few it was incomplete and needed ecbolics to complete it. In 15 cases (about 20%) the operation was unsuccessful. In those classed as complete failures the paste had no effect at all and abortion was effected under general anæsthesia by digital evacuation or by the introduction of bougies or a hydrostatic bag into the uterus. Partial failure means the production of an incomplete abortion with the paste and the use of other operative procedure needing general anæsthesia to complete it.

TABLE II—RESULTS OF THE PASTE METHOD OF TERMINATING PREGNANCY

Duration of pregnancy (weeks)	No. of cases	Average amount of paste used (ml.)	Average duration (hours) before onset of abortion	No. successful	No. unsuccessful		
					Complete failure	Partial failure	Total
12 or less	37	16·8 (8–23)*	27·7 (6–52)*	29	3	5	8
13–16	24	20·8 (15–40)*	43·5 (13–375)*	21	0	3	3
17–20	2	55 (30–80)*	..	0	2	0	2
More than 20	8	32·5 (15–70)*	19 (10–24)*	6	2	0	2

* Extremes

The figures, though not statistically significant, suggest that the method is more likely to be unsuccessful after the 16th week of pregnancy. Table II also shows that, on an average, the abortion can be expected to begin 24–48 hours after the injection of the paste.

At the suggestion of Mr. E. W. C. Buckell, late obstetric registrar at University College Hospital, the paste, mixed with an equal quantity of 'Neohydriol,' was inserted into the uterus of a patient (not included in the above series) who was 16 weeks pregnant and had pulmonary tuberculosis; 16 ml. of the mixture was injected, and complete abortion took place within 24 hours. Fig. 1 shows the paste, immediately after insertion, filling about the lowest quarter of the uterus. The fœtal spine can also be seen. Fig. 2 shows some of the paste still present in the uterus, and some in the left fallopian tube, after the abortion. Fig. 3 shows some of the paste in the pelvic portion of the peritoneal cavity four days after the abortion. Radiography thus indicates that the uterine contractions during the expulsion of the uterine contents may drive the paste along the fallopian tubes.

Our largest group, the schizophrenics, selected only by excluding hebephrenics, consists of catatonics, paranoids, and paraphrenics. The ability to lead a useful life outside hospital was restored in 30–40% of these cases. In this figure are included some patients who could be discharged but have no home to go to. In another 20–30% the most distressing symptoms have definitely improved. This is no small achievement in view of the years of misery, suffering, and struggling with delusional phantoms now spared the patient, and the general effect on the atmosphere of the hospital. Why the result of the operation is fully satisfactory in only a third of the cases cannot be answered from the small number of discharged patients. A parallel study devoted to those patients operated on in the same period and still in our hospital will provide a series for comparison.

(2) *Time of Operation*

Rebuilding of the personality on the new basis is always possible so long as one can be certain that emotional and intellectual life are preserved behind the screen of psychotic behaviour. Only expert observation will be able to judge this in long-standing cases of schizophrenic withdrawal and deterioration.

There is, on the other hand, no need for leucotomy in an early stage of the illness, except perhaps in quickly deteriorating "nuclear" schizophrenics not responding to insulin treatment. In all other cases not only should the usual less drastic therapies be tried first but also, in the event of their failure, the psychosis should be left to run its course as long as a spontaneous remission can be reasonably expected. Published figures, like those of Freeman and Watts (1946), give no proof that the results of workers who operate in early cases are much better than our own.

(3) *Operative Procedure*

If our theory is correct, the problem of the operation becomes one of quantities. The surgeon will be asked to produce enough frontal symptoms to combat the symptoms of the psychosis—enough euphoria against distress and depression; enough extraversion and distractibility against introspection and withdrawal; enough indifference and freedom from care and worry against obsessions, delusions, and fear. The dilemma obviously is between either producing too mild a frontal deficiency syndrome, with the consequence that the psychosis rules the patient's behaviour as before, or producing a too severe syndrome, with a resulting clinical picture as disturbing as the original illness.

It is less certain if these psychopathological quantities correspond to the amount of prefrontal lobe isolated by the operation. Perhaps isolation of certain parts of the area—e.g., the orbital region—is responsible for all (Hofstatter et al. 1945) or only some (Dax and Radley-Smith 1946) of the frontal symptoms. Perhaps the more or less complete severing of the thalamofrontal radiation represents the quantitative correlate to the clinical symptoms, a view strongly held by Freeman and Watts (1942), whose technique (incision in the plane of the coronal suture) was used in the present series of patients. From a personal communication of Dr. Freeman it seems that these workers now aim at the greatest possible completeness in the division of the white matter in this region. They also advocate a second operation 5–10 mm. behind the coronal suture in patients who do not recover from their psychosis after the first operation (Freeman and Watts 1946). All this, however, can be explained without reference to special bundles of fibres if we assume that the resulting mental change depends on the amount of prefrontal area isolated. Until the physiologist and pathologist can furnish more detailed information, this seems a reasonable working hypothesis.

(4) *Postoperative Treatment and Rehabilitation*

In the postoperative period the patient's life a personality are pliable and easy to mould, ready a systematic reconstruction. They are accessible psychological and occupational training, sometimes sedation and other physical treatments, all of whi were without avail before the operation. Re-educati of the injured brain is a new task for the psychiatr and for most psychiatric hospitals.

Without adequate facilities for reablement the operati should not be advised. Some details of the method u in this hospital were given by Berliner et al. (1945).

The result of our follow-up has strengthened the c for a prolonged convalescence in hospital before dischar should be considered. The patients, freed from th tribulations and worries, and their relations, impress by the patients' happiness and cheerfulness, urge t physician to discharge him. Three months should the minimum for re-education. Even then, only when home environment is favourable should the patient sent out on trial. Relations should be warned of difficulties they will have to face and instructed h to continue re-education; the family doctor should fully informed. There is no doubt that those who ha been patiently and tactfully supervised by their frier at home have adapted best. On the other hand, most our readmissions were due to lack of understandi and guidance in the home and to other adve environmental factors.

SUMMARY

The results are reported of a follow-up of 68 patie discharged from hospital after prefrontal leucoto out of a total of 170 patients operated on betwe February, 1943, and June, 1946. The patients h been at home for at least six months.

More than half these patients (a fifth of the tota who without the operation would have been hopel chronic invalids, earn their living, and more than thr quarters are usefully employed.

Working capacity and the patient's attitude to wo interests and hobbies, social, family, and sex life, described as well as personal appearance and prevaili mood.

From these findings a composite picture of the succe fully treated patient after leucotomy was abstract Its prominent features are well-known sympto observed after frontal-lobe damage due to trauma neoplasm. After leucotomy these features provide a n framework of personality in which the patient's men life has to be reconstructed.

In the light of this theory of the operation practic conclusions are drawn in regard to selection of cas time of operation, operative procedure, postoperati treatment, and rehabilitation.

We are indebted to Dr. P. K. McCowan for permission publish this material and for his advice, and to Mr. R. Beveridge, who operated on most of the patients. Our spec thanks are due to Miss M. A. Lane, senior psychiatric soc worker at the Maudsley Hospital, London, and to her studen who followed up some of our patients in the London area.

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further operative procedures under a general ...ic will be necessary.

method is not intended to replace those used urgent and immediate evacuation of the uterus d.

procedure carries certain risks. In our series of the ill effects have been limited to a few days' in 6 patients (excluding the patient with active pulmonary tuberculosis), and to some post- bleeding in 4. The possibility of subsequent from a chemical salpingitis cannot be neglected, have not seen this complication, whereas 4 of the s subsequently became pregnant.

h to thank Prof. W. C. W. Nixon for permission to records of the obstetric unit, University College

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THE VIABILITY OF TREPONEMA PALLIDUM

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FOR some months in 1943 field hospitals in Assam were without adequate facilities for dark-ground examination of material from penile sores. During this period, when capillary-tube samples from venereal sores were being sent to me by post or by courier, the question often arose of the reliability of this procedure, in view of the hazards to which such samples were exposed, some coming from isolated units in the jungle seventy or eighty miles away and taking four or five days in transit.

My colleagues could not give any categorical opinion about the normal expectation of viability of *Treponema pallidum* in such preparations, and the textbooks then available to us were not helpful. For instance, Topley and Wilson (1941) state of spirochætes that "some of the highly parasitic members, such as *T. pallidum*, are unable to survive outside the animal body for more than an hour or two." Stitt et al. (1938) merely state that exudate from chancres "should be examined fresh" with dark-field illumination. On the other hand, Muir and Ritchie (1937) state that, in sealed tubes, spirochætes may "retain their shape for days or weeks." Gradwohl (1938) is silent on this subject.

Accordingly I decided, in addition to the routine examination of specimens submitted from outside, to investigate the viability of *T. pallidum* in preparations made by ourselves from fresh untreated lesions.

METHOD AND FINDINGS

In 10 *consecutive* cases of typical Hunterian chancre of the penis in which I had just found *T. pallidum* on dark-ground examination, I made several preparations (the number depending on the quantity of serum obtained without undue discomfort to the patient), which were examined at intervals subsequently.

In cases 1–7, labouring as I was under the preconceived notion that *T. pallidum* was a delicate creature, several capillary tubes of serum from each case were taken, sealed, stored in the incubator at 37°C, and examined at intervals until the series of tubes was exhausted. In cases 1 and 2 typical motile *T. pallidum* was seen up to the seventh and sixth days respectively, and on the eighth and seventh days respectively morphological *T. pallidum* was readily identified but motility lost. This was encouraging, and, as it is difficult to obtain from a sore enough undiluted serum to fill more than six capillary tubes, I decided to examine the specimens on alternate days, as in cases 3–7.

In cases 1–7 (table I) *T. pallidum* remained viable and readily identifiable to the sixth day at least. In case 5 motile *T. pallidum* was seen in the last capillary tube, which was reserved until the tenth day before opening. In case 8 only two preparations were made as before, but these were kept at laboratory temperature and not examined until the tenth and thirteenth days, when both were found to contain numerous typical spirochætes still exhibiting natural movement. Case 10 was a similar preparation but had been inadequately sealed; on examination on the eleventh day it was found to be dried up, and no spirochætes were identified on emulsification of the residue in saline.

As the foregoing were consecutive cases, there seemed little doubt about the prolonged viability of the treponemata in the capillary tubes, and, to minimise labour, I decided to see how long the paraffined slide preparations remained positive—i.e., the original slide in which *T. pallidum* had been seen was reserved and examined daily. To avoid drying, I took care to use a fairly liberal drop of saline to mix with the serum and to ensure an adequate seal with the soft paraffin ring at the periphery of the coverslip. In each case several slides were made; some were kept in the incubator at 37°C, and some at room temperature. The findings are set out in table II. In every case *T. pallidum* continued to be readily identifiable and still motile from eight to fourteen days later. In case 14 morphological *T. pallidum* was seen on the sixteenth day on the slide kept at room temperature, but it was no longer motile. Usually the slides kept at room temperature gave better results, as they tended to dry less.

General Observations.—No special precautions were taken in making the preparations, the object being to collect the specimens of serum in much the same way as I would expect others to collect them for submission to the laboratory. The chief precaution was to ensure proper sealing of the capillary tubes and of the paraffined slide-and-coverslip preparations.

During the observations the daily room temperature varied between 5° and 18°C.

The presence of red blood-cells and of micro-organisms in otherwise reasonably good preparations did not appear to prejudice the result to any significant degree. There did not appear to be any great tendency for other bacteria to overgrow the spirochætes, and even in the incubated preparations, where there were large numbers of bacilli present, the spirochætes persisted quite well.

TABLE I—VIABILITY OF *T. pallidum* IN CAPILLARY-TUBE PREPARATIONS MADE FROM TEN CONSECUTIVE POSITIVE CASES OF TYPICAL HUNTERIAN CHANCRE

Case no.	Day of examination of preparation										
	1	2	3	4	5	6	7	8	10	11	13
1	+	+	+	+	+	+	+	?	..	..	..
2	+	+	+	+	+	+	?	..	..	..	..
3	+	..	+	..	+	+	..	?	..	..	..
4	+	..	+	..	+	..	+	?	..	..	..
5	+	..	+	+	..	+	..	+	+	..	..
6	+	+	+	+	+	+	..	.	..	..	..
7	+	..	+	..	+	+	?	..	..	..	..
8	..	..	..	..	..	..	..	..	+R	..	+R
9	..	..	..	+	..	+	..	..	..	..	.
10	..	..	..	..	..	..	..	..	..	—*	..

+, typical morphological *T. pallidum* with characteristic motility.
R, kept at room temperature all the time.
?, morphological *T. pallidum* not showing motility.
—, no *T. pallidum* found.
*, this specimen had dried up.

In case 8, in which the tubes were stored at a room temperature of 5–18°C (41–64·4°F), *T. pallidum* remained viable ten and thirteen days. In case 10, in which the tube was not properly sealed, no spirochætes could be identified on examination on the tenth day.

In a further 8 cases the original slide preparations in which *T. pallidum* had been identified were sealed with soft paraffin and stored either at room temperature or in an incubator at 37°C. In each case *T. pallidum* was viable for eight to fourteen days. Viability was longer in the slides kept at room temperature.

In a subsequent experiment viability persisted thirty-four days.

These experiments confirm the findings of other workers, and attention is drawn especially to the reports of infection with syphilis from necropsy material.

I wish to thank Lieut. Arjan Singh Man, I.A.M.C., for his collaboration throughout the technical work.

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INTRABRONCHIAL PENICILLIN FOR LUNG ABSCESS

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In lung abscess conservative methods of treatment are successful only in exceptional cases, so that surgical treatment has been adopted as a routine. This practice was not changed by the advent of ultra short-wave therapy or of sulphonamides; but the introduction of antibiotics reopens the question.

In February, 1946, I first treated a case of pulmonary abscess with penicillin given systemically in a dosage of 240,000 units a day. This abscess, which was about 7 cm. in diameter and situated in the right lower lobe, decreased in size, while there was a fall in temperature, a reduction in the amount of sputum, and general improvement; but though the penicillin undoubtedly produced immediate benefit it did not lead to a final cure.

Endobronchial Application.—An attempt was therefore made to increase the concentration of penicillin inside the abscess cavity by introducing the drug through a plastic tube inserted into the appropriate main bronchus after anæsthetising the pharynx and air-passages. Penicillin 50,000 units was given in this way into the main bronchus on the affected side, the patient being placed in a suitable position to enable the penicillin to reach the abscess cavity with the aid of gravity. The procedure was the same as that used in bronchography. The patient was instructed to keep in this position for three or four hours or longer if possible. An essential point was the control of coughing.

After this treatment there was an immediate fall in temperature and less sputum; the abscess cavity then got steadily smaller and ultimately disappeared completely. The penicillin was given intrabronchially at intervals of two or three days; 3–8 treatments being given in all.

Inhalation.—On the days when penicillin was not applied intrabronchially it was given by inhalation from an atomiser. This apparatus (fig. 1) was connected to an oxygen cylinder and the expired carbon dioxide was rebreathed, inducing deep respiration, which appears to be essential for obtaining good results from inhaling penicillin. The daily dose was 50,000–80,000 units, divided into two or three inhalations. Since penicillin, though thermostabile in a powder, needs to be kept cool when in solution, the glass container was enclosed in a second container holding ice-water (fig. 2). To prevent cross-infection by the inhalation set when used by one patient after another, each part of the apparatus is sterilised.

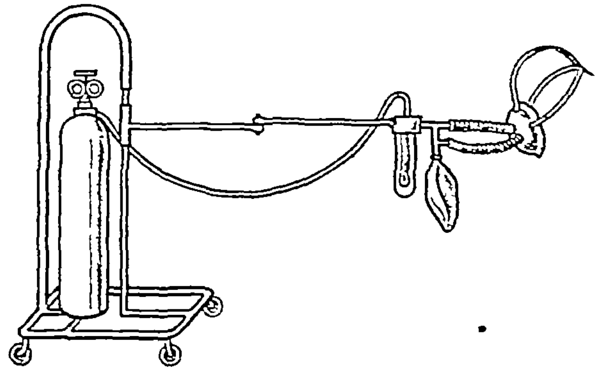

Fig. 1—Penicillin atomiser and inhaler.

The regular inhalations are a useful supplement to the intermittent intrabronchial therapy, but it would probably not cure a lung abscess if used alone, because the penicillin is dispersed through all the air-ducts and thus does not maintain a sufficient concentration in the abscess cavity.

Results.—Of 11 cases treated with intrabronchial penicillin only 1 was lost: an abscess in the right upper lobe in a patient aged 69 in a bad general condition caused sudden death. The 10 other cases were definitely cured.

In 1 case there were two relapses, four and five months after the end of the first febrile period. Both of them were controlled by further treatment with systemic and intrabronchial penicillin.

In 1 case tyrothricin was given intrabronchially, with a good result; the reduction in the amount of sputum seemed to take place earlier and faster than was usual with penicillin.

SUMMARY

Intramuscular penicillin may be expected to produce improvement but not final cure in lung abscess. The method of choice appears to be the intrabronchial administration of penicillin supplemented by frequent inhalations.

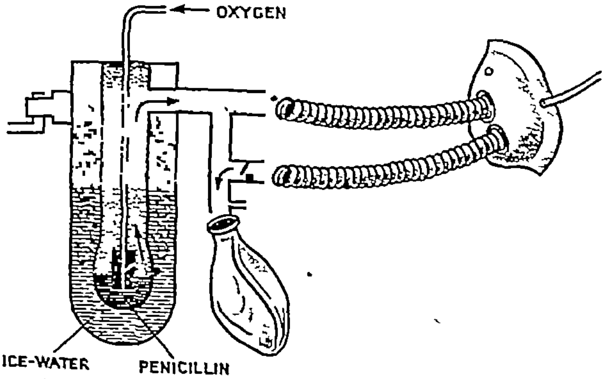

Fig. 2—Penicillin container enclosed in iced-water container

TABLE II—VIABILITY OF *T. pallidum* IN PARAFFINED SLIDE PREPARATIONS, (*a*) KEPT AT 37°C AND (*b*) KEPT AT ROOM TEMPERATURE. EIGHT CONSECUTIVE CASES. PREPARATIONS ALL MADE FROM TYPICAL PRIMARY PENILE CHANCRES

Case no.	Day of examination of preparation															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
11 (*a*)	+	+	..	+	..	+	..	+	..	..	..	..	..	..	..	..
(*b*)	+	+	..	+	..	+	..	+	..	..	..	..	..	..	..	..
12 (*a*)	+	..	..	+	−	..	..	..	..	..	..	..	..	..	..	..
(*b*)	+	..	..	+	+	..	..	..	+	..	..	..	..	+	..	..
13 (*a*)	+	+	+	+	..	..	..	+	−	..	..	..	..	..	..	..
(*b*)	+	+	+	+	..	..	..	+	+	..	−	..	..	..	..	..
14 (*a*)	+	+	+	+	+	−	..	..	..	..	..	..	..	..	..	..
(*b*)	+	+	+	+	+	+	..	+	+	+	..	..	+	..	..	..
15 (*a*)	+	−	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(*b*)	+	+	+	+	+	+	..	..	..	..	..	..	..	..	..	..
16 (*a*)	+	+	..	..	+	..	−	..	..	..	..	..	..	..	..	..
(*b*)	+	+	..	..	+	..	+	..	+	−	..	..	..	..	..	..
17 (*a*)	..	..	..	+	..	..	+	..	..	..	..	+	..	+	..	−
(*b*)	..	..	..	+	..	..	+	..	..	..	..	+	..	+	..	!
18 (*a*)	..	..	+	+	..	..	..	+	..	..	..	−	..	..	..	..
(*b*)	..	..	+	+	..	..	..	+	..	..	..	+	..	+	−	..

+, typical morphological *T. pallidum* with characteristic motility.
!, morphological *T. pallidum* not showing motility.
−, no *T. pallidum* found.

Desiccation of the preparation in the incubator was the factor mainly responsible for impairing the longevity of the spirochætes. On the whole, the preparations kept at room temperature were more satisfactory.

In both tube and slide preparations the numbers of spirochætes appeared to be gradually reduced. Movements became more and more sluggish and finally ceased. In no case was there any evidence, so far as could be detected, of any multiplication of the spirochætes, even at incubator temperature.

On one occasion a spirochæte of *gracilis* type was also identified besides *T. pallidum* and remained viable somewhat longer.

Subsequent Experiences.—Unfortunately I could not pursue the investigation systematically beyond this point, but from time to time I made random observations and had positive slide preparations in which motile *T. pallidum* persisted for even longer periods, the longest being 34 days.

DISCUSSION

That *T. pallidum* is fairly viable outside the human body is not generally appreciated, nor is it generally recorded in the standard textbooks; but the observations here recorded are not unique, as I have since ascertained. A few references are given by the Medical Research Council (1931) to reports dating as far back as 1906, when Beer first reported that in a slide-and-coverslip preparation he had seen *S. pallida* still motile after 33 and 50 days.

In human necropsy material kept in the refrigerator the spirochætes have been found motile after 48 hours, and syphilitic necropsy material can remain infective for at least 24 hours. Enormous numbers of *T. pallidum* may be present in, for instance, macerated fœtuses, suggesting that *T. pallidum* can multiply in dead tissue under anaerobic conditions. Truffi found motile *S. pallida* in a primary chancre 52 hours after death of the patient. Gastou found the organisms in syphilitic child's liver up to 10 days after death, and Neisser found it in a stillborn fœtus 50 hours after birth (Neisser 1911).

Accidental infections, though rare, can and do undoubtedly take place in the necropsy room and in the laboratory. Hoffmann (1927, 1929), reviewing 40 reported cases (including some of his own), concluded that at least 22 of these were certainly genuine cases of this type. Of these 22 cases of accidental infection, 17 were contracted from necropsies on congenital syphilitic children or fœtuses; 3 from freshly acquired cases o syphilis; and 1 from the dissection in the laborator of the brain from a case of general paralysis. Th primary lesion in the accidentally infected person wa on the fingers in 19 cases, on the neck in 1 case, and i the other 2 cases the site of the accidental lesion wa unspecified—presumably the hand or the fingers. I 14 cases the persons so infected were the doctor performing the necropsy, in 6 cases necropsy-roon attendants, and in 2 cases laboratory assistant handling specimens outside the necropsy room afte the necropsy (the brain of the general paralytic bein one of these specimens).

It is commonly assumed that the risk of accidenta transmission of syphilis by therapeutic transfusion o blood is negligible, and before 1939 there was no repor of any such case in Britain. However, some 70 well authenticated cases have been recorded in America an on the Continent since the first description by Fordyc in 1915 (McCluskie 1939). In almost all of these th infections took place when the donors were in th primary or secondary stage of syphilis. McCluski (1939) reported a case in which syphilis was transmitte by a donor still in the pre-chancre stage and whil the Wassermann reaction was still negative; and h summarised 2 similar classical cases of this categor reported by Post and Cooney (1933) and Pautrie (1936).

Whether the practice of refrigeration of stored bloo in blood-banks would itself necessarily ensure rapi death of any spirochætes present may also be questione in view of the reported resistance to cold of the organisn in culture. Kissmeyer (1923), working with pur cultures obtained from the State Serum Institute i Copenhagen, reported having subcultured *S. pallida* after keeping it at −16°C for 3 months but stated that at 2°C they died after some days. Krantz (1923 showed that cultures of *S. pallida* could multiply a room temperature; after culture at 0–5°C for days the spirochætes were readily recognisable, though non-motile, but viability persisted, since they grew on subculture. Krantz also froze his culture at −20°C for an hour and found the organism still strongly motile 48 hours after thawing. More recently it has been shown that when spirochætes are maintained in the frozen state at −78°C they may remain virulent for at least 3 years (Turner and Fleming 1939), but at −20°C virulence disappears within 2 months (Turner 1938).

While I was actively interested in this question of the viability of spirochætes, Selbie (1943), at the Bland-Sutton Institute of Pathology, Middlesex Hospital, was investigating how long *T. pallidum* remained infective in stored blood, plasma, and serum at low temperatures. Suspensions of rabbit chancre in rabbit plasma were stored at 5°C and tested for virulence at various periods thereafter. He found the period of survival to be about 6 days—rather longer than the period found by other workers investigating the same problem. Despite this, he considered the transmission of syphilis by stored blood to be unlikely, because "in the first place, the numbers of spirochætes in the infected plasma were many times greater than those encountered in human syphilitic blood; secondly, the infected plasma was injected, not into the blood-stream, but into a sensitive tissue, thus largely precluding the operation of the natural defences of the host."

SUMMARY

In 10 consecutive cases of penile chancre in which *T. pallidum* had just been found, series of capillary tubes of serum were prepared, sealed, and stored for subsequent examination.

In cases 1–7 and 9, in which the tubes were stored in an incubator at 37°C (98·6°F), *T. pallidum* remained viable at least six days (in case 5 ten days

Of 11 cases treated by this method 10 completely recovered.

I wish to thank Dr. L. Laub, late chief of the department of laryngology, St. Roch's Hospital, for his skilled coöperation in applying the local treatment.

ADDENDUM

Mr. C. Price Thomas, of the Brompton Hospital, was good enough to draw my attention to the fact that, about the same time, similar experiments were carried out, with similarly good results, by Mattei et al.[1] at Marseilles.

AN EASY TECHNIQUE FOR INTRAVENOUS CANNULISATION

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The technique described here has been used on twenty-five patients at the Royal Northern Hospital, Holloway. It is a simple, speedy, and effective method for introducing a blunt cannula into a vein.

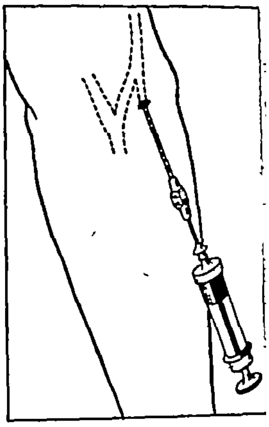
It has advantages over the West Middlesex needle method in that it is much easier and does not need a vein junction for its performance. Experience shows that the West Middlesex needle tends to pierce veins or slip past them unless one enters a fork where two veins join—e.g., at the origin of the cephalic vein at the back of the wrist. The method described here can be used at this point, the bend of the elbow, the long saphenous vein in front of or above the medial malleolus, or any vein which can be distended sufficiently for an intravenous needle to enter. It does not destroy the vein used and is successful in all but extremely collapsed or very small veins and thus has definite advantages over a tied-in cannula. It is also much quicker to perform and the whole transfusion can be set up in five minutes.

Requirements.—These are simple and will be found in most wards:

(1) a medium-sized (about S.W.G. 18) straight blunt cannula of the West Middlesex or Jubé type; or alternatively a sharp-ended intravenous transfusion needle which has had its tip filed off;
(2) a fine lumbar-puncture needle which will go through the cannula easily and protrude from its tip for $^3/_4$–1 in.;
(3) a small syringe;
(4) a fine hypodermic needle;
(5) a small scalpel;
(6) an adapter.

Procedure.—Choose any suitable vein and inject local anæsthetic intradermally about $^1/_2$ in. distal to the point where it is proposed to enter the vein. All that is necessary is to raise a small weal. While the local anæsthetic is taking effect, set up the intravenous apparatus in the usual way and attach the adapter, which is going to fit into the cannula, to the end of the rubber tubing. Next make a short skin incision (less than $^1/_4$ in. is sufficient) and push the cannula through this to ensure its going through easily when the time comes. The lumbar-puncture needle is attached to the syringe which has been used for the local anæsthesia, and the cannula is slid over the needle so that its base lies next to the base of the lumbar-puncture needle.

The vein to be used is then distended. If the long saphenous vein is being used, it is useful to have a sphygmomanometer cuff round the calf. Next, insert the lumbar-puncture needle and the tip of the cannula through the skin incision (see figure). This latter point is important, since it prevents difficulty at a later stage If the cannula tip is left outside the incision it tend to become caught on the edge of the skin in passin through the incision at an acute angle. Enter the vei in the usual way about $^1/_2$ in. proximal to the incision and slide the needle into the vein slightly further after ensuring, by withdrawing blood, that the vein has been entered. Then slide the cannula along the needle into the vein with the right hand, steadying the syringe with the left as this is done. There will be a definite feeling of resistance as the cannula enters the vein; it is then slid right in up to its base, and the syringe and needle are withdrawn after compression has been released. Blood will then trickle out of the cannula, and th adapter is attached and the transfusion started. Th cannula and tubing are strapped to the part in th usual way, but it is unnecessary to splint the limb unles the patient is restless or a vein at the bend of the elbo is being used. When the time comes, the cannula i simply pulled out and a small dressing applied.



My thanks are due to Mr. Hamilton Bailey, F.R.C.S., fo advice and encouragement, and the nurses of the Roy Northern Hospital for patient assistance.

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[1] Mattei, C., Recordier, M., Métras, H., Barbe, A. *Pr. méd.* March 23, 1946, p. 185.

GLANDULAR ENLARGEMENT IN ADULT

REVIEW OF NINE CASES

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During the late war I saw occasional cases of enlarg lymphatic glands, with or without a rash and pyrexi where the blood changes did not correspond to those glandular fever.

These cases presented some difficulty in diagnosis, an there was always doubt whether they were isolat atypical cases or a separate syndrome. For this reas this small group of cases, occurring on board ship, reported, and because the pathological investigatio did not seem to confirm the clinical diagnosis.

The cases were distributed over two voyages in t same ship: 7 on the first voyage and 2 on the secon

The group of 7 patients were seen within a peri of 16 days, 5 of them being members of the crew a 2 passengers. All 5 of the crew were about 21 yea old. The histories of all the cases were similar, exce where stated.

The patients first complained of a "lump behind t ear," which proved to be a painful enlarged lymph-glan Further search showed that glands were enlarged both sides of the neck, in the axillæ, and to a less extent in the groins. The spleen was impalpa throughout the illness, and the patients were apyrexi In 5 cases there was a macular rash on the chest (unnotic by the patients), which faded in a few hours. A six patient had a macular rash on the face only, and t remaining patient had no rash at all. Blood films do on board showed a moderate leucocytosis (11,00 14,000 per c.mm.) and an increase in mononucle (14–25%). These cases were diagnosed as glandular fe (infective mononucleosis).

Cases 1, 2, and 3, in which the disease began March 19, 21, and 24, 1947, respectively, were furt

Medical Societies

ROYAL SOCIETY OF MEDICINE

Child Guidance in the Health Service

At a meeting of the section of pædiatrics on Nov. 28, with Dr. W. G. WYLLIE, *the president, in the chair,* a discussion on the place of child guidance in the new health service was opened by Dr. IAN SKOTTOWE. The child-guidance movement in organised form dates, he said, from 1929; and it embraces all child psychiatry except gross mental deficiency. The movement has become highly specialised; and it is perhaps a little isolated from general medicine and other branches of psychiatry. Account must be taken of more specialties than are implied by dynamic psychopathology alone; and there are strong arguments for integrating child guidance with the new health service. Of 100 children up to the age of 16 seen at the psychiatric clinic of the Royal Buckinghamshire Hospital, Aylesbury, 64 were referred by family doctors: 31 were aged 14–16: and no fewer than 33 had significant somatic disease requiring treatment in another special department, while in a further 9 some somatic investigation was required. Of the 100, 43 needed skilled psychotherapy, 19 the services of an educational psychologist, 18 social service, and 10 residential treatment of one sort or another. From recent surveys had emerged the idea of (1) child-guidance centres, associated with schools and not controlled by doctors, and (2) child psychiatric clinics at general hospitals to which children needing treatment would be referred. This concept had been criticised because of the so-called "dual administration"; but there was nothing inherently impossible about such an arrangement.

Dr. A. A. E. NEWTH emphasised that most maladjusted children are basically normal; but close medical supervision was important. The unification of psychiatric services, sometimes advocated, had its drawbacks; was the mental-hospital psychiatrist likely to be sympathetic to the mild psychological mishaps of childhood? Moreover, too close an association of child-guidance clinics with other mental services might enhance the diffidence of parents in seeking advice. In Dr. Newth's experience most cases were referred initially by teachers, only some 8% being sent in the first place by doctors. Very distressing behaviour might result from trivial maladjustment, while severe maladjustment might evince itself by only slight behaviour disorder. Educational psychologists should not be shouldered with the responsibility of classifying the disorders, for these cases, he said, were complicated and had many and deep roots: the identification of these roots was the more difficult because the very person reporting the disturbance was sometimes largely responsible for it. Thus the American idea of a team was inescapable. The trouble was often sown in early childhood, symptoms becoming apparent only by contrast with others at school: it was therefore reasonable for educational authorities to have a hand in dealing with the disorder. Buildings for the centre should, Dr. Newth suggested, be near to, but separate from, the school: and mentally deficient or psychotic children should not be seen there. Schemes for such centres could not be complete in themselves; for the backing of children's hospitals and of pædiatricians was essential.

Dr. MILDRED CREAK agreed that symptoms are no guide to the condition; so initial investigation should be by the experienced and expert. The waiting-list was a major problem at most clinics: and a first step must be to remove it. The psychiatric problems seen in children's hospitals differed from those at clinics, for they included a large proportion of psychosomatic disturbances. Parents naturally sought a physical explanation for psychogenic disturbances; and it was most important that such states as hysterical vomiting should be quickly referred to the psychiatrist before they became fixed. Clinics whose work was confined to diagnosis tended to widen the gap between general medicine and psychiatry; and students should have the chance to see cases being treated. The psychiatrist working alone was as helpless as the surgeon alone; the psychiatrist should be supported by an educational psychologist and a psychiatric social worker.

Dr. H. S. BRYAN held that, since psychosomatic disorders were so common in children, it was more important for the children's psychiatrist to have had experience in pædiatric departments than in mental hospitals. If child guidance was to be fully effective it must become preventive by reaching every child at an early age. The health visitor might, by extra training, become the spearhead of the attack.

Prof. C. W. VINING was opposed to division between pædiatrics and child psychiatry.

Dr. LETITIA FAIRFIELD contended that child-guidance clinics should be multiple rather than uniform in character. There was need for the screening of cases, and teachers and other school authorities should be able to deal with "naughty children." Up to 1929 pædiatricians had contributed nothing to child guidance "except to give thyroid to mongols"; but of course that was now changed. In a non-equalitarian country such as Britain doctors and nurses in hospitals did not understand the situation in schools from which cases were referred.

Dr. L. G. HOUSDEN said that parents should be enabled to guide their children. The attitude of modern young people was epitomised in an essay by a nineteen-year-old girl who wrote: "I shall send my child to church and Sunday school. Then if it does anything wrong, they can't say it was my fault."

Dr. J. D. KERSHAW deplored the defeatism by which the psychiatrist lurked in the hospital and advanced half-way to meet the maladjusted child, at the child-guidance clinic. He should be based on the clinic and from there move forward the whole way to meet the child. Dr. Kershaw suggested that maladjusted children would be fewer if parents were provided with the physical means for affording the right environment. The child should be considered in relation to his home background and his future.

Dr. A. F. ALFORD (Ministry of Education) said that the child-guidance clinic was to be the pivotal point between the educational service and the National Health Service: in treatment there would be no watertight division between the personnel of the two services, and the patient was to be treated as a unity.

MANCHESTER MEDICAL SOCIETY

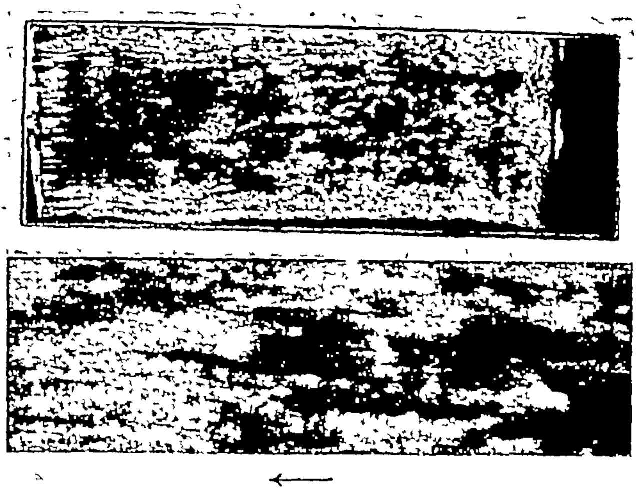
Prognosis of Mental Disorders

AT a meeting of this society on Nov. 5, Dr. G. HOWARD KITCHING, opening a discussion on the prognosis of mental disorders, said that the patient and his relatives want to know not only whether he will get better, but also whether he will be completely well, and what effect the illness will have on his future, on his work, and on his married life. All mental disorder arises from one, or from combinations of two or more, of four groups of precipitating causes: weaknesses or tendencies in the innate constitution; the tendency for mental illness to occur at the epochal crises of life (puberty and the menopause); exceptional mental experiences such as "shocks," which to operate must be major experiences affecting the patient's self-esteem; toxic or structural damage to the nervous or other systems.

He grouped mental disorders under four principal headings:

A Those in which cerebral capacity is reduced. If the condition is congenital the case is one of mental defect of varying degree, if acquired, the case is one of organic dementia. Confusional states may be included in this group. The prognosis of mental defect is, of course, radically stationary and hopeless. In the inorganic dementias the ultimate tendency is downhill, but often with surprisingly long remissions, especially if the onset is acute and associated with some toxic cause.

B Those in which mental coördination is reduced. This group includes all those diverse conditions which have as a fundamental feature a discrepancy between thinking and feeling: the schizophrenic paranoid series of illnesses. In general the prognosis of this group of disorders is bad. Cases with an acute onset have a better outlook than those of



Above: streaky blood film on microscope slide.
Below: enlarged view of part of film, showing typical knobs at head of each streak.
Arrow indicates direction in which film was spread.

had confused the streaky films with the phenomenon described by Fahraeus,[1] in which a large drop of blood is allowed to flow over a slide, and a granularity gradually appears within it. This granularity is in fact rouleaux formation and its degree naturally runs parallel to the E.S.R.

That streakiness did not represent rouleaux formation was shown by microscopical examination, for though the cells in the rivulets were closer together than elsewhere on the slide they were not usually even in contact with one another. Nevertheless its very close parallelism with the E.S.R. suggested that streakiness had some connexion with rouleaux formation; and we felt that it might represent a preliminary stage in the process—a coming together of the cells before they formed chains.

Between 1939 and 1946 large numbers of cases were collected which confirmed the close correlation between streakiness and the corrected E.S.R.; but further investigation was impracticable during this period. Early in 1946 we saw a case of myelomatosis with an extremely rapid E.S.R. but no streakiness—the first gross exception to our rule that we had come across. Moreover the blood films of this patient, though perfectly homogeneous to the naked eye, showed extreme rouleaux formation under the microscope. Clearly, then, rouleaux and streakiness were fundamentally independent of one another. Another significant finding in this case was an extremely high serum-globulin and a normal plasma-fibrinogen. About this time we obtained some human fibrinogen and showed that, as the plasma-fibrinogen was increased, the E.S.R. and streakiness increased quantitatively. These two sets of data forced us to conclude that, whereas rouleaux formation and E.S.R. increased with increasing amounts of either fibrinogen or globulin, streakiness was produced only by an increased amount of fibrinogen.

In view of this finding it seemed possible that streakiness might be due to the precipitation of fibrin—that in drawing out a blood film one partially defibrinated the blood. This possibility was excluded by showing that streakiness was equally well developed in oxalated or citrated blood. This observation was important, since it enabled us in future experiments to work with blood containing an anticoagulant.

We next found that minute traces of bile-salts added to the plasma not only brought sedimentation to a standstill but also completely ironed out streakiness. Both phenomena were eradicated by a lowering of the surface tension, so presumably both phenomena depended on surface forces. It is known that rouleaux formation is the result of surface forces acting at the interface between the cells and the plasma; was it possible that streakiness was produced by surface forces acting at the interface between plasma and air, or between plasma and the glass surface of the slide? If that was the case one would expect that plasma freed from cells would show streakiness; but all our attempts to demonstrate this were in vain.

FIBRINOGEN

We finally consulted Prof. E. K. Rideal, of the Royal Institution, who on examining our streaky films said that the appearance was undoubtedly due to the molecular aggregation and partial denaturation of the protein in the plasma. He suggested that we should again try to demonstrate streakiness in plasma films. This we did, and, after many failures, one of us (T. H. N.) suddenly noticed that if, while the plasma film was still wet, one examined its surface by reflected light, one could detect a series of longitudinal ridges. Once noted the effect was obvious; and we soon demonstrated that the degree of waviness of plasma films ran parallel to the streakiness of the corresponding whole-blood films. Moreover, when we made films from the serum of blood which gave streaky blood films and wavy plasma films, the serum films were always perfectly smooth. Thus we obtained striking confirmation of Professor Rideal's suggestion that streakiness was due to a molecular aggregation of the protein, and of our own earlier conclusion that streakiness depended on the fibrinogen and not on the other plasma-proteins.

Mr. E. M. Shooter, one of Professor Rideal's research-workers, has since pointed out to us why this should be so: for molecular aggregation is much more likely to occur with the elongated molecules of fibrinogen than with the much less elongated molecules of globulin and albumin. Since then we have found two further cases with a very high E.S.R. and little or no streakiness, and in both cases the globulin has been much raised and the fibrinogen about normal. Further, Mr. Shooter gave us a small quantity of human γ-globulin with which we increased the E.S.R. to a high figure without producing any streakiness.

CONCLUSIONS

Further work has confirmed that streakiness gives a useful clinical indication of the plasma-fibrinogen level; that in the great majority of cases it is a useful indication of the corrected E.S.R.; and that a combination of the observation of streakiness with a measurement of E.S.R. is a convenient method for detecting those rare cases in which there is a gross increase of globulin with little or no increase in fibrinogen.

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M.D. Berlin
R. L. Waterfield
M.B. Lond., M.R.C.P.
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[1] Fahraeus, R. *Acta med. scand.* 1921, 55, 3.

. . . It should not be denied that the long-run aim of societies aspiring toward human freedom is to get rid of power, and to bring into existence a free man's commonwealth in which coercion is neither threatened, applied nor desired. This is the thread of anarchist idealism that appears in all uncompromising applications of the key conception of human dignity. When Engels wrote of the eventual "withering away of the state" he was voicing the hope, though not necessarily the certainty, of the radical democrat. In our day, however, the probability that we can reduce power to the vanishing point seems very remote indeed. The urgent task is to chasten and subordinate power to the service of respect.—Prof. H. D. Lasswell at New York Academy of Medicine, Nov. 14.

penicillin nonad tulle

The efficacy of the local application of penicillin has been established by its use in the forms of powders, solutions, creams, and ointments. A new development is the introduction of Penicillin Nonad Tulle. This non-adherent sterilized gauze dressing of wide mesh is impregnated with an emulsifying base of soft paraffin and anhydrous lanoline, containing 1,000 units of penicillin per gram.

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insidious onset, and the prognosis is much affected by the duration of the condition. Obsessional disorder may also be included under this heading.

C. Those in which control is reduced. In these, affective disorders, or disturbances of feeling, show themselves as excess of elation, depression, or anxiety. The response of affective disorder in general to electro-convulsive therapy (E.C.T.) is specific and dramatic, and it successfully cures many of the minor cases as well as most of the major ones.

D. Reactions to situations in which the provoking situation appears to be a predominant factor. This group includes most of the psychoneuroses, and hysteria and anxiety hysteria. A strong element of constitutional predisposition has to be postulated in the patient, for the situations which provoke these disorders are fundamentally common to all people, whereas the neurotic reactions are not.

He considered prognosis collectively and individually. The number of people certified annually in any community is an index of its mental-hygiene movement. A good supply of psychiatric social workers and a vigorous mental-hygiene movement increase the number of certified cases, because they help in the disposal of cases to appropriate hospitals. In England the number of people under certificate is 5 per 1000 population. In any community the amount of serious crime varies inversely as the number of people certified, and one may take it that one mental-hospital bed is roughly the equivalent of one prison bed. Discharge-rates, he considers, are completely fallacious and mean nothing. The average length of stay in an institution is more than 10 years, or one-sixth of the duration of life. Statistics tend to show that psychosis is essentially a chronic and relapsing illness, analogous in medicine to gout, allergy, psoriasis, and diabetes. Statistically, the value of new therapeutic procedures—such as insulin shock for schizophrenia—is extremely problematical.

Of individual prognoses, that in cases of affective disorder has been completely altered by E.C.T. The natural prognosis of involutional depressions was that a third got well, a third remained stationary, and a third went downhill. With E.C.T. a recovery-rate of 80% or over may be confidently expected; and this treatment is almost equally valuable in states of elation, which are much less common than depressive states. It appears to have little real value, however, in schizophrenia or other psychoses.

The prognosis of schizophrenia remains baffling, for the diagnostic criteria vary from country to country, and even from worker to worker. Most workers favour treatment by insulin shock therapy, which reduces the duration of stay in hospital and produces a higher percentage of remissions in acute cases; but such improvements are often not maintained, and the long-term results tend to approximate to those of the untreated disorder.

Prefrontal leucotomy has also altered the prognosis of mental disorder. The results are difficult to assess, because—since it produces irreversible changes—it is not tried (except by uncritical enthusiasts) in early cases until other methods have failed. It cures many depressive and agitated states which have failed to respond to E.C.T., has produced good results in schizophrenia, and in many cases has changed a socially unacceptable psychosis into a socially acceptable one. Drug-addictions, including alcoholism, have a bad prognosis, and need psychotherapy combined with institutional treatment. One authority has estimated that 10% of cases are cured and remain well for three years. Statistical studies of the psychoneuroses and of the value of psychotherapy are at present almost valueless because they depend too much on subjective assessments made by patient and doctor.

Reviews of Books

Diseases of the Chest with Emphasis on X-ray Diagnosis

E. H. RUBIN, M.D., attending physician, division of pulmonary diseases, Montefiore Hospital, New York. London: W. B. Saunders. 1947. Pp. 685. 60*s*.

Dr. Rubin, in his preface to this elaborate volume, says that he designed it for general practitioners, sanatorium physicians, medical students, and radiologists. It is doubtful whether any specialised textbook has ever been written which could appeal to so varied an audience, and this one is no exception. It is far and away too detailed for the busy general practitioner, and most of it demands a knowledge of radiology and clinical pathology which no medical student could possess. Considered as a book by a specialist for specialists it has much to recommend it, and in some ways it breaks new ground, differing from other books on chest diseases in its emphasis on surgery and radiography. In the sections on suppuration, tuberculosis, and neoplasms, the author always gives a reasoned evaluation of surgical treatment based on his own wide experience, and in addition his brother, a thoracic surgeon, has contributed a brief and well-written résumé on surgical procedures in the chest. Dr. Rubin undoubtedly has a profound knowledge of chest radiology, and his analytical approach to interpretation should be followed by all chest physicians. Many of his descriptive terms for X-ray pathology are unhappy, however, and there is insufficient attention to the radiological points which help in differential diagnosis. As against these faults of omission, the book is a mine of detailed information readily found through an excellent index. It is ideal reading for higher medical examinations.

Psychology of Women

Vol. II. *Motherhood*. HELENE DEUTSCH, M.D., associate psychiatrist, Massachusetts General Hospital. London: Research Books. 1947. Pp. 439. 25*s*.

THESE volumes, the first of which we reviewed last year (1946, ii, 946), are frankly a psycho-analytic interpretation, and may seem at first reading to exalt the psychic at the expense of the somatic manifestations of disordered function. It is startling, for example, to be told that a woman is capable of postponing the delivery of her child for psychological reasons; yet the converse—that miscarriage can be induced by anxiety and other psychic states—is a commonplace, and there is no intrinsic difference in the two. That unconscious resistances to the idea of pregnancy can hinder conception is now suggested by physiological evidence, and the cases quoted by Dr. Deutsch strongly support such findings from the psychological angle. She is at her best when discussing purely psychological situations—the relations of stepmothers and stepchildren, of man and wife, of foster-mother and adopted child, and the adjustments which all women must make at the climacteric. With her evidently wide experience, and her insight into conscious and unconscious mental processes, she sheds many a sharp beam of light on human antics, and sets the reader thinking on rewarding lines. She brings home with uncommon force the great variety of things people do, and more especially the things they do, willy-nilly, to their children. Again and again the grown person tries to act out with her mate or her children some situation from her own childhood which left her dissatisfied; and of course the same is true of men. Carrying so much bias for disaster as we do, the wonder is not that few achieve the ripeness which is all, but that any do; and perhaps even these have more often to thank the benign patterns of a healthy soma than the wisdom and virtue of a mature psyche. Dr. Deutsch is good at pointing out those aspects of the psyche which most commonly fail to ripen.

Urologic Roentgenology (2nd ed. London: H. Kimpton. 1946. Pp. 259. 27*s*. 6*d*.).—This compact little book by Dr. M. B. Wesson, ex-president of the American Urological Association, was originally written for radiologists and physicians interested in urology. There have been great technical advances since the first edition, and the extensive use of intravenous pyelography now demands some knowledge of interpretation from all members of a hospital staff. All the abnormalities and diseases of the genito-urinary tract are adequately described, but special emphasis is laid on the commoner ones. The illustrations are liberal and excellent, and the text is so well written that it is a pleasure to read.

THE LANCET

LONDON: SATURDAY, DEC. 6, 1947

Advisers of the Boards

SURPRISE will have been felt in many quarters at ast week's advertisements in our columns for whole-time psychiatrists to certain of the regional boards. What is to be their function, and are these appointments to be followed by similar ones for other specialties? If so, where is the process to end?

The general expectation had been that whole-time professional appointments to the regional headquarters staff would be limited to the chief administrative officer—with perhaps one or two subordinates acting as his assistants—and that he would be concerned with administrative rather than professional matters. The simultaneous appearance of advertisements from several regions suggests that the move in a new direction originated from headquarters in the Ministry rather than by local initiative. If psychiatrists are needed to help with the immediate office work at regional headquarters, it might have been supposed that they would be part-time advisers already holding key positions in the psychiatric service in the region. The present proposition is quite different; for the new posts are permanent and whole-time, and carry salaries second only to those of the chief administrative officers themselves. In the absence, therefore, of any official statement explaining the purpose of these appointments it seems fair to assume that an important principle is at stake. The tendency they imply might easily lead to a form of "officialism" very far removed from the hopes of many who have warmly supported the regional idea. A primary object of the proposed organisation, as we understood it, was to give the regional boards the benefit of advice and guidance from the best medical opinion in the region; and though it is true that no specific provision is made by the Act for medical advisory committees to the boards, the consequences of a failure to establish such machinery would be serious. We cannot now afford to dispense with an arrangement which has been handed down to us in the best traditions of the voluntary hospitals. And if there is anything about which the medical committee of a hospital has a right to be sensitive, it is the making of whole-time appointments to key positions without any reference to it.

We are here in deep water, and it is surely time to look again at first principles. Many of the questions that the boards will have to consider will be closely analogous to those that confront the individual voluntary hospital. The relative priorities of this or that branch of medicine and their claims on the available resources will need to be debated Sooner or later the whole of the medical staffing in the region will have to be revised, and all kinds of new appointments made. How are these matters to be discussed and settled? Either the board can settle these things itself, relying on the advice of its chief administrative officer and of those of its own members who happen to be medical men; or it can appoint properly constituted medical advisory committees representative of all the various interests in the region, and take the advice of their accredited representatives before reaching its own decisions. Surely these alternatives have only to be clearly stated for it to be obvious that the latter method is the right one. If then the need for medical advisory committees is clear, is it wise at this early hour to appoint whole-time specialists on the lines indicated in the recent advertisements, before the medical advisory machinery has had a chance to function? For what whole-time specialist, once attached to the staff of the board as its privileged adviser, is going to look with favour on the establishment of an advisory committee by which his advice will be criticised? If this path is followed it is only too probable that all hope of the evolution of satisfactory medical committees for the region will die away.

Progress in Cancer Research

A PICTURE in *Nature*[1] of some little white balls, 200 A in diameter, lighted on one side and casting a shadow on the other, together with the caption that they were derived from lactating tissue of high-cancer-strain mice, provoked from the uninitiated the query "Are these really the cause of cancer?" This question was discussed at a meeting of the Royal Microscopical Society on Nov. 19 and it seems that we still do not know the answer—unless perchance it can be supplied by the editor of *Life*, in whose pages appear the only available picture and account of similar particles obtained in similar studies in the United States[2]

Previous biological tests showed that milk, tumours, blood, and some normal tissues derived from high-cancer strains of mice contain an agent which under certain specific conditions can produce mammary tumours. When water extracts of such material were spun at high speed they yielded a deposit, including this agent, which was thought to consist of very small particles. Professor PASSEY and his associates at Leeds set out to determine whether these particles could be rendered visible by electron microscopy and whether any of the particles which appear in photographs represent the active extractable agent. By a suitable technique clear-cut pictures of rounded particles 200 A in diameter were eventually obtained from, and only from, milk and tissues of high-cancer lines. At the Royal Microscopical Society's meeting the investigators met criticisms in respect of the size and shape of the particles and the treatment of the extracts, but they did not claim finality or even satisfaction. They are handicapped by having only the occasional use of an elderly temperamental instrument from which too much is being asked, and extraneous difficulties are always hard on biological studies, which impose their own exacting conditions. Hence progress has inevitably been slow. Nevertheless if these particles are the agent, in single units or conglomerations, it is a big advance to show that they can be displayed by electron photography.

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1. Passey, R. D., Dmochowski, L., Astbury, W. T., Reed, R. *Nature, Lond.* 1947, 160, 565.
2. *Life*, July 21, 1947, p. 68.

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for children's hospitals to establish them. It would be a mistake, however, to shape our plans for the future in accordance with present experience of the sources and types of children treated; for in an area which is exceptionally well served only two-sevenths of the modest requirements laid down by BLACKER[1] and others are met. Until a service is nearly adequate, sampling by clinic records is quite arbitrary, because the case-load of a clinic is quantitatively and qualitatively merely a reflection of the reputation, interests, and capabilities of the clinic's staff. Another principle to be observed in planning is that first consideration must be given to the interests of the children and their parents rather than to any popular administrative doctrine such as the contemporary urge for unification

The solution proposed by BLACKER and supported in a Nuffield Provincial Hospitals' Trust report[2] is that child guidance should be undertaken at centres controlled by the education authority, where mainly educational problems would be dealt with by a psychologist, and from which children deemed to be psychiatrically ill would be sent to clinics under the health authority, where a psychiatrist would preside. With its obvious administrative convenience, this proposal is approved by some educationists and mental-hospital authorities, but it is opposed by the Child Guidance Council (now merged with the National Association for Mental Health), which stands for the team principle. Objections raised to the scheme are that, in applying the ominous political device of partition, it depends for success on a mutual tolerance not always evident except where the working bond is close, and that it presupposes among educational psychologists a state of clinical experience which seldom exists: it entrusts to untrained persons the difficult task of recognising psychiatric illness among school-children, while the psychiatrist, against the trend of modern psychiatric practice, retreats once more to his clinical castle. Although this does not apply to the authors of the present proposals, similar schemes in the past have derived some support from a refusal to recognise the full implications of emotional disturbances in children, with a consequent desire to establish a cordon sanitaire to protect maladjusted children from psychiatrists unless all else fails This may even take the form of a standing committee whose function is to review reports from all possible sources before agreeing to send a child to a clinic. Another escapist argument is that most children's maladjustments may be satisfactorily dealt with by the light of nature and that psychotherapy is little more than applied common sense. But common sense, and persuasiveness, are common among those who handle children, and they will continue to fail where it is necessary to face the deeper emotional issues.

At first sight, the obvious place for child psychiatry is with the mental-health services; but child guidance is far wider than child psychiatry, and even the latter has derived comparatively little from the study of adult problems. Again, public opinion is not such that the prevention of children's maladjustments will thrive on close identification with adult psychiatry; the change in name from Mental Hospital Services to Mental Health Services has yet to be associated with an equal change in orientation, and mental hospitals have contributed little to the understanding of the difficult child. Recent experience, moreover, has shown that psychiatry is most effective when nearest to the problem as it occurs in life. Modern child guidance comprises work in maternity and child-welfare clinics; in schools, by selection and grading of pupils and by special teaching methods; in foster-homes, boarding homes, and residential schools; in children's hospitals, notably orthopædic and fever; and finally in diagnosis, disposal and treatment, at the clinic itself, in work in the home, and in the provision of special hostels for treatment. The authorities concerned in all this will include regional hospital boards, local health authorities, local education authorities, and the Home Office, and we should recognise that the first-named has no pre-eminence of interest: indeed the highest common factor, as it were, is the local education authority, which of all public bodies now has far the most intimate concern for the mental and physical development of children between the ages of 2 and 18. It seems logical, therefore, for the great preventive mental-health service of childhood to remain an integral part of that system, and there seems to be no paramount administrative reason for changing the existing arrangements by which child guidance is administered by the School Medical Service, which is itself intermediate between the education and the health interests. Thus placed, the child-guidance services can be linked through the School Medical Service with hospitals and specialists, and particularly with pædiatrics; and there is no reason why the psychiatrists employed in this work should not be carried on the establishments of regional hospital boards Both the medical and the educational aspects of child guidance should be under the unified control of experienced clinicians, and the operations of educational psychologists in the schools should be firmly based on the clinical team; though this does not mean that the psychiatrist must necessarily be the administrative head of the service. In addition there is every reason for general and psychiatric hospitals to develop their own departments of child guidance so that psychiatric principles may permeate medical teaching, so that research can be undertaken, and so that patients can readily be given any special form of treatment they may require.

Despite the demand, however, there may be no future in this country for child guidance unless the supply of clinically trained workers of all disciplines is radically increased. This is not a matter of giving courses of lectures and of amending the regulations for diplomas, but of providing clinical experience in therapy under the supervision of those who are qualified to teach. Concentrated courses of a few months give time neither to absorb the subtleties of treatment nor to learn about children at home and at school. Diagnosis and disposal can be learnt fairly easily, but to acquire therapeutic skill needs long-continued practice under supervision In the shortage of adequately trained therapists, competent and willing to treat difficult cases, lies the most dangerous threat to child guidance.

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1. Blacker, C. P. Neurosis and the Mental Health Services, London, 1946.
2. Appendix to a report on the planning of hospital services in the Berks, Bucks, and Oxon region, Nuffield Provincial Hospitals Trust, 1947; see *Lancet*, 1947, i, 421.

recorded is 170 mm. Hg, while the lowest diastolic pressure is 100 mm. Hg. Of the 116 patients in the series, 78 had essential hypertension (61 benign, 17 malignant), 4 were probably examples of benign essential hypertension, and 18 had secondary hypertension ; in the remainder the cause of the raised blood-pressure was uncertain. The cases were divided into four groups according to family history : group 1 comprised those n which one or more parents had hypertension ; group 2 hose in which there was a probability of this ; group 3 hose in which there was no definite evidence one way r the other : and group 4 those in which the evidence was against hypertension in either parent. The control roup consisted of 71 unselected patients over the age of hirty with no history of hypertension. Analysis showed hat in approximately 76% of cases of essential hyper-ension there was a family history suggestive of hyper-ension, while in only 6·4% was the family history egative. In the 38 patients with secondary hypertension family history of hypertension was obtained in only 4%, and there was no evidence of such a history in 42%. he corresponding figures for the control patients over he age of forty were 36% with, and 35% without, a mily history of hypertension. As Platt points out, if sential hypertension is inherited by a simple mendelian minant transmission, family history should always be sitive. He has therefore reviewed the 5 cases in which mily history was apparently negative, and in only of these was it impossible to find some factor which rew doubt on the diagnosis of essential hypertension. hilst absolute evidence is still lacking, this investiga-on, particularly when taken in conjunction with the dings of Ayman[10] and of Weitz,[11] goes far towards tablishing the hypothesis that essential hypertension a hereditary disease conveyed as a mendelian dominant ith a rate of expression of more than 90%. Whether e inherited factor is specific for hypertension or is erely a tendency to arteriolar change is a question quiring further investigation.

STREAKY BLOOD FILMS

It is a sad fact that human curiosity is least stimulated the things which happen most often. There are, for stance, so many blood films in the hæmatologist's life at he accepts their physical vagaries with automatic ritation. The well-known product consisting apparently a “ drop of semi-clotted blood worried across the dirty rface of one slide by the jagged end of another ” he htly ascribes to bad technique, but the strange pre-lection of the polymorphonuclears for the edges of the m he regards with resignation. It is refreshing, there-re, to find Boveri, Waterfield, and Newman, whose eliminary report appears in this issue, tackling scien-fically that other familiar annoyance, the blood film hich, despite immaculate technique, dries in streaks. n coming to grips with this problem they were at first pressed by a correlation between such streakiness and high erythrocyte-sedimentation rate of the blood from hich the films were made. However, rouleaux did not cessarily occur in the ridges of red cells forming the reaks, and not all patients with a high E.S.R. showed the enomenon, in spite of obvious rouleaux in their films. urther investigation revealed the probable causal factor a raised blood-fibrinogen level, which often, but not ways, accompanies a raised E.S.R. Blood films in such nditions as uncomplicated anæmia or myelomatosis, which the fibrinogen content is normal but the E.S.R. ised, showed no streakiness. The obvious possibility at the ridges were due to some partial or impending agulation of fibrinogen was ruled out by the occurrence streakiness in oxalated or citrated blood. Moreover, the addition of traces of bile-salts, with a consequent lowering of the surface tension, abolished the ridges. It was finally observed that films made from plasma alone showed a wavy surface when examined while still wet if the plasma was derived from blood giving streaky films, while serum always produced smooth films.

The streaky film is of clinical importance since it may afford a simple and rapid method of demonstrating a significant increase in blood-fibrinogen, which, unlike the E.S.R., is not affected by anæmia. These observations of the physical behaviour of fibrinogen under certain conditions of concentration and surface action may also throw light on the more academic problems of blood-clotting. Finally there is the moral that an insatiable curiosity about the common little events of everyday life is a gift valuable to the systematic investigator.

BOVINE TUBERCULOSIS

THE present organisation of our universities, and of our local and national services, does not favour close collaboration between the medical and veterinary *professions: in spite of occasional exhortations about* the importance of comparative pathology, it is an unfortunate fact that medical and veterinary pathologists usually work quite separately. It is therefore all the more encouraging to find someone who has taken the lesson to heart and has endeavoured, in a subject of such major interest as bovine tuberculosis, to make a comparative study of the disease in man and cattle, and to present his results in the form of a comprehensive and eminently readable review.[1]

Mr. Francis has collected information from many different countries, and has provided useful figures on the incidence of tuberculosis in cattle and on the extent to which control measures have proved effective. He suggests that, in Great Britain, tuberculosis did not become common among cattle till the introduction of town dairies, which developed with the growth of the manufacturing centres during the latter part of the 18th century. The conditions under which the animals were kept in these dairies were deplorable, and it is not surprising that by the middle of the 19th century about 20% of cattle examined in Durham were found post mortem to be tuberculous. The most recent figures, based on tuberculin tests, lead to the conclusion that about 20% of all *cattle* in England, 7·5% in Wales, and 14% in Scotland are infected with the tubercle bacillus. For Great Britain, as a whole, about 17–18% of *cattle* and 30–35% of *dairy cows* react to the tuberculin test. The incidence of udder tuberculosis is estimated to be about 0·5% for all cows and 1·5% for tuberculous cows. There is reason to believe that the incidence of bovine tuberculosis has altered little during the last fifty years. The economic loss due to this disease in cattle alone is estimated to be £1–3 million per annum.

Contrasting the disease in man and animals, Francis points out that infection of cattle is mainly aerogenous and affects primarily the lungs, whereas infection of man with the bovine type of bacillus is mainly attributable to drinking milk and affects primarily the extra-pulmonary tissues. Except in infants, tuberculous infection of man results usually in a lesion that retrogresses and eventually heals. In cattle, on the other hand, infection, once it has occurred, tends to be progressive. Hence a positive tuberculin reaction is of far greater significance in cattle than in man. Indeed, Francis says that, since pulmonary lesions in cattle seldom heal, and since they usually extend by the

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[10] Ayman, D. *New Engl. J. Med.* 1933, 209, 194.

[11] Weitz, W. *Z. klin. Med.* 1923, 96, 151.

[1] Bovine Tuberculosis: including a Contrast with Human Tuberculosis. JOHN FRANCIS, B.SC., M.R.C.V.S., Imperial Chemical Industries Biological Laboratories, Wilmslow, Cheshire. London: Staples Press. 1947. Pp. 220. 25s.

Rickettsial Pox

During the summer of 1946 an outbreak of an unusual infection occurred among the 2000 inhabitants of a housing estate in one of the boroughs (Queens) of New York City and was investigated jointly by the New York Department of Health and the U.S. Public Health Service. Although cases were noted sporadically in the early months of the year, it was not until July that the outbreak reached such proportions as to attract special attention. During the first six months of 1946 there were 124 recognised cases (6·2% of the total population), distributed over a wide age-group (from three months to seventy-one years); males and females were affected equally and no occupational relationship could be established.

Clinically [1] the infection was characterised by a primary skin lesion in the form of a papule; this soon developed into a deep-seated vesicle with surrounding erythema and later shrank to a black eschar which disappeared after about three weeks, leaving in most cases a small scar. The lesion was usually found on some covered part of the body and was often accompanied by some regional adenitis but no lymphangitis. About a week after the appearance of the initial lesion an acute febrile illness began, with fever, chills, sweating, headache, and backache—not unlike an influenzal attack but accompanied at the onset or within two days by a maculopapular rash which a day or two later became vesicular and then crusted and which disappeared in four to seven days without scarring. The intensity and distribution of the rash varied considerably, lesions being sparse to abundant and appearing sometimes on the limbs and sometimes on the trunk, but never on the palms or soles. The patients were not acutely ill; they remained alert and coöperative and showed little loss of appetite. There were no distinctive physical signs apart from the rash, and all the patients recovered without complications. Blood-culture and the usual serological tests were all negative; 21 out of 22 patients on whom blood-counts were done showed a leucopenia. The disease most resembled chickenpox and was so diagnosed initially, but the deep-seated vesicle and the lack of any characteristic distribution of the rash, together with the greater constitutional upset and the wide age-distribution, served to distinguish it. Specimens of blood from 15 patients were inoculated into animals, and from 1 out of 5 mice which received blood taken from a patient on the second day of fever an organism with the morphological, cultural, and staining characteristics of a rickettsia was isolated.[2] This rickettsia after primary isolation produced lesions in the guineapig, including well-marked scrotal reactions. It also produced lesions in the chick embryo, and an antigen prepared from the infected yolk sac was used to demonstrate the presence of complement-fixing antibody in the sera of convalescent patients: the same sera reacted less strongly with a Rocky Mountain fever rickettsial antigen. This serological cross-reaction, together with its behaviour in the chick embryo and the guineapig, suggested a relationship between the new rickettsia and *R. conori*, the causal agent of fièvre boutonneuse, but there seem to be some clinical and serological differences between the two infections.

Meanwhile the epidemiologists were establishing the source of the infection.[3] The only insect or animal parasites that were noticeably present in the infected blocks of houses were mosquitoes (*C. pipiens*) and mice. The mosquitoes were exonerated. The mice, it was discovered, were breeding in the basement incinerators, which for want of sufficient attendants were not being regularly fired and were therefore collecting refuse on which the mice fed and bred and from which they invaded various apartments. At the same time mites, often gorged with mammalian blood were discovered, sometimes in great numbers, on the mice, on the walls of the incinerators, and in various living-rooms. From two pools of these mites the same rickettsia—now called *R. akari*—was isolated, and it was also demonstrated, together with specific antibody to it, among the mice.[4] There was a good correlation between mite infestation and clinical cases of rickettsial pox in the houses that were carefully examined. The mite is probably the natural vector of this new rickettsia, and the mouse is the usual animal reservoir; but obviously when occasion offers the mite and the rickettsia are prepared to venture into pastures new, and so another rickettsial infection has been born.

Annotations

HYPERTENSION AND HEREDITY

Clinicians have long been convinced of the significance of a positive family history in assessing the prognosis of patients with hypertension. Hitherto this has been little more than a clinical impression, though it is more than fifty years since Riva-Rocci[5] published his article on sphygmomanometry, and forty years since Gibson[6] made his classical report on the same subject. Three factors may be held mainly responsible for this anomalous state of affairs. In the first place, only of late years has there been anything like agreement on what constitutes hypertension, and even today the agreement is almost as tenuous as that of a council of foreign ministers. The second factor is our lack of knowledge concerning the ætiology of essential hypertension, and the consequent inclusion under this generic title of a variety of conditions which are only now being gradually sorted out. For example, the importance of renal disease, apart from nephritis, has only recently been appreciated: Weiss and Parker[7] have claimed that at least 15–20% of cases of so-called malignant hypertension are due to chronic pyelonephritis, whilst Wosika and Maher,[8] by urological investigation, found that among 600 cases of hypertension 29% were secondary to demonstrable renal causes. The third factor is the difficulty of obtaining an adequate and reliable family history.

It is thus clear that any attempt to establish statistically a hereditary factor in hypertension is fraught with pitfalls, and Platt[9] was undoubtedly right to study a series small enough for personal investigation, and yet large enough to permit of statistical analysis. Only patients with symptoms referable to hypertension were included in his series; the lowest systolic pressure recorded is 170 mm. Hg, while the lowest diastolic pressure is 100 mm. Hg. Of the 116 patients in the series, 78 had essential hypertension (61 benign, 17 malignant), 4 were probably examples of benign essential hypertension, and 18 had secondary hypertension; in the remainder the cause of the raised blood-pressure was uncertain. The cases were divided into four groups according to family history: group 1 comprised those in which one or more parents had hypertension; group 2 those in which there was a probability of this; group 3 those in which there was no definite evidence one way or the other; and group 4 those in which the evidence was against hypertension in either parent. The control group consisted of 71 unselected patients over the age of forty with no history of hypertension. Analysis showed that in approximately 76% of cases of essential hypertension there was a family history suggestive of hypertension, while in only 6·4% was the family history negative. In the 38 patients with secondary hypertension a family history of hypertension was obtained in only [illegible]%, and there was no evidence of such a history in 42%. The corresponding figures for the control patients over the age of forty were 36% with, and 35% without, a family history of hypertension. As Platt points out, if essential hypertension is inherited by a simple mendelian dominant transmission, family history should always be positive. He has therefore reviewed the 5 cases in which family history was apparently negative, and in only [illegible] of these was it impossible to find some factor which threw doubt on the diagnosis of essential hypertension. Whilst absolute evidence is still lacking, this investigation, particularly when taken in conjunction with the findings of Ayman[10] and of Weitz,[11] goes far towards establishing the hypothesis that essential hypertension is a hereditary disease conveyed as a mendelian dominant with a rate of expression of more than 90%. Whether the inherited factor is specific for hypertension or is merely a tendency to arteriolar change is a question requiring further investigation.

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[1] Greenberg, M., Pellitteri, O., Klein, I. F., Huebner, R. J. *J. Amer. med. Ass.* 1947, 133, 901.

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[3] Greenberg, M., Pellitteri, O., Jellison, W. L. *Amer. J. publ. Hlth*, 1947, 37, 860.

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STREAKY BLOOD FILMS

It is a sad fact that human curiosity is least stimulated by the things which happen most often. There are, for instance, so many blood films in the hæmatologist's life that he accepts their physical vagaries with automatic irritation. The well-known product consisting apparently of a "drop of semi-clotted blood worried across the dirty surface of one slide by the jagged end of another" he rightly ascribes to bad technique, but the strange predilection of the polymorphonuclears for the edges of the film he regards with resignation. It is refreshing, therefore, to find Boveri, Waterfield, and Newman, whose preliminary report appears in this issue, tackling scientifically that other familiar annoyance, the blood film which, despite immaculate technique, dries in streaks. On coming to grips with this problem they were at first impressed by a correlation between such streakiness and a high erythrocyte-sedimentation rate of the blood from which the films were made. However, rouleaux did not necessarily occur in the ridges of red cells forming the streaks, and not all patients with a high E.S.R. showed the phenomenon, in spite of obvious rouleaux in their films. Further investigation revealed the probable causal factor as a raised blood-fibrinogen level, which often, but not always, accompanies a raised E.S.R. Blood films in such conditions as uncomplicated anæmia or myelomatosis, in which the fibrinogen content is normal but the E.S.R. raised, showed no streakiness. The obvious possibility that the ridges were due to some partial or impending coagulation of fibrinogen was ruled out by the occurrence of streakiness in oxalated or citrated blood. Moreover, the addition of traces of bile-salts, with a consequent lowering of the surface tension, abolished the ridges. It was finally observed that films made from plasma alone showed a wavy surface when examined while still wet if the plasma was derived from blood giving streaky films, while serum always produced smooth films.

The streaky film is of clinical importance since it may afford a simple and rapid method of demonstrating a significant increase in blood-fibrinogen, which, unlike the E.S.R., is not affected by anæmia. These observations of the physical behaviour of fibrinogen under certain conditions of concentration and surface action may also throw light on the more academic problems of blood-clotting. Finally there is the moral that an insatiable curiosity about the common little events of everyday life is a gift valuable to the systematic investigator.

BOVINE TUBERCULOSIS

THE present organisation of our universities, and of our local and national services, does not favour close collaboration between the medical and veterinary professions: in spite of occasional exhortations about the importance of comparative pathology, it is an unfortunate fact that medical and veterinary pathologists usually work quite separately. It is therefore all the more encouraging to find someone who has taken the lesson to heart and has endeavoured, in a subject of such major interest as bovine tuberculosis, to make a comparative study of the disease in man and cattle, and to present his results in the form of a comprehensive and eminently readable review.[1]

Mr. Francis has collected information from many different countries, and has provided useful figures on the incidence of tuberculosis in cattle and on the extent to which control measures have proved effective. He suggests that, in Great Britain, tuberculosis did not become common among cattle till the introduction of town dairies, which developed with the growth of the manufacturing centres during the latter part of the 18th century. The conditions under which the animals were kept in these dairies were deplorable, and it is not surprising that by the middle of the 19th century about 20% of cattle examined in Durham were found post mortem to be tuberculous. The most recent figures, based on tuberculin tests, lead to the conclusion that about 20% of all *cattle* in England, 7·5% in Wales, and 14% in Scotland are infected with the tubercle bacillus. For Great Britain, as a whole, about 17–18% of *cattle* and 30–35% of *dairy cows* react to the tuberculin test. The incidence of udder tuberculosis is estimated to be about 0·5% for all cows and 1·5% for tuberculous cows. There is reason to believe that the incidence of bovine tuberculosis has altered little during the last fifty years. The economic loss due to this disease in cattle alone is estimated to be £1–3 million per annum.

Contrasting the disease in man and animals, Francis points out that infection of cattle is mainly aerogenous and affects primarily the lungs, whereas infection of man with the bovine type of bacillus is mainly attributable to drinking milk and affects primarily the extrapulmonary tissues. Except in infants, tuberculous infection of man results usually in a lesion that retrogresses and eventually heals. In cattle, on the other hand, infection, once it has occurred, tends to be progressive. Hence a positive tuberculin reaction is of far greater significance in cattle than in man. Indeed, Francis says that, since pulmonary lesions in cattle seldom heal, and since they usually extend by the bronchial route, nearly all tuberculin-positive animals may be regarded as infective for others. In the control of bovine tuberculosis, he believes that pasteurisation of milk affords the only hope of immediate benefit to the human population, and that the eradication method based on the tuberculin test is the only satisfactory policy for dealing with the disease in cattle. He draws attention to the fact that, except for tuberculosis, Great Britain has led the way in stamping out the major zymotic diseases of animals—rinderpest, pleuropneumonia, sheep-pox, rabies, and glanders—and he thinks that the time has now come to make a determined attempt to get rid of tuberculosis. If the rate of progress reached just before the war in the eradication scheme is maintained, he estimates that all British cattle will be in attested herds in about 40 years' time.

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STAIN REACTIONS IN ERYTHROID CELLS

The visible changes in the reaction to various stains are everywhere used to differentiate cells and to assess the stage of their development. There is today general support for a modified monophyletic view of blood-cell development, postulating that most, but not all, cells derive from a common basophilic precursor, the hæmocytoblast. In erythroblasts, whether normal or pathological, the original basophilia of the cytoplasm pales as development proceeds, and then changes, through grey-blue stages, to the pink of the erythrocyte. The nucleus has nucleoli in the earliest (pro-erythroblast) stage, but loses them in the later stages. During the final collapse and pyknosis of the nucleus separated fragments often appear while the nucleus is still present, and many persist as inclusion or Howell-Jolly bodies after the nucleus itself has entirely disappeared.

New light on both the disappearance of cytoplasmic basophilia and the nature of the so-called inclusion bodies has been provided by the use of recently developed cytochemical techniques. Brachet[1] described a cytochemical test for ribonucleic acid which depends on the use of a ribonuclease discovered by W. Jones in 1920 and further explored by Kunitz.[2] The enzyme depolymerises ribonucleic acid, but has no action on deoxyribonucleic acid; and it is the latter which is responsible for the Feulgen reaction that stains nuclear chromatin. Brachet found that the basophilia of the young cells in the bone-marrow of various animals was removed by ribonuclease, and he deduced that the presence of ribonucleic acid accounted for the tint. This reaction has been applied by White[3] to human bone-marrow material, both normal and pathological, obtained by sternal puncture. The marrow films are fixed with Susa solution and then stained with pyronin-methyl-green; this colours bright red the cytoplasm that appears basophilic with the usual Leishman or Jenner-Giemsa stain, and the degree of red stain corresponds to the deepness of the basophilia; the stain also colours nucleoli red. The chromatin of the nucleus takes up the methyl-green. Hæmocytoblasts and all early erythroblasts show red-staining cytoplasm and nucleoli when present. If the marrow films are exposed to the action of ribonuclease before staining, then the nucleoli and the cytoplasm fail to take the pyronin stain. Early normoblasts and megaloblasts show decreasing basophilia as hæmoglobinisation increases; this is paralleled by a decrease of the pyronin-staining material that is removed by ribonuclease. There is thus good evidence that the cytoplasm of early erythroblasts contains ribonucleic acid, and that this is the substance responsible for their basophilia. As development proceeds, ribonucleic acid becomes less and hæmoglobin increases in the cytoplasm, these two changes being reflected in the change from basophilia through pol chromatic stages to the pink colour of the mature r cell. Myeloblasts can also be shown to contain rib nucleic acid in their cytoplasm, and the concentrati decreases as the cells mature into myelocytes.

La Cour[4] has applied the Feulgen reaction f deoxyribonucleic acid to dividing erythroblasts seen the bone-marrow of patients with pernicious anæmia. I noted that the chromosomes of pro-myelocytes have on a low charge of deoxyribonucleic acid as compared wi the pro-erythroblasts. There were other mitotic abn malities, and La Cour suggested that the granulocy abnormalities in pernicious anæmia might be due to t lack of deoxyribonucleic acid because the pro-eryth blasts take the lion's share of a short supply. This interesting, and it links up with the suggestion that fo acid is concerned with nucleic-acid metabolism. B La Cour's observations were made on 2 patients on and it is not clear that the different kinds of cells we adequately differentiated; nor were hæmoglobinis megaloblasts seen in mitosis.

The fact that inclusion bodies are sometimes to found in red blood-cells has been known for a long tim and it was also known that they were particularly lial to appear and persist after splenectomy or even atrop of the spleen. These were the Howell-Jolly bodie they stained a reddish-purple with Leishman or Giem which distinguished them from the grey or black dots punctate basophilia. The Feulgen reaction shows th the Howell-Jolly bodies are nuclear fragments; t bodies of punctate basophilia are not. In 1945 Pappe heimer and others[5] reported the appearance of inclusi bodies in the red cells of 3 patients whose spleens had be removed for anæmia of probable hæmolytic type. T bodies were rounded and often multiple; they did n give the Feulgen reaction and so were not Howell-Jol bodies. They did react with potassium ferricyanide an hydrochloric acid, thus showing that they contain iron. Now iron-containing erythrocyte inclusions h been described by Grüneberg in mice and human subjec and named "siderocytes"; they were thought to be r cells nearing the end of their life, with free iron alread splitting off from the hæmoglobin. Pappenheimer an his colleagues thought that their cells might well l siderocytes, but they offered no explanation for the appearance. Recently McFadzean and Davis[6] in Gla gow have reported iron-staining erythrocyte inclusion in patients with acquired hæmolytic anæmia, and th number of affected cells rose to 60–80% after splenectom These bodies gave reactions like Pappenheimer's bodies they were Feulgen-negative but gave a positive iro reaction; they were mostly rounded but some ha bizarre shapes and were quite large. Investigation of th marrow showed that normoblasts, even when not full hæmoglobinated, were affected; sometimes 70–80% of these cells contained inclusions. It was noted, too that the proportion of normoblasts with cytoplasmi inclusions was about the same before splenectomy a after. McFadzean and Davis therefore suggested tha the red cells deriving from affected normoblasts ar unusually susceptible to destruction in the spleen and that splenectomy enables many more of them t survive in the peripheral blood-stream. They also think that affected red blood-cells in their patients resembl Grüneberg's siderocytes, but hold that interference wit hæmoglobin *anabolism*, rather than breakdown, i responsible for their appearance. These recent reports suggest that some of the earlier descriptions of Howell-Jolly bodies increasing after splenectomy really referred to those ferruginous non-nuclear bodies. Their significance

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Special Articles

THE PROBLEM OF GASTRIC CANCER

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Despite encouraging progress in dealing with cancers in more superficial and accessible sites, cancer of the stomach remains a desperate problem for the clinician and desperately fatal for the victim.

Though the total incidence of cancer is believed to be about the same in the two sexes, in the rich and the poor, and in all nations, gastric cancer has sex, social, and racial distinctions. The racial incidence varies from 20% of all cancers in Great Britain to about 40% in America and over 50% in some Continental countries.[22] It is much commoner in the poor than the rich, and the preponderance of males is 3 : 1 in America and 4 : 3 in Britain. But in all civilised countries where records are kept it is seen to be the chief cause of death from cancer, being responsible for 13,000 deaths annually in Great Britain, and about 40,000 in the U.S.A.[46]—i.e., 33% of all cancer deaths.[29] Worse still, as Ogilvie[32] points out, its highest incidence in men and women is between the ages of 40 and 60, when they have established a place in life, a home, and a reputation; when they are most useful to their profession and their country, and most necessary to their families. It is the commonest type of cancer with the worst results from treatment, for on the average only 1–4% of all patients are alive after five years following curative surgery, and only about four months' prolongation of life can be obtained by palliative treatment.[27]

What can be done to decrease this toll of valuable lives? Apart from the possibility of prevention, about which we can do little until we know more of the causal factors, the problem is one of diagnosis and treatment. Early diagnosis is particularly important, for we know that most patients can be cured by radical surgery when the disease is localised to the stomach.[10] But at present some 80% of cases of gastric cancer are beyond any hope of cure by surgery alone when first brought to the surgeon.[30] In spite of the tremendous advances made in the surgical treatment during recent years, radical surgery can hardly become more radical. What of irradiation? Post-mortem findings show that over 20% of people dying of gastric cancer have the disease *still confined to the stomach* and immediately adjacent glands,[26] but the results of irradiation so far have been disappointing, though they should improve with the wider use of such methods as direct irradiation at high intensity.[12 13] This improvement may not be dramatic, however, and we are forced to conclude that improved results must mainly depend on getting more early cases to the surgeon, and so on earlier diagnosis.

REASONS FOR TOO LATE DIAGNOSIS

Why is diagnosis so often too late? The blame is shared by the patient, the general practitioner, and the consultant. At the New York Hospital it was found that the average duration of dyspeptic symptoms in a series of gastric cancers before admission for treatment was $12^1/_2$ months.[9] The patient took an average of 8 months to seek advice from his doctor, who then took an average of $4^1/_2$ months to reach a tentative diagnosis. Sometimes indeed there was a delay of 6 months or more in the outpatient department, *in spite of all the diagnostic aids*, before a diagnosis was made and surgical treatment sought.

Why should the patient hesitate *in seeking advice*? As Finch[14] says, the main reasons are ignorance, fear, false modesty, and gullibility. Gastric no definite and characteristic symptoms in the ea stages, and it is often only the onset of complicati that may arouse the patient's suspicions.[44] Inde many cases are devoid of symptoms until the diseas inoperable[30 36 43]; or symptoms may have been pres for a few weeks only, though the disease is much ol On the other hand, the recognition of vague sympto depends on the sensitivity of the patient, and in so people symptoms only become obvious when frequen repeated and gradually intensified. Gastric cancer beg in the stomach as a limited disease and may remain for a long time, with mild and hardly recognisa symptoms.[28] Curability depends on its recognition prompt surgical treatment during this stage. *But m* people consider a mild degree of gastric discomfort *be a part of the normal process of growing old,* indigestion or dyspepsia signifies to them an uncomfo able but benign process.[29] Patients generally will seek medical advice in the early stages of such va symptoms as loss of appetite, mild epigastric distress, slight loss of weight[38]; only too often they treat the selves for months with one or more of the many alkal panaceas, encouraged by the relief these often br even in gastric cancer. There is no part of his own someone else's body the average layman feels m competent to treat than the stomach, and no part the body where such interference so often leads to disas When finally he does seek advice, his doctor may pen with similar remedies and minor dietary restricti without proper investigation, until it is too late. B practices must be deplored. The advertising of dyspep cures to the public should be prohibited by law,[1] in Ogilvie's words[30] "alkalis are the undertaker's b friend." The tremendous sale of patent medici encourages self-diagnosis or chemist's diagnosis a treatment.[23] In about half the cases gastric cancer h spread beyond the stomach before pain and repeat vomiting occur, the common dyspeptic sympto bringing the patient to his doctor.[4] Pain and bleedi are the symptoms that bring the patient to his doct "at the double," and their absence *in the early stages* gastric cancer lull him into a false feeling of security

RE-EDUCATION

We must become more "cancer-minded."[33] Th means re-education of the general public and the medic profession as a whole to make them more canc conscious. For the layman, a nation-wide propagan campaign is badly needed, as carried out so successful in the U.S.A. and New Zealand. We must get rid of t paralysing fear of cancer, by emphasising the fact th early cancer can be cured. At present most people fe it is almost a death sentence to be told they have canc —as indeed it still is only too often. Unless and unt *we can hold out more hope of a cure,* patients will n present themselves freely for early diagnosis. When the do come along with vague dyspepsia, we must not laug at them or call them neurasthenic, but *must investiga* them thoroughly. The usual objection to educating t lay public is that it will produce neurotics and introvert who will inundate the medical profession with their sil or imaginary complaints. But neurotics are born, n made, and they flourish more readily in an atmosphere ignorance and superstition. We must remove by educa tion the reasons for not seeking advice early—ignoranc fear, false modesty, and quack remedies. We ne propaganda to counteract the inherent tendency of peopl to treat and palliate their own digestive complaints.

Much could be done in the schools by instruction in th principles of human anatomy and physiology, togethe with simple rules for health. This should help to remov *the fantastic misconceptions* about the body and it care that still exist in most adult minds, often fostere [illegible] orant and prudish parents. Even as medica dents we are taught little about health and how to guard it. For adults, carefully worded and illustrated opaganda could be disseminated by the lay press and by emas as well as by radio talks. It must be cunningly nuated into the usual entertainment. Special lectures publications usually have too limited an appeal to ch many people. The gist of the propaganda should to encourage people to avoid seeking advice from their ghbours or the chemist, but to go straight to their ctor when they notice any untoward symptoms, which ld be indicated briefly. It must emphasise the fact t even slight symptoms may sometimes be serious, t early diagnosis vastly increases the possibility of re, and that delay may be dangerous to oneself and se distress to other people.

As regards the medical profession, it is a depress- g thought that most of our teaching and clinical perience is with inoperable gastric cancer. Teaching ll be vain if it does not help us to diagnose the disease rlier while still operable.[9] It is relatively unimportant patients that inoperable cancer can be diagnosed rectly. That can almost be done by the uninitiated, d it is too late to help much then! Most accounts in gical textbooks of the symptoms and signs of gastric cer are of the late and inoperable stages, since the rly stages have no definite and characteristic symptoms. st textbooks need to be rewritten in this respect. e average medical student is not much interested in ncer and its early diagnosis and treatment, not being are of the urgency of the problem. He will say there e many more exciting things to learn about, and e outlook is so hopeless anyhow—why can't we leave ch people to die in peace? This defeatist attitude is e result of our medical educational system, which is lly in need of drastic revision. Had the pioneers of our ofession thought likewise of the other diseases—e.g., berculosis, syphilis, and smallpox—we would still be the dark ages of medicine. We are still in the dark ages the diagnosis and treatment of gastric cancer.

INVESTIGATION

Alertness of the patients to the vague early symptoms, d careful assessment of them by the medical profession, e the chief means of early diagnosis. Many doctors o not fully appreciate the need for thorough investiga- on at this stage. Early diagnosis is difficult and rare inly because cancer is never suspected then. Anyhow, st doctors feel that the prognosis is so bad that they ll not urge reluctant patients to undergo investigation, nd thus the time is missed when a cure might well be ssible. But if they felt that once a cancer was diag- osed it could be cured, their whole attitude would hange. Before any progress is possible we must break his vicious circle.

Early diagnosis needs not casual and superficial ttention but eternal vigilance. More mistakes are made hrough not looking than not knowing. Generally peaking, at present we are not making the best use of he diagnostic aids available. Mullen [29] has divided hysicians into two classes—those who always suspect stric cancer and never find it; and those who never spect and always miss it. The first complain of the tility of their efforts; the second of the hopelessness f the disease. To the suspicious physician the present iagnostic methods suffice for very many more patients han those to whom they are applied. Gastric cancer is ways later than you think, and any delay in diagnosis ssens the patient's chance of having the only known ethod of cure—surgery. Instead of being thought of last, r often not at all, gastric cancer should be thought of first n the diagnosis of every dyspepsia, irrespective of age.

Physicians, who usually see the patients first, cannot xpect surgeons to improve the outlook of gastric cancer rely by further improvement in surgical technique. Allen [1] has shown that, at the Massachusetts General Hospital, though the resectability-rate increased from 27% in 1933 to 37% in 1939, and the operative mortality decreased from 38% to 25%, the five-year cure-rate rose only from 20% to 21%. So, with increased courage and skill on the part of surgeons, more patients were operated on and survived operation but there was no appreciable increase in cure-rate. Only when a greater proportion of operable cases are brought to the surgeon will more cures be effected by surgery alone. Hence earlier diagnosis is the crux of this problem.

This is the psychological age in medicine. Only too often our patient's symptoms are classed as neurotic or functional, if a possible or likely cause is not found easily on examination and investigation, which is often superficial and incomplete. Many patients have been sent to the psychiatrist because of such a failure to diagnose the disease. Assuming that every possibility of physical disease has been eliminated, he can always find some kind of psychic trauma to explain the symptoms. (Who has not suffered some psychic trauma at some time?) So patients have been treated with hypnosis, narco-analysis, or even continuous narcosis instead of radical surgery, which has not been sought until the true diagnosis was only too obvious. The more often a genuine disease is thus misdiagnosed and wrongly treated, the more likely is the patient's behaviour to become hysterical and exaggerated, like that of someone about to be buried alive. Each time he sits up to protest he is alive, he is pushed back with the assurance he is dead and about to be buried! Let us not be too impatient to dismiss our patient's complaints as neurotic, but rather search more patiently and diligently for the cause if it eludes us at first. Even neurotic patients may develop physical diseases, including carcinoma of the stomach, though their dramatic description of their symptoms may contrast with the paucity of their physical signs.

Radiography and Gastroscopy

Too late diagnosis may be due to the diagnostic methods we use or, more likely, to our interpretation of them. It is now well recognised that radiography and gastroscopy together are essential and complementary investigations for gastric cancer,[11] but they are not used together sufficiently often when cancer should be suspected. Though neither is infallible and each has its shortcomings, a combination of both will give a higher number of correct diagnoses than will either method alone.[38 39 41] Moreover the radiologist and gastroscopist must be expert, thorough, and persistent, for though the diagnosis of late cases only confirms the clinician's opinion and is easy, the diagnosis of early ones may confirm a mere clinical suspicion and is highly skilled and difficult.[29] In expert hands these methods are nearly always accurate, but in other hands they can be dangerously misleading.[16]

By gastroscopy, with adequate preparation and premedication together with careful and gentle instrumentation, it is nearly always possible to examine the whole stomach. Correct interpretation of the findings is far harder and requires careful observation and long experience, as well as correlation of the findings with those of the radiologist, the surgeon, the microscopist, and even the pathologist at autopsy. Gastroscopy is most useful in helping to decide between simple and malignant ulcers.[3 38] Some cancers are not seen by gastroscopy (1) because gastroscopy is impossible, as in cardiac obstruction by the tumour, or leather-bottle stomach which cannot be distended with air to give a good view, and (2) because the tumour is hidden in one of the blind areas found in some stomachs. As regards gastroscopic biopsy, we have as yet no instrument with which this can be performed safely and easily. But even biopsy is not always reliable, especially when negative; and, since the degree of cellular differentiation may vary from place to place in a tumour, the value of a single biopsy is problematical.[40] If less reliance were placed on radiological findings, especially when doubtful or negative, and if gastroscopy by an experienced observer were included in the routine investigation of all dyspepsias, we should diagnose more early cancers.

Some cancers, especially early ones, will not be found by radiography at the first or even subsequent examinations. The method fails most often in ulcer-cancer, where sometimes only a pathologist can tell the simple from the malignant ulcer.[15 45] The radiologist must be persistent: a single negative result must not lull him, the patient, or his doctor into a false sense of security; and if the symptoms continue the examination must be repeated frequently, preferably by the same expert. Minor but constant defects in peristalsis, due to infiltration of the submucosa, may be seen by radiography. Ledoux-Lebard[24] uses many rapidly taken or superimposed films to show obliteration of rugæ, changes in the mucosal pattern, and persistent defects in peristalsis. Gross filling defects due to ulcer or tumour are easily detected, but they are not due to early cancer.[29]

Radiography will give good results only if the mucosal-relief technique with compression and spot films, combined later with complete filling of the stomach, are used.[38 41] The mucosal-relief technique[3] shows fine details of the mucosal pattern, and spot films[21] permit recording of any phase of the radiographic examination without interrupting the screening. (This last is used to study gross details and for aiming the machine in taking spot films, which give a permanent record with finer detail.[6]) It must be constantly remembered that, taken generally, positive findings on radiography are reasonably reliable, but negative results may be dangerously misleading. Cooper[9] reports a correct radiological diagnosis in 70% of cases at the first examination, increased to 90% after repeated examinations. But this diagnostic accuracy is offset by the fact that 85% of these cases were hopelessly inoperable, and it would probably be much less accurate in earlier cases. As Wangensteen[44] has put it, too many doctors are credulous enough to accept the opinions of the radiologist as though he wielded an infallible divining-rod; whereas overwork and poor equipment may make him little more reliable than a crystal-gazer. There is a need of many more radiologists trained in the latest methods of gastric examination, and for great improvement in radiological equipment. This should include spot machines and tilting tables, and might well provide for a ciné-film record of all screen examinations of œsophagus, stomach, and duodenum.

Gastric Acidity

Gastric-acidity estimation is helpful provided the total response to histamine is estimated.[10] Results are fairly constant, for Polland[34] found the acid below normal or absent in 85% of gastric cancers, and no case of hypoacidity in gastric ulcer. Allen[1] noted achlorhydria in 60% of malignant ulcers and said that malignancy was to be expected in the achlorhydric stomach though the presence of acid did not rule out cancer. Reid[37] and Brunschwig et al.[5] concluded that 60% of patients with gastric cancer have achlorhydria, and Mullen[29] found it in 70–80%, though he felt the presence of high acidity did not disprove cancer, especially with a prepyloric ulcer. Lewis[25] considered achlorhydria one of the most valuable early signs of malignancy, and Holman and Sandusky[20] held that low or absent hydrochloric acid remains the most reliable single piece of evidence of gastric cancer. Comfort et al.[8] have shown that the acidity is nearly always below normal in patients destined to develop gastric cancer, and that this low acidity develops early and persists.

Other Investigations

The many other investigations that may help u
diagnose gastric cancer include estimation of hæmogl
and blood-cell levels, erythrocyte-sedimentation
plasma-protein content, plasma and urine vitamin le
and liver-function tests.[35]

But too much reliance must not be placed on t
aids to diagnosis, especially when they conflict with
clinical suspicions, which should always be given
utmost consideration. Too many patients have lost
chance of life because a single investigation did
confirm the physician's suspicions of gastric ca
With persistence of symptoms, however vague, th
not sufficient reason (as Reid[37] says) for assuring
patient all is well and forgetting him. We may be w
in our suspicions; but, in the words of Ogilvie,[33] i
always wait until we are sure we are right, we
always be just too late to cure the patient. It mus
borne in mind that, though the highest incidenc
gastric cancer in women is between 40 and 50 years a
men between 50 and 60 years, this is not by any mea
disease of middle or old age, and anyone over 30 y
may be affected. Walton[43] and Ogilvie[30] say
dyspepsia developing in a person over 40 years, wit
any previous dyspeptic symptoms, is due to cancer
we have proved it otherwise.

Laparotomy

All competent authorities agree that, should
dyspepsia not respond to proper medical treat
within a few weeks, it should be fully investigated
the results are inconclusive or negative but the sympt
persist, the investigations should be repeated, and
*a laparotomy performed. To wait and see courts disas
far better to look and see. Though unnecessary operat*
are to be deprecated and should be avoided,[11] laparoto
is the best of all means of discovering the presenc
absence of gastric cancer. Then we are faced with rea
not merely shadows in a film. Exploration by a gas
surgeon should be safer than allowing the passag
time to decide the correct diagnosis (Wangensteen
A live mistake, says Ogilvie,[33] is better than a d
certainty, and there is more rejoicing in heaven
one negative laparotomy than over ninety-nine that
positive but too late.

SURGICAL TREATMENT

If the diagnosis is still in doubt even at laparoto
we must take what is the safest course for the patie
for our only chance of curing him is at the first gas
operation. So we must ensure that radical surgery
used whenever possible, not *only* in every proved
of gastric cancer but also in every case where it is e
suspected on exploration. If we do any less than t
we are not taking advantage of the best opportun
to cure the patient. The happiest way to diagn
gastric cancer is to be told by the pathologist after s
a gastrectomy: "That's a cancer, that was!"

So it is imperative that the surgical diagnosis a
treatment of gastric cancer should be left to prope
trained and competent surgeons. Nobody who is
able and willing to perform the most radical operat
possible should attempt to operate on a patient suspec
of having gastric cancer.[29] He must not rush in w
unseemly haste but must organise the whole procedu
like a general planning a campaign, paying due attenti
to adequate preoperative preparation and postoperati
care.[12 35 37 44] The operation must be planned to d
with the peculiar features and possible or actual spre
of the disease in each case. The experienced surge
will set out to remove the whole of the disease and w
decide on the best method of restoring the continui
of the alimentary tract after this has been done
he will not cramp the scope of his operation by so

received form of anastomosis, which might lead to failure to extirpate the growth completely. In outline operation should involve radical removal of the r and all the accessible potential field of spread, glandular and local, even in the absence of palpable . This is generally recognised as the best means ating operable cancer of the breast or colon.

Gastric cancer is likely to spread round the duodenum head of the pancreas, as well as along the left gastric ; hence these areas should always be dissected ely.[7, 30, 43] Failure to do this is often excused the absence of palpable glands, but it is really an plete attempt to eradicate all of the disease. many large glands are inflammatory, whereas many ones, even when impalpable, are neoplastic. microscopical section, and often even with cannot be certain whether a gland is involved growth. So the extent of the standard operation of gastrectomy for cancer should be increased than decreased.[1, 30] It may be impossible to clearly the actual extent of spread in the stomach and subtotal gastrectomy may divide an extension growth. In such a case total gastrectomy might the chances of cure, though the patient has a far more risky operation. When it seems to get clear of any extension of the growth in stomach or duodenal wall, radical gastrectomy[30, 31] give the best chance of cure.

authorities agree that surgery is always worth , except where there are clinically obvious wide- metastases. The desperate case (though not the one) is worth exploring, for laparotomy is the reliable way of deciding the correct form of treatment.[11] Gastrectomy may be undertaken as a curative or a palliative measure, and the criteria of operability with different surgeons.[11] Should curative radical ectomy be impossible, owing to irremovable local of the cancer or to the patient's poor general condition, direct irradiation at high intensity[12] may be . If this is impracticable, palliative gastrectomy, removing the primary lesion while leaving the more spread of the cancer, may increase the patient's without improving his prognosis. Apart from there are other less severe palliative operations, as gastric exclusion, gastrojejunostomy, gastrostomy, or jejunostomy, which may relieve suffering appreciably prolonging life. They may allow patient to put his house in order and make some for his family, and sometimes they lead to improvements in condition.[18] It is unjustifiable merely to close the abdomen when an inoperable found. By so doing, we fail in our primary duty patients—to alleviate suffering.[17]

ORGANISATION

The implementation of the Cancer Act, in conjunction the impending National Health Service, offers an unparalleled opportunity for improving the diagnosis and treatment of gastric cancer. Division of the whole country regions, each with its cancer centres for diagnosis, treatment, and follow-up, should enable all patients suspected of cancer to be examined, treated, and followed up by experts. This should be a great improvement on the present disorder, provided we make sure the "experts" are sufficiently trained and experienced in their specialty; but, as Finch[14] says, we must the development of the "cancer specialist" or "cancerologist." Further, the cancer centres must not up naked and unashamed, as long as people generally have such a fear of cancer, which still carries social stigma. They must be disguised by enveloping cloak of a general hospital, where the allied diseases of the same viscera can be with in each department. Having all kinds of dyspepsias, and perhaps other surgical conditions, mixed in a ward with gastric cancers is of inestimable value to all concerned. It helps the morale of the cancer patient to see others having operations and getting well; it helps preserve the mental balance, sanity, and cheerfulness of the doctors and nurses; and it reduces the difficulty of obtaining medical and nursing staff.

The danger of all this planning and organisation is the damping down of individual enthusiasm and initiative, with the development of mass-thinking, leading to a millennium of mediocrity. We must strive to preserve our freedom of thought and action, which must be coupled with a desire for genuine progress and an increase in knowledge. This will be achieved only by continually striving with humility and an inquiring mind. We must ensure that change means real progress, and that the welfare of the patient always remains the first consideration.

In the meantime while the "back-room boys" are working out new methods of treatment, and the planners are at work, we should try to make much better use of the methods of diagnosis and treatment available now. As has been said above, the present diagnostic methods are adequate for very many more patients than those to whom they are applied, and radical surgery can cure the large majority of patients with gastric cancer if carried out when the disease is localised to the stomach.[10]

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RITISH EMPIRE CANCER CAMPAIGN

the annual meeting held in London on Nov. 26 H. the Duke of GLOUCESTER, president, said that lebration of the campaign's 25th anniversary next r a special appeal for funds will be launched. In the financial year the public, subscribed £135,000, not ding sums raised in the autonomous areas. This is highest figure yet reached, but does not permit the sary extension and intensification of the work.

rd HORDER, reporting as chairman of the Scientific sory Committee, said he felt more hopeful than r before about the results of cancer research and tment, and more certain of the service rendered by campaign. The problem is still the causation of er—not the cause, " for of causes of cancer we have dy an abundance." Any one of the many somewhat ted facts may prove a pointer. Planning is essential st the strategy and then the tactics. The 25th versary appeal will give the public an opportunity aking the programme which the campaign has in r a real and not a visionary one. It is an ambitious ramme, and very expensive, but vital in the public rest :

A special committee has been set up to develop research the whole virus position in relation to cancer. This ves the activation of several ad-hoc teams up and down country. A grant of £25,000 has already been set aside this research.

Travelling fellowships are imperative, with long-term ments of from five to ten years' duration, if the acute tage of workers is to be provided against.

The campaign requires another special committee set up ganise research on chemotherapy.

The new tools of atomic-energy physics must be made lable to B.E.C.C. workers.

Lastly there is great need of education with regard to er, both of the doctor and of the public. Thousands of are lost every year through want of diagnosis during the ble stage of the disease. Not only so, there is also the tion of prevention ; here there is more need for education.

THE MENTAL HOSPITALS

E annual report of the Board of Control[1] tells of nued overcrowding in our mental hospitals. At end of 1946 there were 146,444 people under care er the Lunacy and Mental Treatment Acts, 128,579 ese being in public mental hospitals. The total beds hese hospitals fall short of this number by some , and their numbers are further reduced—from such es as staff-shortage, need for restoration and re-equip- t, and diversion of beds to war-time casualties— ver 15,000. Thus overcrowding amounts to 13·1% the basis of recognised bed-space. More than half admissions in 1946 were of voluntary patients. al admissions showed an increase of 6009 over those 945—an increase due, the board feel sure, not to e in the incidence of mental illness but to a growing reness of the need for early treatment. They esti- e that during the next ten years an additional 1500 s a year may be needed ; and presumably they me that these will be in addition to existing idle diverted beds when these have been reclaimed for the tal hospital service.

he "most serious single handicap" under which the ice has laboured has been, and is, shortage of nursing f. By the turn of the year, it seems, some hospitals d the situation easing slightly, and many made use uxiliary staff—orderlies and the like—and of part- e voluntary workers from the British Red Cross ety and the Order of St. John, and from the Women's ntary Services. The practice of requiring nurses eep on the wards seems to be dying out.

he board note that the possibilities of occupational apy for patients with long-standing mental disorder not yet fully understood by many who work in pitals.

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[1] Part I. H.M. Stationery Office. 1947. Pp. 40. 9d.

In England Now

A Running Commentary by Peripatetic Correspondents

THIS is no time for lightly proposing new textbooks and manuals, but I am worried about recently qualified men who don't understand what the patient says. Oughtn't there to be a glossary of lay terms for medical people; for remember the man who, when a patient told him she "hadn't seen anything for three months," sent her to the Eye Department? Does every new doctor realise that "tummy trouble," spoken of in an open and cheerful manner, means upper abdominal pain, whereas if there is a dropping of the voice and eyes it means diarrhœa? "Inside trouble," is always gynæcological, and to "have all one's inside out" is to have a total hysterectomy not a pan-evisceration. "Something coming down" is again usually gynæcological, but may occasionally be a thrombosed pile. Another point to remember is that the urinary bladder is rude and will be referred to in a shamefaced way as the waterworks, while the gall-bladder is a polite and interesting organ and can be discussed freely at tea-parties; and if a woman ruefully confesses that she has "fallen again," the doctor should not ask if any skin was knocked off. "Dizzy turns" and "blackouts," of course, may be anything, but usually after exhaustive investigations prove not to be epileptic attacks. In fact, anyone who has had to deal with soldiers will recognise blackouts as simple blackouts, and leave it at that.

The glossary should also deal with terms in use in various parts of the country. At my first outpatients in a Nottingham children's hospital the first mother complained that her child was "tissucky" and the second that hers was "mardy." The first child had a mild bronchitis; the second was fractious, bad-tempered, and generally difficult. Both lovely words but very confusing at first acquaintance.

* * *

Invited by the ever-attractive possibility of getting something for nothing, we found ourselves a week or so ago wandering through the doors of the London Medical Exhibition. As we stepped into the Odeon-like foyer we were eyed narrowly by a gentleman suspiciously demanding if we were "of the Profession." We reassured him with some disdain, adding in explanation of our immaturity and general untidiness that we were residents of St. Ethelred's. "Ah yes," he beamed at us, "most welcome, I'm sure. You will find the bar on the lower floor."

I am an experienced exhibition-goer, being educated all the way from the original Wembley extravaganza by way of the Ideal Homes, Radiolympia, the Motor Show, and the 1937 *Exposition de Paris*, to last year's Chelsea Flower Show. At all of these gatherings, with the understandable exception of the Flower Show, an exuberance of free samples was available to be carried away by the delighted visitors. I have left such affairs to find my pockets bulging with all sorts of junk from model rubber tyres and improved lavatory brushes to a free annual subscription to a society journal. The subsequent problem of finding what the hell to do with the collection appears negligible against the thrill of their costless acquirement.

The Paris exhibition was highly satisfying from the sampler's point of view, for the champagne and cognac stands cascaded their wares, and free bottles of Grand Marnier went along with buckshee crêpes suzettes. At the Horticultural Hall we had to content ourselves with jostling towards a salver of diabetic chocolate, a couple of diabetic rolls (no butter), a cup of baby food, some strained carrots, and what later turned out to be a handful of raspberry-flavoured laxative. In addition, we are now confidently expecting the daily arrival of small though gratuitous packages of malt drinks, phenobarbitone, nose-drops, hair-oil, and contraceptives.

As we wandered through this hippocratic bazaar we greatly enjoyed listening to an all-electric stethoscope and diathermying large slices from an appetising hunk of raw horse-meat. We were enchanted with an illuminated tableau of the internal workings of the halibut, and with a sort of radar screen ultimately attached to a frog's gastrocnemius. The corset-stand attracted our passing attention, the charming young lady who explained the mechanics of the apparatus appearing only slightly disappointed when we failed to place an order (there were no free samples). Several nearby stands advocated the waters and general social amenities of our British spas. In response to our mild inquiries an enthusiastic young fellow enlarged on the beneficial effects of these towns, in gratitude for which we allowed him to post on a wide selection of spa literature—giving the name of a member of the Ethelred's staff renowned as an incorrigible bon viveur.

The anæsthetic apparatus was worthy of its almost invariable appearance at some point in any recent British film. We have left the days of the rag-and-bottle so completely behind us that one feels self-conscious inducing anæsthesia with anything not resembling the front of a Buick, and of about the same price. The modern anæsthetic machine contains so many otherwise anonymous knobs labelled PRESS as to constitute an invitation to manslaughter for enthusiastic though inquiring anæsthetists like ourselves. We pressed a few knobs here and there, and were piqued when nothing seemed to happen. By that time we had goggled at the glittering machinery so long that we fully expected either Schenectady or a boiled egg to come out of the cabinet somewhere.

* * *

Ordinary associations of ideas are with the conscious rather than the unconscious content of the mind. A provincial psychiatrist, musing in Victoria Station, thought hardly at all of childhood fantasies of being an engine-driver, and still less of their possible origin in the desires to play clockwork trains on a vast scale, or to be grown-up, or in latent aggressive drives or what-not. He thought that the local departure boards read like a mental hospital directory, so many of the names being those of well-known mental hospitals. However, the provincial psychiatrist restrained himself from passing a devastating judgment on the mental health of the Metropolis by recalling that the number of mental hospitals in an area is an index, not of the amount of mental disease but of the adequacy of the hospital services.

* * *

An interesting study might be made of mass-psychology in relation to sport and the almost hysterical excitement which may be provoked by the sporting party-spirit. The enthusiasm which used to be limited to the village green is now extended (by cable and wireless) to the ends of the world, and for days before and after it several million people may talk, think, and possibly dream of a combat between two cricket, football, or baseball teams.

This was forcefully brought home to me one Sunday when my stay in Chicago happened to coincide with the world series of baseball matches in New York. Chicago is rather jealous of New York, and the listeners in the former city were mostly in sympathy with the Dodgers of Brooklyn who were challenging the Yankees of New York. The excitement was intense, and for several hours each day for seven days wireless sets both at home and in public were surrounded by people alternately thrilled or depressed by the turn of the play. On the Sunday I listened in the house of a surgical friend whose excitement was clear when he held out his hands, saying "Look, they are wet with perspiration." But the baseball was not the whole of the thrill. At the same time and in the same room a television set was showing, with commentary, a football match between two famous Chicago teams. It was a trifle difficult to follow the two highly technical commentaries simultaneously but there is little which is impossible to the votaries of sport.

* * *

In this Service hospital the orthopædic staff is composed of widely different types. On the one hand we have the men who have done it all, and on the other the struggling youngster, who, through the exigencies of war, has forgone clinical experience, and now that the tumult has died down has forsaken the bayonet for the scalpel. This morning on entering the theatre I was greeted with the question: "Who's doing the list today, orthoplods or orthogods?"

Letters to the Editor

TEACHING APPOINTMENTS

SIR,—It is not easy to decide from his pseudony
letter of Nov. 22 whether "M.R.C.P." considers m
research to be a positive evil, or merely a useless
of time which might be better spent on conning textl
of general medicine or whipping up enthusiasm
flair for teaching. From my own small experien
medical research, I doubt whether it can be iden
with the "increasingly narrow specialism"
everyone engaged in the teaching of medicine
deplore. I am still more doubtful whether, as
correspondent seems to imply, there is any nece
antagonism between research experience and the a
to teach students. Naturally, these two qualitie
not always found in combination; just as the
research-workers who cannot give a clear accou
even their own work, so there are good teachers
the list type" who would be patently useless at
research. But the mere fact of having done research
not in itself make a man a bad teacher; on the cont
good students appreciate some knowledge of physi
and of recent work in medicine. Although unlike
will still be unfortunate if in response to the solicita
of "M.R.C.P." universities should decide to di
research ability from their consideration in appoi
senior staff, and so turn themselves voluntarily
training schools for medical technicians.

Department of Medicine,
University of Manchester.

D. A. K. BLA

OUR PRESENT DIET

SIR,—I read with interest your report (Nov. 2
the Hunterian Society's debate, but it was disappoi
not to see more emphasis placed on the fact that a
figures quoted were average values and therefore req
interpretation in human terms.

The report on nutrition drawn up by the tech
commission of the Health Committee of the Leag
Nations in 1935 and 1936 points out that the v
the commission agreed are average figures and
"it is essential that they should be interpreted in
light of this fact."

Dr. Breen made a brief reference to the variatio
energy derived from a given meal; this, surely, is
crux of the whole matter, and probably accounts
the inconclusive nature of discussions on our present
nutrition. Some individuals, it seems, are able efficie
to assimilate the food they eat and our present
may be greater than their bodily requirements (case
exogenous obesity are still observed), whilst ot
whose metabolism is not so efficient, may obtain
few calories for health. This point is recognised in
terminology of the report quoted above. The t
"net calories" used in this report is defined as "
amount of energy available from the *food actu*
assimilated" (my italics).

T. O. BLAC

Radlett, Herts.

FRACTURED CLAVICLE

SIR,—In your issue of Nov. 8 Mr. J. S. Batch
describes a somewhat elaborate invention for splint
a fractured clavicle or an acromioclavicular dislocati
May I remind your readers of the simple and effec
method which Frank Romer[1] devised for controll
the fractured clavicle by strapping?

The surgeon, standing behind the patient, raises the
on the injured side to form a right angle with the body,
draws back both shoulders firmly. This manœuvre redu
the deformity, bringing the scapula into correct position
strapping. A thin layer of cotton-wool is then placed in
axilla. A strip of adhesive strapping (about $1^1/_2$ in. w
is fixed by one of its ends over the acromion and brou
down behind the shoulder-joint, under the axilla, up anteri
to the top of the shoulder at the acromial end of the clavi
and backwards over the scapula to below its inferior an
where it ends. A similar strip is fixed starting from above
nipple and passing over the clavicle to just below the infer
angle of the scapula. Two more overlapping strips are appl

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[1] Romer, F. *Lancet*, 1923, i, 880.

to cover the whole of the clavicle. The arm is then lowered, and the patient is allowed to dress himself. pport is needed beyond that of an ordinary sling to take weight of the arm occasionally. The injured parts should saged daily for at least ten days. This can be done the strapping, and should be renewed at the end of four and again from time to time if slack or uncomfortable. ould be worn for at least three weeks.

ough Mr. Romer did not mention it in his paper, I mber, from the time when I was his assistant, that frst strip had a piece cut out of each side so as to ow it as it passed under the axilla and prevent chafing.

dm, S.W.1. C. V. HARRIS.

DYEING OF SURFACE ANÆSTHETICS

—In your issue of Sept. 27 (p. 493), two recent are mentioned of fatal substitution of a cocaine on for one of procaine. Fortunately this does not often; however, now and again cases are met in literature of every country. Especially the ear, nose, throat surgeon, using every day both or similar ons, often at a single operation, is always threatened this misapprehension.

The Swiss firm Ciba as long as ten years ago delivered 'Percaine' (now 'Nupercaine') solutions for surface thesia in a deep pink colour. In the Military ital at Tjimahi the same is done to all surface thetics, at my request. Our dispenser, Mr. J. de Jong, 1 minim of a 1% fuchsin solution per 50 ml. thetic, by which procedure a deep pink colour is ned. Fuchsin is a mixture of hydrochlorides of line and its derivatives. It is absolutely non-nous, does not react with the anæsthetic, and is ly soluble in water. The only disadvantage I can ine is the possibility of its staining garments when ed. However, the stains are easily removed—for nce by 5% hydrochloric acid in ethyl alcohol, or % hydrogen peroxide in 10% ammonia (verbal munication of J. de Jong). The advantage is that an illiterate can be taught that tinted solutions are ted for injection. Also when the drugs are out of labelled bottles and in containers on a tray the colour always indicate a surface anæsthetic, which is very ring indeed to the surgeon. The colour is readily le even in a semi-dark room.

my opinion it would be advisable to prohibit use dyed surface anæsthetics.

ary Hospital, Tjimahi, Java. O. L. E. DE RAADT.

TUBERCULOSIS IN EUROPE

—The leading article in your issue of Nov. 22 cerned with a recent report of the International mittee of the Red Cross on health conditions in a ber of European countries, including Germany.

You point out that tuberculosis mortality figures in many today require very careful scrutiny, and you rightly sceptical of the committee's statement that the American zone (including the Berlin sector) the rculosis death-rate "rose from 20 per 10,000 inhabi-s in April, 1946, to 37·5 in April, 1947" (as against in 1933). In a report of the military governor, U.S. , on public health and medical affairs, the death-from tuberculosis in the U.S. zone is given as 6·7 per in April, 1946, and 6·6 in March, 1947. Hence the tality-rates given by the Red Cross committee are 3–5 times the official figures; and whereas the mittee's figures indicate an alarming doubling of rates in a year, according to official data no change taken place.

This is not an isolated instance of carelessness. Thus committee states that in Schleswig-Holstein (British) the tuberculosis death-rate, "which was 6·3 per 00 inhabitants in 1934/1936, rose to 22·1 for the half of 1946." Actually (official British sources) the rculosis death-rate for this Land in the first half 1946 was 6·6 per 10,000 (the *notification*-rate of *new* was about 22); again the committee presents a e three times the correct one, and a startling rise n there was none. Some of the committee's com-ons are no less careless, to say the least. In almost country discussed, an increase in the number of rculosis cases on the registers is taken as signifying an increased incidence of the disease; but in Spain this increase "does not arise from the spread of the disease by contagion, but from the fact that the methods for the detection of tuberculosis are more rapid." In similar tendentious vein, the report states that there are "over 12,000 beds for consumptives in Spain in sanatoriums supplied with all technical means for modern surgical treatment": whereas the 23,000 beds for tuberculosis in August, 1946, in the British zone, with a similar population and a lower tuberculosis mortality, are described as "only 23,000 beds . . . which were not sufficient to admit all infectious cases to hospital."

It is a pity that the names of the members of the medical division of the International Committee of the Red Cross, who are responsible for this uncritical and superficial review, are not given.

London, N.W.3. P. D'ARCY HART.

*** Our leading article quoted the committee as saying that the tuberculosis situation is "particularly disastrous" in Germany, Austria, and Rumania. Actually the committee applied these words to the general situation in these countries.—ED. L.

ROWLEY BRISTOW MEMORIAL

SIR,—Many friends of the late Walter Rowley Bristow have expressed a wish to share in a memorial to him. It has been suggested that his life and work would be best commemorated by the foundation of an annual or biennial memorial lecture, to be delivered, if circumstances permit, alternately in Great Britain and in the United States, the two countries in which he was acclaimed as an outstanding leader in orthopædic surgery, and where he was held in such warm regard. When a sufficient endowment fund has been accumulated it will be entrusted to the British Orthopædic Association. Contributions to this fund are now invited, and can be sent to George Perkins, 149, Harley Street, London, W.1.

G. R. GIRDLESTONE GEORGE PERKINS
CHARLES MAX PAGE HARRY PLATT.

"CHORIONIC GONADOTROPHIN"

SIR,—To question the propriety of any accepted phrase in science may at first appear priggish and pedantic. Accuracy and ease of thought, however, depend largely on exact language; and I offer no other excuse for the following note.

The term "chorionic gonadotrophin," whose suitability is now questioned, was adopted in the past because of a hypothesis which later work has not confirmed.

The word "chorion" is derived from the Greek χόριον, which like the Latin *corium* means "leather," and strictly indicates therefore the subepithelial tissues; but in our language it denotes the outermost membrane of the fœtus. The adjective "chorionic" is commonly applied to the gonadotrophin which is produced by the placenta of a pregnant woman and is present in high concentration in her blood and urine; so used the term "chorionic gonadotrophin" implies to many that the hormone is produced by the chorion of the fœtus. Known facts do not support such a belief. The fœtus has no need for abundant supplies of this hormone, and little if any can be detected in its blood or other parts of its body. These considerations alone make it probable that the gonadotrophin required by the mother is manufactured by her tissues and not by those of the fœtus. Furthermore, in some animals, including the mare, the fœtal and maternal components of the placenta can be separated by manipulation and so analysed apart; and in the mare it has been found in this way that gonadotrophin is present in large amount in the maternal but not in the fœtal component.[1] It is therefore concluded that in the mare placental gonadotrophin is elaborated without a doubt by maternal tissues and not by the chorion of the fœtus. Although the precise origin of placental gonadotrophin has not been determined in every mammal, the process is a fundamental one and is likely to be the same in all.

As a mere argument it may perhaps be suggested that the hormone arises in the subepithelial structures—i.e., the corium (or chorion) of the uterus—and that on this

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1. Catchpole, H. R., Lyons, W. R. *Amer. J. Anat.* 1934, 55, 167.

account the term "chorionic gonadotrophin" may after all be correct. But this is a mere debating point, for the word "chorion" in general medical parlance indicates the external fœtal membrane and not the corium of the uterus.

I suggest that, to prevent confusion of thought, "placental gonadotrophin" might well replace the more questionable term "chorionic gonadotrophin" at present in use.

Marlborough, Wilts. HAROLD BURROWS.

SUBSTITUTE FOR CANADA BALSAM

SIR,—'Siloxane' or 'Silicone,' a synthetic resin with a chain of silicon and oxygen alternately, promises to be a useful substitute for Canada balsam, in thick mounts, as it is practically water-white. Its refractive index is much the same as that of Canada balsam, and the technique for mounting is similar.

Mental Hospital, Wells, Somerset. D. S. SPENCE.

AMBULANCES

SIR,—Your leading article last week asks for information concerning the experience of doctors calling ambulances for their patients. As the Emergency Bed Service calls some 10,000 ambulances a year our experience may be of interest to you.

This service, as you know, deals only with patients who require immediate admission to hospital—immediate being deemed to mean within a day. A certain number of them are cases of desperate urgency, in which case the general practitioner authorises us to call for a "life and death ambulance," which, I understand, comes from the accident service and invariably leaves at once. In the remainder of the cases the patients are seriously ill and in need of treatment, but a short delay is probably of no serious consequence.

Whenever an ambulance is called the ambulance service is asked when the vehicle will leave, and the amount of delay indicated by this reply is the figure used in the following table. The cases tabulated have been selected at random, being the first 100 ambulances called in the months indicated.

SUMMARY OF DELAYS REPORTED ON 100 AMBULANCE CALLS MADE AT THE END OF EACH QUARTER TO THE LONDON COUNTY COUNCIL AMBULANCE SERVICE AND OTHER AMBULANCE SERVICES IN GREATER LONDON

Delay	December, 1946		March, 1947		June, 1947		September, 1947	
	L.C.C.	Others	L.C.C.	Others	L.C.C.	Others	L.C.C.	Others
None ..	37	66	44	68	65	73	59	83
15 min.	—	3	4	6	2	6	4	5
20 ,,	2	4	4	3	4	6	3	3
30 ,,	9	18	8	10	4	6	7	6
45 ,,	12	1	4	2	5	2	7	1
1 hour	28	6	17	10	18	7	13	2
2 hours	9	1	9	1	2	—	5	—
Over 2 hours	3	1	10	—	—	—	2	—
Total ..	100	100	100	100	100	100	100	100

It should be emphasised that where a doctor states that the case is desperately urgent an accident ambulance can be called, but some of the long delays shown must represent a great deal of anxiety to patients and doctors.

The ambulance services are at present suffering acutely from an inability to replace their ambulances, most of which are pre-war vehicles, and it is strongly to be hoped that the advent of the National Health Service will enable them to obtain high priority for replacements.

R. E. PEERS
Secretary, Emergency Bed Service.

10, Old Jewry, London, E.C.2.

Parliament

FROM THE PRESS GALLERY

National Assistance Bill

IN moving the second reading of this Bill[1] in House of Commons on Nov. 24 Mr. A. BEVAN, Min of Health, described it as the coping stone on the struc of our social services because it provided for the 400 people on outdoor relief, the 100,000 in institut and the 30,000 deprived children who still rema under the poor-law. Assistance, he continued, wa future to be a national responsibility and welfa local responsibility. Therefore the National Assist Board—as it was to be renamed—would pro financial help on a scale to be determined by regula presented to Parliament by the Minister of Nati Insurance.

Turning to the people who would need special l Mr. Bevan said the board would have the dut providing maintenance of the blind while the authorities would be responsible for schemes for training and welfare. The welfare authorities would have a special responsibility for the tuberculous. system of mass radiography, and the encouragemen people in the early stages of the disease to give up work and undergo treatment, would be continued extended. The provision under which tubercu allowances ceased when it was found that the pa was incurable would be abolished. The treatmen pulmonary tuberculosis would be the responsibilit the National Assistance Board on the one side and regional hospital boards on the other.

The proper care and welfare of the aged, Mr. Be declared, was the peculiar problem of modern soci As people grew older they became jealous of t independence and the Government had therefore dec that the workhouse must go. Instead the wel authorities would be given power to establish spe homes where our old people would enjoy the maxin of privacy and independence. "Bigness," Mr. Be said, "is the enemy of humanity," and the optin limit for these homes must be about 25 to 30 reside who should belong to mixed income groups. The cha ter of the homes would be destroyed if merely the n indigent lived in them. Obviously it would not possible for these hotels to spring up overnight would take some time to build and equip them. "H ever," concluded Mr. Bevan, "we have set our feet u that road, and we intend to march upon it as qui as possible."

Mr. WALTER ELLIOT was glad that the tubercul schemes were being maintained and extended. would, he pointed out, place on the Government a greater responsibility for finding the nursing staff make sure that treatment was available. At present could not staff all the existing beds, and as long we were in that position it was not necessary, or e advisable, to talk about using more money for bri and mortar provisions. Mr. Elliot was a little une about some of the powers taken by the Bill. For insta any aged or infirm person could be removed from house on the certificate of one medical officer of hea supported by the court. Usually at least two certifica were necessary before a citizen could be removed fr his house and detained under an indeterminate sente or order.

Mr. SOMERVILLE HASTINGS looked upon the Bill one of the best that had been introduced in the pres Parliament. He was grateful that in future the cost hospital treatment would not be counted as means, that pensioners would be allowed some pocket mo while they were in hospital. He hoped that the r homes would be situated as near as possible to wh the old people had spent their lives. Dr. BARNET STR also welcomed the new provisions in regard to tub culosis allowances. Doctors had had imposed up them the duty of offering the death sentence to th and women. Now that they had a remedy it would make life much easier.

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[1] See *Lancet*, Nov. 8, p. 692.

Medical Practitioners and Pharmacists Bill

In the House of Lords on Nov. 27 this Bill was read a third time and sent to the Commons.

Punishment and Reform

The Criminal Justice Bill, said Mr. CHUTER EDE, in moving its second reading on Nov. 27, was not intended to weaken the effectiveness of the law, but to rationalise make more flexible methods already available for dealing with convicted offenders. After describing the main provisions of the Bill, already set out in our columns,[2] Mr. Ede turned to the question of abolishing the death penalty. the war, he pointed out, there had been an increasing tendency for criminals to carry lethal weapons. At the time when they had to deal with a phenomenal increase in cases of violent crime, and with the emergence of the armed criminal, our police forces were below establishment. The Government therefore could not regard the time as opportune to include in this Bill a provision for suspension or abolition of the death penalty. But it recognised that this was a matter on which strong individual conscientious feelings were held, and that the division did not follow the usual party lines. If an amendment to deal with the death penalty was moved at the report stage of this Bill the Government would leave the final decision to a free vote of the House.

Viscountess DAVIDSON declared that the powers given to the courts to secure mental treatment for juvenile offenders on probation would only be effective if there were people capable of carrying out the treatments indicated in clause 4 of the Bill. Some idea of the personnel which would be required could be gathered from the following figures for all indictable juvenile offences in 6: under 14 years, males 22,922, females 1500; to 17 years, males 17,349, females 1732; 17 to 21 years, males 15,118, females 2324. There were at present some medical men and women capable of carrying out this work in the bigger centres, mainly in London, but their numbers barely covered the opportunities for work of this kind at present in existence. All clinics were overworked today, and no provision was made in the Bill, so far as she could make out, for adding to the numbers of trained medical or lay personnel. There were bodies who were quite capable of carrying out suitable training if grants could be made to them. It would probably be said that such provision came within the scope of the National Health Services Act rather than the Criminal Justice Bill. But there was no power given in the latter measure to the judiciary to require the Minister of Health to provide for the training and appointment of officers for this purpose. So far as she could gather the maximum number of people who were ready and trained to deal with juvenile offenders was about 50.

Dr. SANTO JEGER averred he was not one who liked to cry stinking fish about his own profession, but he regarded the medical attention in prisons as inadequate. It was often perfunctory, although he agreed that many prison medical officers were skilful, took their duties seriously, and gave their charges good medical care. He thought every medical officer in a prison should be compelled to take a diploma in psychological medicine and to attend refresher courses from time to time. Though a non-smoker himself he urged that prisoners should be allowed to smoke and such punishments as solitary confinement, flogging inside prisons, and the imposition of bread and water diet, should be abolished. He was emphatically opposed to the retention of flogging as the use of flogging was associated with a basis of sexual perversion, not necessarily deliberate and conscious. Its abolition he believed would lessen the brutal atmosphere which existed in so many of our prisons.

Mr. STROSS held the provisions relating to young offenders to be the most important part of the Bill. If we wanted to keep down the number of habitual criminals we must ensure that young offenders were treated in such a way that they never again appeared before the courts.

QUESTION TIME

Pensions for Psychotics

Replying to a question Mr. G. BUCHANAN, Minister of Pensions, stated that the statutory tribunals had determined 2100 appeals by men and women discharged from the Services against the rejection of pension under the broad heading of psychosis. Of these the tribunals have allowed 450.

Royal Commission on Population

Major E. A. H. LEGGE-BOURKE asked the Minister of Health when the report of this commission might be expected.—Mr. BEVAN replied: I am informed by the commission that owing to the delays in the tabulation of the family census, the report will not be ready until next year.

Medicine and the Law

Medical Report without Patient's Knowledge

Dr. R., chief medical officer to an Irish insurance company, was adjudged "guilty of infamous conduct in a professional respect" at a hearing in Ireland last month[1] for having asked a medical practitioner to furnish "confidentially" a medical report on one of his patients.

It appeared that the patient was an elderly woman whose daughter wished to take out a policy to cover the prospective expenses of her mother's funeral. The daughter gave the insurance agent the name of Dr. K., her mother's medical attendant. In due course Dr. R., acting for the company, applied to Dr. K. for a report on the mother's medical history. Dr. K. in answer refused the application and described it as "irregular and unethical." Dr. R. rejoined that his request was for the purpose of assisting the poorer classes to effect insurance on a member of the family so as to protect themselves against funeral expenses; he added that Dr. K.'s refusal was "antisocial." This exchange of epithets was ended by Dr. K. asking for the letter back so that the correspondence could be referred to the Medical Registration Council of Ireland for decision. Several months later he received a second application from Dr. R. of the same nature and apparently relating to the same patient. He then sent the letter to the council.

The charge formulated against Dr. R. was that he had asked Dr. K. to furnish, for reward, a private report respecting the past and present state of health of a patient without the knowledge or consent of the patient. Dr. R. in his evidence stated that he had been chief medical officer to the insurance company since 1932 and that it was the company's practice in such cases, at the request of the person who proposed to take out the policy, to ask the medical attendant of the insured to make a report. He stated that 98% of the doctors who were asked supplied these confidential reports. Questioned as to what happened if doctors refused, he said that "accasionally, very occasionally" doctors did not reply, and on his sending a reminder they answered that they regretted they could not accede to his request. That ended the matter. Asked how it happened that he had sent a second request to Dr. K., he answered that, when he sent the second letter, he would not have seen the first proposal; there might have been two different proposals from children of the patient living in different places.

In announcing the decision of the tribunal, the chairman said that the council took a very serious view of any action which might impair the patient's trust in the confidential nature of any information obtained by a medical attendant about his patient. The council considered that information should not be disclosed without the patient's knowledge or consent. The action of Dr. R. was endangering this confidence. The council, however, decided to postpone judgment until their meeting in two years' time. Before that date Dr. R. would be required to send to the registrar, for the use of the council, the names of professional and other men of standing who might be willing on application to testify to their knowledge of his professional behaviour in the interval.

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[2] *Lancet*, Nov. 15, p. 725.

[1] *Irish Times*, Nov. 5.

Obituary

JOHN FRASER

BT., K.C.V.O., M.C., M.D., CH.M. EDIN., LL.D., F.R.C.S.E.

WE have to record the death of Sir John Fraser, principal of the University of Edinburgh since 1944, and previously regius professor of clinical surgery. Both in surgery and in affairs he was a man of high ability, with a fresh and vigorous mind directed towards the future.

Press Portrait Bureau

He was born in 1885 at the small town of Tain in Ross-shire, the son of James Fraser and Margaret Mackay. From school days at Tain Academy he went to Edinburgh and graduated in medicine with honours in 1907. Thereafter he was resident surgeon successively at the Royal Infirmary, the Sick Children's Hospital, and the Chalmers Hospital, till 1910 when he took his F.R.C.S.E. and CH.M. He also studied in Paris and Freiburg. His first honorary post was at the Sick Children's Hospital, to whose honorary staff he was elected in 1912; and at that time he did much work, both clinical and experimental, on tuberculosis of bones, extending his researches to the differentiation of human and bovine tubercle bacilli. In 1914 he produced his book on *Tuberculosis of the Bones and Joints in Children*, which was dedicated to his chief, Harold Stiles, and was well received both by colleagues and students. Further inquiry on these lines was interrupted by the war, and from 1914 to 1918 he served with the R.A.M.C., winning the Military Cross and a mention in despatches: in observations on traumatic shock he collaborated among others with Cuthbert Wallace, with whom he afterwards wrote *Surgery at a Casualty Clearing Station*. On returning to Edinburgh he was elected assistant surgeon to the Royal Infirmary, and his surgical interests widened further.

A fluent and resourceful lecturer, Fraser took pains to understand his audience so that they should understand him. The Edinburgh undergraduates of 1925 welcomed his appointment to the regius chair because he paid them the compliment of taking them seriously—addressing them indeed as equals who were entitled to be critics. They welcomed him too as a young man who had lately travelled their own road (with much distinction) and who had no use for the idea that the highest peak of Edinburgh's glory was touched in the days of Lister and Syme. Nor were they disappointed: the new professor had brilliance both as surgeon and teacher, and was true to the ideal of scientific practice imparted by Stiles his predecessor.

During his active years as a surgeon Fraser's fame spread widely. His book *The Surgery of Childhood*, which came out in 1926, was the first of its kind and a competent work. He lectured in Sydney and was made F.R.A.C.S.; he became an honorary fellow of the American College of Surgeons and of the American Surgical Society; his private practice grew; and his appointment as surgeon to the King in Scotland brought him a knighthood in the Royal Victorian Order in 1937. During the late war he was consulting surgeon to the Military Hospital, Edinburgh, and to the Royal Navy in Scotland, and in 1943 he was created a baronet. Throughout these years, however, his professional work was increasingly mingled with the affairs of the university and the nation. In a portrait sketch at the time of his appointment the university magazine, the *Student*, said:

"While talking to Professor Fraser, one receives the impression that his greatest triumphs are yet to come at the conference table. For he has the subtlety of Odysseus, grasps your argument beforehand, penetrates the thou which lie behind it, and gives you his answer in a cl confection of compliments. There is a strange disp between the essential novelty of his thought and the sembl of orthodoxy which he throws over it. He loves to act lion in the guise of the lamb, and this is the very quintess of diplomacy."

He was a member of the Royal Commission on Licen of 1930–31, of the consultative committee of the A Medical Services, and of the scientific advisory commi of the Department of Health for Scotland. N concerned about the conditions of student life, he he to form the plans of his friend Sir Donald Pollock, in 1943 gave about £250,000 in trust to stimulate develop student activities. In 1944 he succeeded Thomas Holland as principal.

The three years spent in this new work characterised by intense devotion: no effort was sp to master the details of university problems great small. Almost from the first, however, he was ha capped by ill health, leading to grave illness last y and he was handicapped also, in a sense, by a High reserve and a shyness which in daily contacts made courteous manner rather formal. Nevertheless in a t of great difficulty following the war he achieved n for which Edinburgh will long be grateful.

Sir John Fraser married Agnes Herald, of D and they had a daughter and a son who succeeds to baronetcy.

ALEXANDER MacCORMICK

K.C.M.G., M.D. EDIN., HON. F.R.C.S.

THE influence of Sir Alexander MacCormick on development of surgery in this continent, writes Australian correspondent, has been profound. practical surgeon, by his judgment, skill, and anatom approach to surgery, he taught by precept and exam many thousands who were associated with him assistants, house-surgeons, and students.

Sydney Morning H

Born in 1856 at Taynish, in Argyllshire, MacCorm received his early medical education at the Univer of Edinburgh, where he was a class-mate of Sir Arthur Conan Doyle, David Orme Massey, and his life-long friend Dr. Robert Scot Skirving. After graduating M.B. in 1880, he became a demonstrator in physiology at Edinburgh and later house-surgeon at the Liverpool Royal Infirmary to E. R. Bickersteth, who had a great influence on his work. In 1883 he came to Australia under the ægis of his friend Anderson Stuart, as the first demonstrator in anatomy to the new medical school of the University of Sydney. To this period of anatomical research belongs his thesis on the musculature of the limbs of the Australian native cat, for which was awarded the Edinburgh M.D. with gold medal 1885.

In the same year he was appointed assistant surge to the Royal Prince Alfred Hospital, Sydney, wh he was one of the first to introduce antiseptic metho and the teachings of Lister. Here he laid the foundatio of his great surgical reputation. Appointed to the sen staff in 1889, he worked actively at the hospital un he reached the retiring age in 1915; then he joined t staff of the St. Vincent's Hospital where he remained active member of the staff until 1932. He was also member of the staff of the Sydney Hospital and of t Prince Henry Hospital.

Although MacCormick was lecturer in surgery in t University of Sydney for over a quarter of a centu he was not considered a good clinical teacher. But t two tributes which follow show that for some of l pupils at least this was not true. "He spent little tid in bedside instruction," writes B. T. E., "but to the who followed him closely there was a great deal to lea he was always ready to answer questions. In the theatre there were large audiences of students visiting practitioners. His skill and speed in the ormance of intricate surgical dissections was unique d he became a master of almost every branch of surgery. ny, like myself, have established their practice n his teaching and example."

J. S. takes up the tale: "It would be impossible to agine anybody leading a more strenuous and useful than MacCormick. His mental and physical stability enormous, enabling him to outlast many a younger . To his patients and to their tissues he was gentle kind. His field of activity was the whole body, and had an uncanny judgment and a superb dexterity. excellent teacher of those who worked with him. he ght by example. Generous and charitable, he never wed his right hand to know what his left was doing."

MacCormick was made an honorary fellow of the yal College of Surgeons of England in 1900 and of the al College of Surgeons of Edinburgh in 1905, and he a foundation fellow of the Royal Australasian College f Surgeons. He was knighted in 1913 and appointed K.M.G. in 1926. With Dr. Scot Skirving, he had served consulting surgeon in the South African War with the w South Wales contingent, when he was mentioned despatches. He also served from 1914 to 1917 in Middle East and in France.

The volumes of the *Australasian Medical Gazette* m 1884 to 1906 bear testimony to his skill and ability, d in all he published more than 30 articles.

One of his best-known cases was that of a man who in had a V-shaped excision performed for a cancer of the . A year later, a considerable part of the lower jaw was moved for a recurrence, with a large part of the cheek and submaxillary gland. Three and a half months later, ramus of the jaw, part of the parotid, the pillars of the ces, and the tonsil were removed. Four months later a ther recurrence was treated. In 1892, the patient was and was shown at a meeting of the Intercolonial Medical gress in Sydney. Through the opening in the side-wall the pharynx, it was possible to follow the movements of the glottis during swallowing. These movements were studied Anderson Stuart, who, with MacCormick, described in the *Journal of Anatomy and Physiology* in 1892.

MacCormick's attention to the patency of the whole ry tract before closing the abdomen in gall-bladder ery was meticulous and was one of his most practical hings. He was at his best in intricate dissections lving the tongue, maxillæ, and glands of the neck. operation he described in 1899 for removal of cancer the tongue was well ahead of his time, while his ation for irreducible dislocation of the metacarpal t of the thumb, by passing a tenotome through the of the joint and cutting the thick anterior ligament nst the phalanx, still remains the simplest and best hod of meeting this difficult problem.

n 1926 he presented his private hospital, The Terraces, ether with £25,000 and lands for its extension, to the esbyterian Church of New South Wales, and it is now nown as The Scottish Hospital. He was a member of the Royal Yacht Squadron and commodore of the Royal ydney Yacht Squadron; when about seventy, he iled his yacht *Ada* from England to Australia through Panama Canal. On his retirement, he went to live t St. Brelade, Jersey, and he escaped internment by few hours when the Channel Islands were invaded in 1940. After the war he returned, and it was there he ed on Oct. 25.

ELIZABETH COWPER EAVES

M.D., B.SC. LOND., D.P.M.

Dr. Elizabeth Eaves, lecturer in physiology in the University of Sheffield and consulting neuropathologist to the South Yorkshire Mental Hospital, died on Nov. 21 after a short illness.

Holding her B.SC. she was appointed demonstrator in physiology at the University of Sheffield in 1909, and she continued to work in this department until her death, serving under four professors. In her chosen specialty of neurohistology she devised staining methods for nervous-system tissues. Colour-vision was another of her interests, and she had lately completed a paper presenting the results of years of detailed observations. From this work Dr. Eaves turned to medicine, taking her M.B. in 1922, the D.P.M. two years later, and her M.D. in 1925.

As president of the local association of the Medical Women's Federation Dr. Eaves for many years spared no effort to obtain equality for women students, especially on the question of resident student posts, and she undertook a follow-up of all the women students from Sheffield who had qualified in the last 30 years, to justify the existence of the woman medical student. She was also at one time corresponding secretary of the Medical Women's International Association.

During the world war she spent her university vacations doing locum appointments, mainly in hospitals for nervous diseases. Those who visited Dr. Eaves at her home discovered with appreciation her gifts as a pianist.

Public Health

Foul Rivers

ON the second reading of the River Boards Bill the Duke of Devonshire quoted Greek, somewhat to the confusion of *Hansard*. He was recalling what Herodotus recorded of the exemplary habits of the ancient Persians. One need not flinch from offering an English translation of the passage: "Because of their special reverence for rivers they neither urinate nor spit into a river nor wash their hands in it, not do they allow anyone else to do so."

Such respect for cleanliness, health, and amenities puts us to shame some 24 centuries later in an age when the water-borne sewage of cities and the poison of industrial effluents are allowed to contaminate our streams and estuaries. Even the new Bill, as its sponsors have to admit, does nothing in itself to check this appalling pollution. Its scope is invincibly modest. It is a typical "departmental" Bill, devoted to the mechanics of administration.

The Central Advisory Water Committee, of which Lord Milne has been chairman, have looked round England and discovered that there are 45 fishery boards, 53 catchment boards under the Land Drainage Act, and, in all, some 1600 bodies responsible for dealing with river pollution. The Milne Committee proposed to substitute 29 larger and more powerful authorities. The new Bill is not even so definite as that. New "river board areas" are to be mapped out presently by departmental order. It is not thought worth while to disturb the Port of London Authority's powers over navigation and pollution, the London County Council's powers of preventing flooding, or the supervisory jurisdiction of the Thames Conservancy. Consequently the Thames, Lee, and London areas are excluded from the Bill but may be brought in later by another set of departmental orders. The main purpose of the new Bill is to set up the projected river boards and to transfer to them the functions, powers, assets, and liabilities of the existing bodies. On any fresh provisions for enforcing the law, or for conserving water so that we do not witness the irrational sequence of floods and droughts, the Bill appears to be silent. But it was officially stated during the House of Lords debate that the Milne Committee has, at the Government's request, set up a subcommittee to examine what fresh legislation is required for coping with pollution. Thus, even in a period of streamlined law-making, we progress but slowly towards ending the scandal of our fouled rivers.

Shortly before the debate a school of porpoises was observed off Westminster. But the riparian residents of Chelsea and Chiswick cannot watch from their windows the leap of the salmon. Mature fish cannot survive the pollution of the Thames below London Bridge. Apart from the amenity of clean water, we lose a by no means negligible source of food-supply. In former centuries, it is sometimes said, such was the plenty that wages agreements used to stipulate that the agricultural labourer should not be obliged to accept salmon in lieu of money more than twice a week. Mentioned in the recent debate, and apparently accepted by the Master of Trinity in his *English Social History*, the story is heavily challenged by a contributor to *Notes and Queries* in the issue of Nov. 15. Whether it be true or false, the

In May, 1946, the institute moved into new quarters in London Street, and this made it possible to extend both clinical and educational work. There were 1071 attendances at the psychopathic clinic, and 160 new cases came for treatment—about the same number as in 1938. But the demand for the clinic's services outruns its capacity, and it is estimated that at least five times as many cases would be dealt with if money was available to pay for medical and other technical staff. Even a small additional whole-time or part-time paid technical staff, it is thought, would make this possible, and to ensure that better use was made of valuable data collected in the records.

The conditions covered include mental defect, low intelligence, psychosis and borderline psychosis, psychoneurosis. Character disorders, organic disorders, and alcoholism. Patients are referred to the institute by courts, doctors, clinics, philanthropic societies, relatives and friends, and social workers; and some patients come of their own accord. Medical, psychological, and social treatment is undertaken, and every patient is thoroughly examined physically and mentally; his intelligence is tested and his social history is studied by a psychiatric social worker. The results are surveyed and discussed by one of the medical directors, and a comprehensive report of the findings, with recommendations, sent to the court or other body which referred the patient to the clinic. Dr. Denis Carroll, Dr. Frederick Dillon, Dr. Edward Glover, Dr. T. Rowland Hill, Dr. Emanuel Miller, and Dr. J. D. W. Pearce are the directors of the clinic, and there are in addition 19 other doctors on the medical staff. More subscribers are needed to help this careful and useful piece of voluntary work.

RADIOACTIVE TESTOSTERONE

WITH the aid of the radioactive isotope of carbon, C^{14}, radioactive testosterone, the first example of a synthetic radioactive sex hormone, has been produced in the department of chemistry at Harvard University.[1] It is expected that this will lead to advances in the knowledge of the interrelations of steroid hormones and cancer.

MEDICAL SUPPLIES

FROM Dec. 1 the Ministry of Health will take over from the Ministry of Supply responsibility for purchasing medical supplies for the Government. This transfer is in conformity with the general policy of handing over various war-time functions of the Ministry of Supply to the appropriate Government departments. The functions transferred include the purchase and inspection of Government requirements of drugs, dressings, and medical and surgical equipment, together with responsibility for sponsorship of firms producing these supplies for civil needs. For the present, the regional controllers of the Ministry of Supply will continue, on behalf of the Ministry of Health, to deal with matters normally considered at the regional level. All correspondence formerly addressed to the Directorate of Medical Supplies (including Penicillin Production Control), should from Dec. 1 be sent to the Secretary, Ministry of Health, Whitehall, S.W.1. The telephone number (Abbey 7788) remains unchanged, but the new telegraphic address will be " Localise, Parl, London."

SICK-BAY FOR CIVIL SERVANTS

A SICK-BAY was this week opened at Moray Lodge, Campden Hill, for civil servants of the lower-paid groups appointed to posts in the London area and living in hostels or lodgings. The sick-bay will be administered by the Ministry of Health, and the British Red Cross Society will be responsible for its day-to-day management. The Treasury Medical Adviser and his staff will act as medical officers, but private doctors will, of course, be free to visit their patients in the sick-bay. Cases of serious or notifiable infectious disease will not be accepted, and the sick-bay will deal only with the home-nursing type of case.

University of Oxford

On Nov. 22 the degree of D.M. was conferred on D. M. T. Gairdner (in absentia), and the degree of B.M. on D. M. L. Moran.

Royal Society of Medicine

The William Gibson research scholarship has been awarded to Dr. Alice Palmer, of Sydney, for her proposed research on the circulation in pregnancy.

Royal College of Physicians

The by-laws have been amended to give members more voice in the affairs of the college. In future at least two general meetings of members must be held each year, and a standing committee has been set up to concern itself with their interests. At the first statutory meeting, held on Nov. 27, with Lord Moran, the president, in the chair, 133 members were present. The following were appointed to serve on the standing committee: Lord Moran (ex-officio), Dr. W. R. S. Doll (chairman), Dr. M. J. McArdle (secretary), Dr. H. S. Morley, Dr. E. Halliwell, Dr. J. Holmes, Dr. J. F. Bromley, Dr. P. L. Mollison, Dr. W. J. O'Donovan, Dr. J. H. Hunt, Dr. E. Bywaters, Dr. C. Wilson, Dr. G. E. F. Sutton, Dr. A. Leishman, Dr. E. Darmady, Dr. K. A. Latter, Dr. R. Johnstone, Dr. R. Cove-Smith, Dr. J. R. Forbes, Dr. Helen Dimsdale, Dr. W. E. Gibb; and Dr. J. F. Loutit and Dr. L. W. Batten, who were also elected representatives on the council of the College.

London Hospital

Dr. A. G. Leatham has been appointed Sherbrook research fellow to the cardiac department of the hospital.

Pharmaceutical Society of Great Britain

On Thursday, Dec. 11, at 7.30 P.M., at 17, Bloomsbury Square, London, W.C.1, Mr. Adrien Albert, PH.D., will speak on protein structure and its pharmaceutical significance.

Medical Defence Union

Dr. P. H. Addison has been appointed assistant secretary to the union. Dr. Addison, who qualified in 1933, has served with the I.M.S. for ten years.

Gordon Hospital, London

On Dec. 2, the Duchess of Kent formally opened this hospital. The hospital which was first started in 1884, completed its rebuilding scheme in 1939, but during the late war it was requisitioned as a hostel for troops and its equipment transferred to the Victoria Hospital, East Grinstead.

Bearsted Memorial Hospital

The new unit of this hospital at Lordship Road, Stoke Newington, N.16, is now open for the reception of patients irrespective of religion or creed, and the board ask that emergency cases and abnormalities should be referred to the hospital for admission and antenatal treatment.

N.A.P.T. Colonial Scholarships

The National Association for the Prevention of Tuberculosis have awarded scholarships to the following for training in Great Britain in 1948:

Dr. Motala, in charge of Kibongoto Tuberculosis Hospital, Moshi, Tanganyika; Dr. V. E. Donawa, grade A medical officer (tuberculosis), medical department, Trinidad; Dr. M. H. Sherif, medical inspector in Sudan Government.

International Association for Prevention of Blindness

An honorarium of $1000 to promote research work on ophthalmology is offered through the American members of the staff of this association.

The award will be made in connexion with the 16th Concilium Ophthalmologicum, and the jury will consist of the officers and executive committee of the association. Papers may be presented by any responsible research-worker. The subject is to be Simple Non-inflammatory Glaucoma and may include anything definitely relative to the question. The matter must be new and of such value, in the judgment of the jury, as to merit this recognition. Papers may be written in English or French; they should be either unpublished or else published between the present date and Oct. 15, 1949; and they should reach the secretary of the association, 66, Boulevard St. Michel, Paris, not later than Oct. 15, 1949.

Scottish Defence Union's Report

During the year 1946–47 the membership of the Medical and Dental Defence Union of Scotland increased from 5742 to 5905. The annual report gives the assets as £34,882, representing a reserve of £5 18*s*. 1*d*. per member. During the past year the main grounds in respect of which claims arose were: error in prescription; amputation of the wrong finger; omission to remove tourniquets after operation; failure to X ray fracture; X-ray, diathermy, and radiant-heat burns; failure in swab check after operation; wrongful certification of insanity; negligence in diagnosis; negligence after unsuccessful dental extraction; and libellous remarks to relative of patient.

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[1] Turner, R. B. *Science*, 1947, 106, 248.

Pan-American Congress of Ophthalmology

Among the guests who are to address the third Pan-American Congress of Ophthalmology, which is to be held in Havana from Jan. 4 to 10, are Sir Stewart Duke-Elder whose subject will be Penicillin in Ophthalmology, and Dr. Elizabeth Cass (Gibraltar) who will speak on Strabismus.

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ROBERTSON, J. M., M.B. St. And.: junior asst. pathologist, The Victoria Infirmary of Glasgow.

STEWART, A. S. R., M.B. Glasg.: asst. physician, County Hospital, Ashton-under-Lyne, Lancs.

WARD, J. A., M.R.C.S.: M.O., Tanganyika, Colonial Service.

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DOEY, W. D., B.A., M.B. Camb., F.R.C.S., D.L.O.
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Diary of the Week

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5.30 P.M. *Experimental Medicine.* Dr. R. A. Kekwick, Dr. N. E Martin: Plasma Protein Fractions.
INSTITUTE OF DERMATOLOGY, 5, Lisle Street, W.C.2
5 P.M. Dr. I. Muende: pathological demonstrations.
CHELSEA CLINICAL SOCIETY
7 P.M. (South Kensington Hotel, 47, Queen's Gate Terrac S.W.7.) Mr. T. A. Cockburn, F.Z.S.: Treatment of Diseas in Wild Animals.
MIDDLESEX COUNTY MEDICAL SOCIETY
3 P.M. (Ashford County Hospital.) Dr. K. D. Keele: Disease of the Abdominal Aorta and its Branches. Dr. A. G Signy, Major B. E. Tomlinson: *Chronic Appendix.*
EDINBURGH POST-GRADUATE BOARD FOR MEDICINE
5 P.M. (Royal Infirmary.) Dr. D. M. Horstmann (Yale University Epidemiology of Poliomyelitis.

Wednesday, 10th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Prof. F. Wood Jones, F.R.S.: Perineum.
5 P.M. Dr. Foulds: Development and Limitations of Malignancy (ii) clinical applications.
ROYAL SOCIETY OF MEDICINE
5 P.M. *Comparative Medicine.* Dr. P. H. Gell, Mr. H. B. Parry M.R.C.V.S.: *Nutrition and Resistance to Infection.*

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5 P.M. Prof. R. J. V. Pulvertaft: Pathology of Poliomyelitis.
ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 26, Portland Place, W.1
7.30 P.M. Dr. J. L. McLetchie: Control of Sleeping-sickness in Nigeria.
INSTITUTE OF DERMATOLOGY
5 P.M. Dr. H. W. Barber: Lichen Group of Eruptions.

Friday, 12th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Dr. Harrison: So-called Acid-base Blood Balance.
5 P.M. Prof. W. D. Newcomb: Gastric Ulcer and Carcinoma.
ROYAL SOCIETY OF MEDICINE
8 P.M. *Radiology with the Faculty of Radiologists and the British Institute of Radiology.* Mrs. E. K. Dawson, Prof. R. W. Scarff, Mr. R. B. C. Ledlie, Sir Stanford Cade: Carcinoma *of the Breast.*
LONDON CHEST HOSPITAL, Victoria Park, E.2
6 P.M. Mr. J. W. S. Lindahl: Sinus Infection in Chest Diseases.
ROYAL MEDICAL SOCIETY, 7, Melbourne Place, Edinburgh
8 P.M. Prof. R. W. B. Ellis: Effects of War on Child Health.

Saturday, 13th

ROYAL SOCIETY OF MEDICINE
10 A.M. *Radiology with the Faculty of Radiologists and the British Institute of Radiology.* Dr. R. McWhirter, Dr. Clemmesen *(Copenhagen)*: Carcinoma of the Breast.
BIOCHEMICAL SOCIETY
11 A.M. (London School of Hygiene, Keppel Street, W.C.1.) Symposium on the Biochemical Reactions of Chemical Warfare Agents.

THE British Medical Association Handbook for 1947–48 contains in compact form useful information about the officers, membership, constitution, and *publications* of the association, and it also summarises the more important decisions of the representative body upon matters of policy.

THE address of the home division of Messrs. Burroughs Wellcome & Co. will be 183–193, Euston Road, London, N.W.1 (Euston 4477), from Dec. 15. The same address will apply to their overseas division from Dec. 21.

BSORPTION OF PENICILLIN GIVEN BY MOUTH

H. C. STEWART
A., M.D. Camb., Ph.D. Lond.
ECTURER IN PHARMACOLOGY
AND THERAPEUTICS

J. R. MAY
B.A., M.B. Camb.
ASSISTANT CLINICAL
PATHOLOGIST

ST. MARY'S HOSPITAL, LONDON

From the Department of Physiology and the Inoculation Department of St. Mary's Hospital, London

AMONG the few disadvantages of penicillin therapy is e very uncertain response of infections to treatment th the drug given by mouth, as compared with the ccess of sulphonamides by that route. The first tempt to administer penicillin in this way was reported Abraham et al. (1941), but little has since been pubhed in this country on the subject, perhaps because e impression obtained from many of the earlier reports s that the only factor concerned in the failure of the thod was the destruction of penicillin by the acid in e stomach, a view which is still widely held. Various alis have been used to combat the acidity of the gastric ice, but the results have been equivocal and rarely bstantially better than when alkalis were not used. no case have the blood-levels obtained been so high those constantly found after intramuscular injections the same doses. The final doubt was thrown on the ggestion that acid was the only factor by McDermott al. (1946), who showed that no better absorption was tained with penicillin by mouth in patients with hlorhydria.

In many of the reports the information obtained out the absorption of penicillin given by mouth has me largely from cases under treatment. Many of se, however, were cases of gonorrhœa (Paul et al. 45, György et al. 1945), the causal organism of which one of the most sensitive to small concentrations of nicillin. Since the doses given by mouth in these ses were very large, it is not surprising that the results re good, even though only a small fraction of the se may have been absorbed.

In the present investigation we have tried to determine e relative importance of the factors governing the sorption of penicillin given by mouth. No attempt s made to treat actual infections; all the results were tained in normal healthy adults, most of whom were n of 20–40 years. It has been shown by Henderson d McAdam (1946) and Buchanan (1946) that babies der 6 months of age may absorb penicillin by mouth tter than adults, but we have not investigated this point.

In all the experiments described below, except when odenal intubation was adopted, the volume of water used for the administration of the penicillin was about 120 ml. or 4 oz. (half the capacity of a 250 ml. beaker). This amount was a reasonable compromise, because, while it did not dilute the penicillin unduly, it was sufficient, it was hoped, to allow the dose to pass rapidly through an empty stomach and to lessen the taste of the penicillin, which some subjects found obnoxious.

Sublingual penicillin had been tried before but proved unsatisfactory, mainly because of the extremely disagreeable taste, which gave rise to copious salivation and made it impossible to retain the tablet in situ for more than a few seconds. Now that purer penicillin with a less obnoxious taste was obtainable it was found possible to keep 15,000 units/0·15 ml. under the tongue for fifteen minutes without swallowing. Out of 8 experiments in 5 persons, only 2 gave a blood-penicillin level in one specimen in each case, the rest showing no absorption. This was not, therefore, considered a practical method.

TABLE I—EFFECT OF FOOD ON PENICILLIN ABSORPTION

bject no.	Blood-penicillin level (unit/ml.)				
	On empty stomach	With food	After food		
			1 hr.	2 hr.	3 hr.
1	0·06	0 03	0 06	0 06	0 06
2	0·06	0	0	0 03	0 05
3	0	0	0	0	0
4	0 06	0	0	0	0 05
5	0 02	0	0	0	0
6	0	0	0	0	0
7	0	0	0	0	0
8	0 2	0	0	0 06	0·13
9	0	0	0	0	0
10	0	0	0	0	0
11	0 06	0	0	0 13	0·06
12	0	0	0	0	0
13	0 13	..	..	..	..
14	0	..	..	..	..
15	0 05	..	..	..	..
16	0	..	..	..	..

ll readings were the highest obtained after 15,000 units of penicillin had been taken. Blood was tested at 20 min., 40 min., 1 hour, hours, and 3 hours after administration of penicillin.

ESTIMATION OF PENICILLIN

In Blood.—In the early experiments the method used for estimating blood-penicillin levels was that described by Fleming (1944), using hæmolysis of blood by a streptococcus as the indicator. Subsequently Fleming and Smith (1947) improved this method by substituting a mixture of glucose, phenol red, and serum water for the saline diluent and red cells. This method was used for the experiments in the latter half of our investigation.

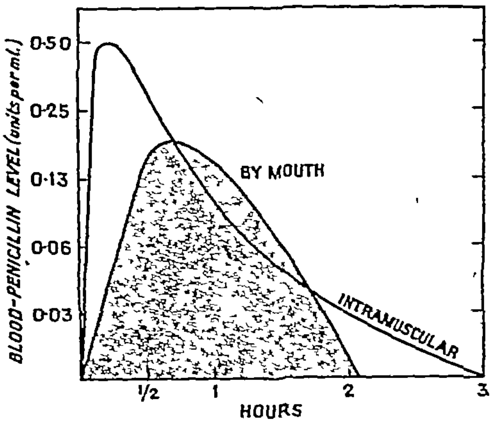

Fig. 1—Variation in absorption (shaded area) observed in 16 persons after a dose of 15,000 units of penicillin by mouth on an empty stomach, compared with a typical curve of blood-penicillin levels produced by the same dose of penicillin given intramuscularly.

In Urine.—The penicillin content of the urine specimens was estimated on agar plates by the filter-paper disc method, with the Oxford H staphylococcus as the test organism.

Other methods used are described with the relevant experiments.

EFFECT OF FOOD

It was necessary first to ascertain whether penicillin should be given on an empty stomach—i.e., whether food in the stomach interferes with absorption. If so, it was essential to know what interval should elapse between the taking of food and the administration of the penicillin.

For this purpose 12 persons each swallowed 15,000 units of penicillin on five separate occasions at different times in relation to food. This dose is small in comparison with those recommended for therapeutic use by mouth; but, since the penicillin was not being used for treatment, there was no object in giving a bigger dose. Further, with a small dose it is easier to appreciate small differences of absorption in relation to food, while at the same time it is easier to differentiate the good from the bad absorber.

The penicillin was given on an empty stomach; with food; and one, two, and three hours after food. It was impracticable, under present conditions, to control the type of food eaten, but by giving the penicillin in relation to breakfast this difficulty was to some extent obviated, since

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V—COMPARISON OF PENICILLIN ABSORPTION FROM PLAIN GELATIN CAPSULES AND FROM AQUEOUS SOLUTION, EACH CONTAINING 100,000 UNITS

ject No.	Vehicle	Blood-penicillin levels (unit/ml.) at various times					
		$^1/_2$ hr.	1 hr.	2 hr.	3 hr.	4 hr.	5 hr.
1	Water Capsule	0·75 0·3	0·5 0·5	0·13 0·13	0 07 0·06	0·03 0 04	0 0
2	Water Capsule	0·5 0·25	0·5 0·13	0·25 0 04	0·13 0	0 01 0	0 0
3	Water Capsule	0·35 0·13	0·25 0 06	0 06 0	0 04 0	0·01 0	0 0
4	Water Capsule	0·5 0·25	0·13 0·2	0·03 0·06	0 0·03	0 0	0 0
	Water Capsule	.. 1·0	0·5 0·5	0·5 0·13	0·06 0 06	0 0 03	0 0
	Water Capsule	0·25 0·25	0 35 0 5	0·07 0 06	0·03 0	0 0	0 0

ven by mouth would therefore be indicated by the retion of about 10,000 units. Excretion of a smaller ount would indicate incomplete absorption.

The results of these experiments (fig. 2) show that the aimed penicillin, when administered a second time, e no better results than did the same dose of mercial penicillin in the control experiment.

CAPSULES

Penicillin in enteric-coated capsules has been used in e past to avoid the destructive effect of the gastric idity (Burke et al. 1945). Our experiments showed t the effect of pH was not very important and could ly have been overcome by the use of capsules designed disintegrate in the gut and not in the stomach.

To assess the value of this procedure, a few experiments re carried out on the best absorber in our series, who wallowed capsules with the same dose in each. These had been variously coated by formalin-hardening cess to dissolve some in 2–10 min., some in $1^1/_2$ hours, d some in 3 hours. These times were known from control experiments in which some of the capsules of each kind had been swallowed but barium sulphate had been substituted for penicillin and the dissolution time determined by radiography.

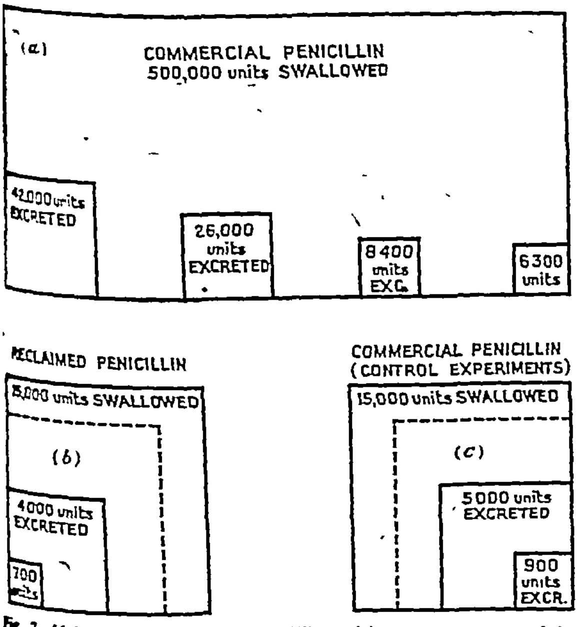

Fig. 2—Urinary excretion of penicillin: (a) amounts excreted by 4 persons after taking 500,000 units by mouth; (b) amounts excreted by 2 persons after taking by mouth a dose of 15,000 units of penicillin reclaimed from urine; (c) amounts excreted by same 2 persons after taking by mouth a dose of 15,000 units of commercial penicillin. The areas enclosed by the interrupted lines represent the approximate amounts that should have been excreted if all the penicillin had been absorbed.

The results (fig. 3) showed that blood-penicillin levels were progressively lower the farther down the gut the capsule dissolved. Since the best results were obtained with the untreated capsule, it was necessary to determine whether this method had any advantage over the administration of penicillin in water.

Six persons swallowed 100,000 units of penicillin on two occasions, the first in water and the second in an untreated gelatin capsule, in each case on an empty stomach. The results are shown in table v.

In view of all these results it is not surprising that the use of capsules has been abandoned.

PENICILLINASE

To investigate the relative importance of penicillinase among the various destructive factors in the intestine, samples were obtained of the bacterial flora at different levels in the gut. Any bacteria isolated were tested for the production of penicillinase after 24 hours' growth in nutrient broth. A penicillin-agar (2 units/ml.) plate, sown all over with Oxford H staphylococcus, was used. The solutions to be tested were placed in porcelain cylinders standing on the medium. The presence of penicillinase was shown by growth of staphylococci round the cylinders after incubation.

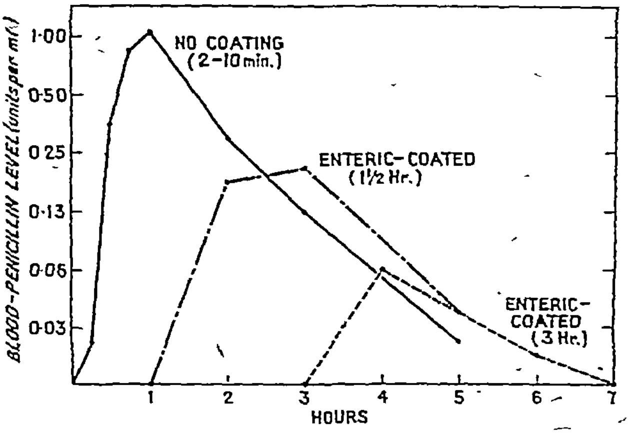

Fig. 3—Blood-penicillin levels obtained from a person who swallowed 100,000 units of penicillin on three occasions in gelatin capsules with different degrees of enteric-coating.

Two methods were adopted to obtain samples of gut contents: from the upper part of the duodenum by direct intubation (see below), and from the jejunum and ileum by the introduction and withdrawal of sterile nutrient broth through the gut-wall at operation, with a hypodermic syringe and fine-bore needle. Some collateral information was obtained by direct culture of the contents of the rat's intestine at various levels.

Results.—In 7 samples of duodenal contents no penicillinase-producing organisms were found. In 2 cases specimens were taken from about 2 ft. distal to the duodenojejunal flexure and about 3 ft. proximal to the ileocæcal junction. No penicillinase-producing organisms were found in either jejunal specimen or in the first ileal specimen. The second ileal specimen contained a coliform organism which produced only 2 units/ml. of penicillinase in twenty-four hours. Various organisms were cultured from different levels of the rat's intestine, but none produced penicillinase.

DUODENAL INTUBATION

Since the results obtained with enteric-coated capsules appeared to show that absorption of penicillin from the gut became progressively worse the farther down the

TABLE II—PENICILLIN STABILITY IN GASTRIC JUICE AT VARYING pH (SERIES I)

Gastric-juice specimen no.	Concentration of penicillin in buffer (unit/ml.)			
	A	B	C	D
1	0·75	0·06	0·06	0·04
2	1·0	0·25	0·25	0·18
3	0·75	0	0	0
4	0·75	0·25	0·25	0·25
5	0·75	0	0	0
Control	0·75	0·75	0·75	0·5

A, immediately after mixing.
B, after an hour at pH 3 or less.
C, after a further half-hour at pH 6–7.
D, after a further hour at pH 8.

this meal was the one which varied least. No food was allowed until two hours after the penicillin had been given.

Table I lists the highest blood-penicillin level for each of the 12 persons and for 4 other persons given penicillin on an empty stomach only.

Fig. 1 shows the variation in absorption in 16 persons who had each taken 15,000 units of penicillin by mouth on an empty stomach compared with a typical blood-penicillin curve produced by the same dose of intramuscular penicillin.

The highest blood-penicillin levels found in 9 persons who had taken 20,000 units of penicillin by mouth on an empty stomach were as follows:

Subject no. ..	1	2	17	18	19	20	21	22	23
Blood-level (u./ml.)	0·13	0·13	0·06	0·06	0·13	0·05	0·04	0·03	0·07

Blood was tested 20 min., 40 min., 1 hour, 2 hours, and 3 hours after administration of penicillin.

Since these results showed that the best absorption was almost always obtained when food was withheld, all subsequent experiments were performed on an empty stomach, except when the contrary is stated.

EFFECT OF pH OF GASTRIC JUICE

To assess the importance of the pH of the gastric juice, in-vitro experiments were carried out with juice of various acidities, instead of plain acid solutions, to imitate more closely in-vivo conditions. Three series of experiments were performed, the technique being basically the same in each; 2 ml. of each specimen of gastric juice was taken and 0·1 ml. of penicillin (1000 units/ml.) was added, making a final concentration of 50 units/ml.

Before each estimation a 10 c.mm. aliquot was taken and added to 1 ml. of nutrient broth. This diluted the penicillin to a strength suitable for titration and at the same time buffered the acid to a neutral and penicillin-stable pH. After the addition of the penicillin to the gastric juice all specimens were kept at a temperature of 37°C, from which they were not removed until the end of the experiment, and the removal of specimens for titration and their dilution in buffer were also carried out at this temperature.

In each series of experiments a control was prepared by mixing equal quantities of each specimen of gastric juice, and 2 ml. of this was adjusted with $N/10$ NaOH to pH 6– This specimen was then tested exactly as the others.

TABLE III—PENICILLIN STABILITY IN GASTRIC JUICE AT VARYING pH (SERIES II)

Gastric-juice specimen no.	pH	Concentration of penicillin in buffer (unit/ml.)					
		A	B	C	D	E	F
6	1·24	1·0	0·1	0·06	0	0	0
7	1·76	0·5	0·125	0·06	0	0	0
8	2·11	0·5	0·25	0·125	0·1	0·06	0
Control	6·5	0·5	0·5	0·5	0·5	0·5	0

A, immediately after mixing.
B, after 10 min. incubation at 37°C.
C, ,, 20 ,, ,, ,, ,,
D, ,, 30 ,, ,, ,, ,,
E, ,, 40 ,, ,, ,, ,,
F, ,, 1 hour ,, ,, ,,

Series I

Five specimens of gastric juice were used, and the pH each with universal indicator was 3 or less.

Incubation was carried out for an hour at acid pH and th for half an hour at pH 6–7 after adjustment with alka and finally for a further hour at pH 8 after adding mo alkali. In this way a time greatly in excess of that in whic the penicillin could remain at these pH levels in the bod was covered.

Titrations were carried out immediately after mixin after an hour's acid incubation, after half an hour of neutralit and after an hour at pH 8. The results are shown in table II

Series II

Since the acid hydrolysis during the first hour from th above experiments was most important, further specime of gastric juice were investigated and specimens were take at short intervals during an hour's acid incubation only.

In this series the pH of each specimen was measured mo accurately with a glass electrode. The results are given table III.

Series III

Further specimens of gastric juice were selected to cov the less acid range not included in the previous series.

The pH of each of these specimens was also measure with a glass electrode. The results are given in table IV.

SELECTIVE ABSORPTION

Owing to the varied reports on the absorption penicillin given by mouth it was thought advisabl before proceeding further, to investigate the possibilit that penicillins I, II, III, and K might be absorbed t different extents. If this were so, differences in th content of these types in the different batches of com mercial penicillin might explain the very variable result reported by different workers.

TABLE IV—PENICILLIN STABILITY IN GASTRIC JUICE AT VARYIN pH (SERIES III)

Gastric-juice specimen no.	pH	Concentration of penicillin in buffer (unit/ml.)					
		A	B	C	D	E	F
9	2·0	0·5	0·25	0·175	0·125	0·1	0·04
10	2·9	0·5	0·5	0·5	0·5	0·35	0·25
11	4·2	0·5	0·5	0·5	0·5	0·5	0·35
Control	6·7	0·5	0·5	0·5	0·5	0·5	0·5

A, B, C, D, E, and F as in table III.

Because of the impossibility, when these experiments were carried out, of obtaining pure samples of the different penicillins for this purpose, the following experiment was designed.

Penicillin that had been excreted in the urine was extracted and readministered. This penicillin, been through the body once, should all be potentially absorbable; hence, if any selective absorption occurred, the urinary excretion of penicillin should be considerably greater after a dose of this reclaimed penicillin than after the same dose of ordinary commercial penicillin.

Four persons each swallowed 500,000 units of commercial penicillin which contained unknown quantities of the various types. The urine passed by each person during the next 24 hours was collected and the penicillin excretion estimated; all samples were then pooled and the penicillin extracted.

The total amount recovered was 70,000 units, which was only sufficient for four experiments using 15,000 units in each. It was therefore decided to select 2 persons (the best and the worst absorbers of the original 4), give each of them 15,000 units, and estimate again the total amount of penicillin excreted in the urine of each.

The excretion of penicillin after an intramuscular injection is about 60% of the original dose (Abraham et al. 1941, Rammelkamp and Keefer 1943). The amount of penicillin absorbed from a dose of 15,000 units

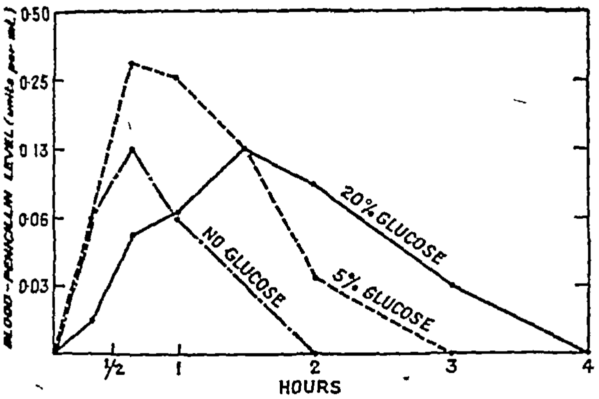

Fig. 5—Influence of glucose on absorption of penicillin in a good absorber.

instances, the remaining 2 being at one hour. Therefore, unless the pH of the gastric juice is less than 3, no significant destruction can be attributed to this factor by the time the peak of the blood-penicillin level is reached. Since the number of persons with a resting gastric pH of under 3 appears to be considerably less than the number of persons who absorb penicillin indifferently, it seems unlikely that destruction by acid gastric juice can be the only factor concerned. This supposition becomes even more tenable when it is realised that, during the first forty minutes after swallowing the penicillin, absorption is continually going on and thus the greater part of any dose cannot come in contact with the acid for anything approaching this length of time.

The question therefore remains whether the administration of alkali with penicillin is really advantageous. Finland et al. (1945) concluded that penicillin given in saline on an empty stomach gave blood-penicillin levels as good as those produced by any preparation incorporating antacids or buffers, with the possible exception of aluminium-hydroxide gel. This view is also in agreement with that of McDermott et al. (1945), who obtained blood-penicillin levels of the same order with penicillin in water, with or without antacid. György et al. (1945), however, found considerably higher blood-penicillin levels when sodium citrate was administered with the penicillin. From the results of our investigations it appears that an antacid would only be beneficial as such in preventing the gastric contents from being less than pH 3, which could only help in a limited number of cases. In this connexion, however, it should be remembered that slightly alkaline fluids traverse the stomach more readily than do acid or neutral fluids, and this fact is often utilised in dispensing irritant substances—e.g., digitalis and salicylates. The use of antacids or buffers, if given with penicillin, in a watery solution and not in capsules, may well help as much by facilitating the rapid entrance of the drug to the small intestine as by neutralising the gastric acidity.

Since absorption of penicillin is so rapid when it is given by mouth in water, a large proportion of the dose may well follow the lesser curvature of the stomach and mix little with its contents. If this explanation is correct, the choice of antacid becomes important. Those antacids which dissolve readily in water—e.g., sodium citrate and sodium bicarbonate—would be preferable for administration with penicillin in aqueous solution. The water-insoluble antacids—e.g., kaolin and magnesium trisilicate—adsorb the penicillin and tend to adhere to the gastric mucosa, which is obviously undesirable.

Capsules were often used in the early days; sometimes the penicillin was given by itself in this manner (Burke et al. 1945), and at other times it was incorporated in an oily base (McDermott et al. 1945). This method has now fallen into abeyance, partly because the capsules, enteric-coated to avoid the effects of gastric acidity, gave progressively worse blood-penicillin levels the farther down the gut they disintegrated (fig. 3), and partly because, even when they were not enteric-coated, with the result that they dissolved in 2–10 min., they still gave blood-penicillin levels no better than, and often inferior to, those given by penicillin in aqueous solution (table v).

The observation that blood-penicillin levels become progressively worse the farther down the intestine the drug is released is open to two possible explanations: there may be destruction by penicillinase; or the absorptive power of the intestinal mucosa may diminish progressively. As regards penicillinase, Wilson and Miles (1947) state that the bacterial flora of the normal gut consists of a few enterococci in the jejunum and increasing numbers of coliform and other organisms in the ileum. Our experiments showed that duodenal contents aspirated by tube in most cases contained no viable organisms, but such microbes as were cultured in no instance produced any penicillinase. Similarly in the jejunum no penicillinase-producers were found, and in the ileum 1 of 2 cases showed a coliform organism to be present which produced only 2 units/ml. of penicillinase in twenty-four hours under optimal conditions. It therefore seems most unlikely that penicillinase activity could play anything but a negligible part in the unsatisfactory results of giving penicillin by mouth.

The absorptive power of the intestinal mucosa was investigated in the experiments with duodenal intubation. The proximal part of the duodenum is well known to contain the optimal absorptive mucosal area for various substances. Experiments already discussed focused attention on this part of the gut; and, since the exact extent of this area is unknown, it was thought advisable to determine the influence that duration of contact between drug and mucosa in this area might have on the absorption of penicillin.

With doses that gave about the same blood-penicillin levels in different persons, experiments were carried out to determine the effect of giving the same dose of penicillin on two separate occasions to each person. The first time the dose was in a small bulk, 5 ml., and the second in a large bulk, 250 ml., of water. The idea was that the larger bulk would stimulate peristalsis and by gravity tend to leave the proximal part of the duodenum much more rapidly than would the small bulk; in which case the results should be better with the smaller bulk. This was found to be true (see fig. 4 and table vi). In subjects 1 and 13 the blood-penicillin levels obtained with the small bulk of fluid were comparable with those usually obtained with an intramuscular injection of the same dose.

Though only 5 persons were tested, the fact that the difference was of the same sign in each case is highly significant, even if the benefit from the cross-over test is ignored. Comparison of the small and large bulks, so far as maximal blood-penicillin levels were obtained, gave a mean of the difference of 0·16 unit/ml., with a standard error of ±0·09.

In a few cases penicillin was injected through the gut wall at operations for laparotomy or gastro-enterostomy. Since only one experiment could be done in each person, it was not thought to be a very practical way of obtaining evidence about the influence of bulk on the absorption of a given dose. However, in several cases very good blood-penicillin levels were obtained, suggesting that the condition of the patient and the anæsthetic had little inhibiting effect.

The possibility that any one type of penicillin might be better absorbed than another can be disregarded in the light of the experiments on selective absorption.

The use of glucose was disappointing. In several instances the blood-penicillin levels were higher and small intestine it was released, it seemed likely that the best absorptive area for penicillin, as for many other substances, was the upper end of the small gut. If this area was small, the length of time a solution of penicillin came in contact with it would be important. To test this assumption the following experiment was devised.

Five persons swallowed duodenal tubes on several occasions, and pairs of experiments were carried out on each: in the first a dose of penicillin was given through the tube in a small bulk (5 ml.) of water; and in the second, on a subsequent occasion, the same dose was given in a large bulk (250 ml.).

The object was to give the penicillin in such a bulk that on the first occasion it would tend to remain in the vicinity of the opening of the tube, whereas on the second occasion the increased amount of fluid would tend to pass rapidly along the gut. The only evidence accepted as proof of duodenal intubation was radiographical.

The larger volume of fluid was run in through a funnel by gravity, and the smaller was introduced with a syringe. Loss in the tube in the latter case was prevented by giving the penicillin in 2 ml. of water, washing through with a further 3 ml., and finally emptying the tube with 3 c.cm. of air, the volume of the tube.

Owing to individual variations in absorption each person was given by mouth test doses of penicillin in water on an empty stomach to select for use the smallest dose which would give blood-penicillin levels of the same order as those obtained from 15,000 units in a good absorber. In this way it was possible to average the different results, which are shown in fig. 4, where the results from penicillin by mouth are called control. The blood-penicillin levels obtained in each person in the various experiments are shown in table VI.

GLUCOSE

Since Armstrong et al. (1945) have shown that penicillin can be demonstrated in the blood for a longer time when injected intramuscularly in 5% glucose than when given in normal saline solution, we investigated the possibility that glucose might similarly affect penicillin given by mouth.

We carried out 73 experiments in 11 persons; 12 of these experiments were controls, the penicillin being swallowed in water instead of glucose solution. Only two doses of penicillin were used, 20,000 units and 100,000 units, and two glucose solutions, 5% (isotonic) and 20%.

Most of the experiments were carried out on an empty stomach, but in some persons a better result was obtained both in the control and in the glucose experiment when this was done two to three hours after taking food.

Ultimately, however, these experiments were abandoned because, though in some cases considerable improvement was shown, this was not a constant finding.

The beneficial effect was a longer maintenance of the blood-penicillin level as compared with the control, which was repeatable in the same subject but was not nece of any use in improving the blood-penicillin levels in a pe known to be a poor absorber.

One example of the effect in a glucose-sensitive subjec shown in fig. 5.

TABLE VI—EFFECT OF FLUID VOLUME OF DOSE ON ABSORPTION OF PENICILLIN ADMINISTERED INTRADUODENALLY

Subject no.	Dose	Bulk (ml.)	Blood-penicillin levels (unit/ml.) at various times				
			20 min.	40 min.	1 hr.	2 hr.	3 hr.
1	15,000	5	0·13	0·5	0·75	0·11	0
	15,000	250	0·1	0·16	0·09	0	0
	15,000	Control	0·03	0·07	0·09	0·01	0
2	15,000	5	0	0·03	0·1	0·05	0
	15,000	250	0	0·03	0·04	0	0
	15,000	Control	0·01	0·06	0·04	0	0
13	15,000	5	0·06	0·25	0·2	0·03	0
	15,000	250	0·01	0·04	0·13	0·01	0
	15,000	Control	0	0·13	0·03	0	0
14	50,000	5	0·35	0·35	0·25	0·06	0·03
	50,000	250	0·35	0·2	0·13	0·06	0
	50,000	Control	0·06	0·04	0·03	0	0
24	50,000	5	0·09	0·09	0·04	..	0
	50,000	250	0·04	0·04	0·01	0	0
	50,000	Control	0·09	0·09	0·04	0	0
Mean	..	5	0·13	0·24	0·27	0·06	0
		250	0·1	0·09	0·08	0·01	0
		Control	0·05	0·08	0·05	0	0

DISCUSSION

In the absorption of drugs from the alimentary t the buccal mucosa is the first possible portal of en The experiments in this connexion showed clearly t absorption through the buccal mucosa was of importance.

In the stomach there are two factors for considerati the effect of food, and the action of the gastric ju Burke et al. (1945) briefly investigated the influenc food on the absorption of penicillin and found t administration two hours after a meal gave better bl penicillin levels than half an hour after food. T workers in all their experiments recorded blood-penic levels greatly in excess of those recorded by any ot workers—even greater than the levels usually obtai after an intramuscular injection of the dose they u

From a therapeutic point of view it was essential know the relationship of penicillin absorption to f more exactly. Table I shows that, of 12 persons f tested, only 6 showed detectable blood-penicillin lev after the administration of 15,000 units in water mouth. Of these 6, only 1 had a measurable bloo penicillin level when the penicillin was swallowed eith with, or an hour after, food. At two hours after fo 4 of these persons showed blood-penicillin levels, incre ing to 5 persons at three hours. On an empty stoma —i.e., before breakfast in the morning or not less th four hours after a meal—with one exception (subject 1 all 6 subjects showed their maximal blood-penicill level. Besides this group of 12, 4 other persons ca swallowed the test dose on an empty stomach only 2 of these gave satisfactory blood-penicillin level showing that 8 out of 16 persons had absorbed measurab quantities of penicillin after taking 15,000 units. It interesting to compare this result with that in whic all of 9 subjects gave detectable blood-penicillin leve after swallowing 20,000 units on an empty stomac It seems, therefore, that blood-penicillin levels used an index of absorption indicate that 15,000 units is abo the median detectable dose.

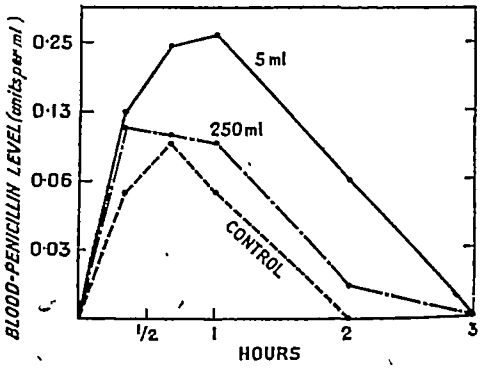

Fig. 4—Mean blood-penicillin levels of 5 persons detailed in table showing effect of fluid volume of dose on absorption of penic administered intraduodenally and of penicillin given by mouth a control.

The absorption of penicillin having been shown to b maximal in the absence of food, the influence of th resting gastric juice was next investigated. Table shows that the only destructive pH encountered in th alimentary canal is the acid one. Tables III and show that the pH must be less than 3 to produce an appreciable destruction of the penicillin in 40 min. Thi is important, because in 15 experiments in which peni cillin was swallowed by 6 persons the peak blood penicillin level occurred at or before this time in 1 further and destroyed the action of the tensores palati. Having been taken to pieces in this way, the palate was sutured in layers, allowing the soft palate to take a new, more posterior, position. The method is an application of the V–Y principle of plastic surgery, the soft palate being lengthened and brought nearer to the posterior pharyngeal wall.

If the child can be given a normal palatal speech mechanism—i.e., a normally shaped palate and a competent palatopharyngeal valve—the best time to repair the palate is before the child learns to speak. Speech can then be learnt by the ordinary imitative habits of childhood, and the bad habits and tricks of cleft-palate speech will not have to be unlearnt.

The results of this operation have been summarised by Wardill as follows:

> "It can be said that where the operation is done during infancy, and *where a functional palatopharyngeal valve has been formed*, speech will develop along normal lines without any training" (Wardill 1933).
>
> "Children operated upon by this method before the age of speech, assuming a successful surgical result, grow up in the large majority of cases as normal children, without any of the stigmata of cleft palate; and they require no speech training beyond what is customarily given to any normal child" (Wardill 1937).

We here describe the speech results in a consecutive series of 100 children whose cleft palates were repaired by one of us (F. H. B.), following the technique described by Wardill. The assessment was made primarily to learn our own results; but they may also be of use to practitioners and surgeons who have to advise on the treatment of these difficult cases. As Morley (1945) wrote:

> "Very few surgeons, even up to the present day, have published detailed accounts of the speech results of their operative procedures."

METHOD OF TREATMENT

The children were operated on in the Duchess of York Hospital for Babies, Manchester. A hospital such as this, with doctors and nurses experienced in nutritional disorders and the care of infants, is essential to the success of a cleft-palate centre. Skilled pædiatric care before and after operation makes possible a high standard of safety. It is a testimony to the care of our medical colleagues and the nurses, largely under the guidance of Dr. Catherine Chisholm and Dr. Sylvia Guthrie, that in 100 children coming to hospital for repair of the palate operation was never refused and no child died.

Age at Operation.—If the case was one of complete cleft, the lip and anterior palate were repaired by Veau's (1931) technique when the infant was 3 months old. The main palate operation was done at the age of 12–21 months.

Anæsthetic.—The anæsthetic consisted of intratracheal nitrous oxide, oxygen, and ether, given by Dr. K. B. Pinson, whose watchful care and great experience were in large part responsible for the good condition in which the infants left the operating-theatre.

Operation.—The technique followed that described by Wardill, except in two particulars:

(1) Instead of four short flaps of hard palate mucosa, one long flap of mucoperiosteum was raised on each side—as in the Veau and earlier Wardill operations—and the posterior palatine arteries were preserved. Careful freeing of the tissues round these vessels allowed them considerable mobility.

(2) Pharyngoplasty was performed in the first half of the series only; in the second 50 cases the posterior pharyngeal wall was not disturbed.

At the end of the operation it was seen that the anterior ends of the hard-palate flaps were now 0·75–1·0 cm. further back in the mouth than when they were first raised, a measure of the posterior displacement of the new soft palate. As the anæsthetic tube was withdrawn and the child gagged, it was seen that the soft palate could reach the posterior pharyngeal wall.

Assessment.—The children were examined 4–8 years after the operation, at the age of 5–9 years. Speech therapy had not been used. Each child had learnt to speak at home in the ordinary way. It was possible to determine whether the palatopharyngeal valve was competent by the absence of nasal escape or of nasal intonation during speech, by the child's ability to snort or to blow up a balloon, and by his ability to pronounce correctly the explosives K and G. It is well known, however, that a child may be able at the doctor's knee to demonstrate complete oronasal closure in any of these ways, and yet at home exhibit all the faults of cleft-palate speech. In this series some of the children whose speech was assessed as "imperfect" could say all the test words correctly and could blow up a balloon, but had obvious faults in continuous speech. For this reason, after investigating the condition of the palatopharyngeal valve, we took as our criterion in assessing the result the quality of speech when the child was talking with his parents or friends.

TABLE I—SPEECH RESULTS AFTER OPERATION FOR CLEFT PALATE

Type of cleft	Total	Speech perfect	Speech perfect except for minor hard-palate or lip faults	Speech imperfect	Imbecile
Postalveolar	41	27	8	4	2
Complete ..	49	19	18	11	1
Total ..	90	46	26	15	3

RESULTS

There was no death in hospital in this consecutive series of 100 children.

The soft palate remained totally united in all cases. In 12 cases a small perforation (up to 0·5 cm. in diameter) developed between the mouth and the nose at the tip of the hard-palate flaps.

Of the 100 children, 90 were examined; 6 of the missing children had died from accident, enemy action, or disease; 4 children could not be traced.

In 41 of the 90 children the cleft was postalveolar—i.e., of the soft palate, or of the soft palate and hard palate only, the alveolus being intact. In the remaining 49 the cleft was complete—i.e., of upper lip, alveolus, and palate, whether unilateral or bilateral.

Of the 90 children, about half (46) spoke perfectly, with no speech stigma of any kind; about a quarter (26) spoke perfectly except for small faults associated with irregularity of the anterior hard palate or lip; and about a fifth (18) spoke imperfectly (in 3 of these the operation could not be assessed, because the children were mentally defective). The results are shown in table I.

Speech Perfect

In the 46 children who spoke without stigma, tests for oronasal closure showed the palatopharyngeal valve to be competent.

A child was placed in this category only after a most critical examination. The description "perfect" meant that the speech was in every way indistinguishable from that of a normal child.

This speech result was obtained more often after repair of a postalveolar cleft than after repair of a complete cleft (table I), since with a complete cleft the alveolus is more likely to be deformed or the lip adherent, leading to difficulties in sound-production (see below).

It was notable in these children that the soft palate was long, mobile, and supple; and that the hard palate was smooth and regular in contour, with the teeth in maintained longer; but glucose did not produce a consistent improvement in poor absorbers. Nevertheless, from a therapeutic point of view, some caloric intake is essential, and for a few days at the height of an illness carbohydrate as a food source is all that is required. It is fortunate that this can be provided in a manner which, far from interfering with the absorption of penicillin, may improve it.

McDermott et al. (1945) have stated that, to produce blood-penicillin levels comparable with those following an intramuscular dose of penicillin, five times as much must be given by mouth. This appears to be a generalisation but does not distinguish between the good absorber and the bad. In our series, both for 20,000 units and 100,000 units, this relationship, even supposing that the increase in blood-penicillin level was proportional to the increase in dose, held good only for the good absorbers, who from a treatment point of view present little difficulty in any case. Ten times the intramuscular dose, however, seems to be a safer figure to ensure satisfactory results in both poor and good absorbers.

If penicillin is to be given by mouth, the following system is suggested. The penicillin should be given in about 4 oz. of 5–10% glucose solution, containing about gr. 20 of sodium bicarbonate or citrate, before meals, and not less than three hours, preferably four hours, after the previous meal. The dose should be ten times as great as the dose of intramuscular penicillin that produces the blood-penicillin levels required. If these are to be maintained continuously, a dose of 500,000 units by mouth should be satisfactory.

SUMMARY

To ensure the best possible absorption, penicillin by mouth should be given on an empty stomach.

There is no evidence that any of types I, II, III, and K penicillin is better absorbed than another.

In all instances the use of capsules gave results inferior to those obtained with the same dose in aqueous solution.

The destructive effect of gastric acidity is only of importance when the pH is less than 3.

Most of the penicillin is absorbed in the upper part of the small intestine.

Destruction of penicillin by penicillinase in the upper digestive tract is negligible.

Glucose is a convenient source of energy which can be given with penicillin and often enhances the result.

The most important factor influencing the absorption of penicillin seems to be the unexplained individual variations in the absorptive capacity of the gut.

We wish to thank Sir Alexander Fleming for his stimulating interest and encouragement; Dr. D. Rowley for the extraction of penicillin from urine; Drs. K. E. Cooper, K. W. Cross, and A. H. James for helping us by swallowing duodenal tubes; many others for acting as experimental subjects; Prof. C. A. Pannett, Mr. A. E. Porritt, and Mr. J. C. Goligher for certain specimens; and the Sir Halley Stewart Trust for their continued financial support to one of us (H. C. S.)

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SPEECH AFTER REPAIR OF CLEFT PALAT

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The importance of a cleft palate to the patient li in its effect on speech, and the ultimate criterion operative repair is the resultant speech. Operatio such as the Langenbeck, designed only to close th obvious cleft, do not provide one of the factors essenti for normal speech—a soft palate capable of reaching th posterior pharyngeal wall, so making possible comple oronasal closure. Passavant (1869) first described ho this closure was brought about, the soft palate risi upwards and backwards to reach a prominent ridge on th posterior pharyngeal wall caused by contraction of th superior constrictor muscle (Passavant 1869, Whil 1930); though more recently Townshend (1940) a Wood Jones (1940) have shown that the muscle-fibr concerned in this ridge are those of the palatopharyngeu

Since Passavant described the sphincteric action the hiatus nasopharyngeus there has been a gradu development in surgical practice towards an operati which does not merely close the cleft but also brin the soft palate nearer to the pharynx. Important stag in this development were the operations described Gillies and Fry (1921) and Veau and Borel (1931).

Veau aimed at reducing scar tissue to a minimum completely suturing the nasal mucosa as well as th buccal and by approximating the two halves of the sof palate musculature. In addition to reconstructing th palate in layers, he completely freed from the bone th long flaps of hard-palate mucosa, so as to allow them lie intimately against the bone in their new position. Th also permitted the soft palate to be more readily displac backwards into the pharynx. Of 100 children wh underwent this operation 62 acquired normal speech and of 47 of them operated on during the first two yea of life 34 (72%) acquired normal speech (Veau an Borel-Maisonny 1933).

Wardill (1927, 1928, 1933, 1937) emphasised th importance of the palatopharyngeal sphincter, or valv formed by the soft-palate muscles and those of th posterior pharyngeal wall. He drew attention to th continuous activity of the valve during speech, an demonstrated that, unless it was competent, productio of normal speech sounds was impossible. He showe further that in cases of cleft palate the bony pharyn was abnormally wide and deep, making it more difficul to construct a competent valve. To overcome thi anatomical handicap he introduced the operation o pharyngoplasty, in which a transverse incision was mad across the posterior pharyngeal wall at the level of th arch of the atlas, exposing the muscle-fibres which her descend in a distinct bundle on either side of the midline The wound was then sutured vertically, bringing togethe the two halves of the muscle, narrowing the pharyn from side to side, and producing a bulge of muscle in th region of the normal Passavant's ridge. An alternativ method of narrowing the nasopharynx was described b Browne (1934).

The repair of the palate described by Wardill include the best features of the Gillies-Fry and Veau operations Long flaps of mucoperiosteum were raised from the hard palate (in later operations four shorter flaps were used) the soft-palate muscles were completely freed anteriorly from their attachment to the posterior edge of the hard palate, and from the pharyngeal wall laterally. Fracture of the hamular process on each side freed the soft palate possible and the explosive sounds were good. The of operation was satisfactory, but speech remained as in the previous group, because of a disability of the central nervous system.

(3) *Imbecility* was found in 3 children in whom the structure of the palate appeared satisfactory, but it was impossible to carry out any tests.

We do not know whether this high incidence of mental deficiency is to be expected in any collection of children with cleft palates. Apart from these 3 children, mental backwardness was not conspicuous in our series. On the contrary, a feature of the children who spoke perfectly or almost so (three-quarters of the total) was their mental alertness and general brightness—conditions no less notable in their enthusiastic parents, who came gladly the follow-up clinics year after year, in many cases travelling long distances. There can be no branch of surgery more satisfying to the surgeon than cleft-palate reconstruction, which demonstrates the fascinating physiological result that follows a successful technique, and sees such gladness in parent and child.

PHARYNGOPLASTY

It is of interest to compare the function of the palatopharyngeal valve and the speech results in the series in which pharyngoplasty was performed with that in which it was not. The results obtained in 87 children in whom it was possible to assess the speech mechanism are given in table II.

The figures do not show much difference between the two groups. The aim of a pharyngoplasty is to facilitate closure of the palatopharyngeal sphincter. In all the cases in which pharyngoplasty was performed this closure was gained; and, though there were 5 imperfect speakers in the group, the cause of the imperfection was not in the palatopharyngeal valve. In the comparable group in which pharyngoplasty was not performed there were imperfect speakers, and in 2 of these the palatopharyngeal valve was at fault. These were the 2 cases described above) in which the soft palate was noted as being very small and posterior displacement at operation was inadequate. Possibly, if the pharynx had been narrowed by a plastic operation, the small soft palate might have become adequate to effect oronasal closure.

There was thus this small difference in our results in favour of pharyngoplasty. Examination of the pharynx in children in whom pharyngoplasty had been done showed a rather fixed and immobile posterior pharyngeal wall. By contrast, in the cases in which pharyngoplasty had not been done the posterior pharyngeal wall was mobile, with good contraction and elevation of its muscles. It was our impression that after pharyngoplasty the advantage gained by the narrowing was lost by the immobility that followed; whereas when the posterior pharyngeal wall was not disturbed it developed a mobility that compensated for the slightly greater diameter of the pharynx.

CONCLUSION

Wardill's operation aims to close the anatomical defect and to construct a competent palatopharyngeal valve on which speech depends. Wardill claimed that, if a normal palatal speech mechanism was provided at an early age, the child would speak normally without speech training.

In our results these claims are justified, for in only children was the palatopharyngeal valve incompetent. Without speech training, perfect speech was obtained in about half the cases, and in another quarter there was perfect speech marred only by slight articulatory defect due to irregularity of the anterior hard palate

The remaining cases (about a fifth of the total) showed various additional hazards such as gross deformity of the jaws, and defective speech sense—conditions not remedial by operation alone.

SUMMARY

A modified Wardill's operation was performed in 100 consecutive cases of cleft palate in children aged 12–21 months.

At follow-up examination about half the children had perfect speech; about a quarter had perfect speech except for minor faults due to irregularity of the anterior hard palate and alveolus; and about a fifth had imperfect speech, though only 2 had an incompetent palatopharyngeal valve.

Pharyngoplasty did not seem to produce better results.

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TRILENE ANALGESIA

SIMPLE APPARATUS FOR SELF-ADMINISTRATION

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DURING the late war there was a great demand for a rapid and safe analgesic capable of use with no more than printed instructions. Early experience with assault landing troops showed that a satisfactory, though short, analgesia could be induced with a wool plug soaked in 'Trilene' in an ordinary 'Benzedrine' nasal inhaler. From these observations the present instrument was gradually evolved for the use of commandos, air, naval, and tank crews, and ambulance personnel, as well as to meet most of the normal medical requirements of trilene analgesia.*

Description of this instrument has been deliberately withheld for two years while it has undergone extensive trials both in Great Britain and in South Africa. The results have been so favourable that publication now seems justified.

DESCRIPTION

The inhaler (figs. 1 and 2) is of metal, $8^1/_4$ in. long and [illegible] in. in diameter, and weighs 10 oz. when fully loaded. It is designed on the principle of a cigarette lighter with an absorbent cotton-wool pad and a capillary wick leading trilene from a 6 ml. ampoule into a vaporising chamber seated in a nasal nozzle. This volume of trilene is just enough to saturate the pad without producing any fluid excess, and though sufficient for analgesia lasting 60–90 min. is insufficient to produce anæsthesia. The inhaler is brought into use by breaking the base of the ampoule with a spring plunger.

The component parts of the inhaler consist of (1) a plated brass tube with an internal screw thread at either end; (2) a plated brass cap at one end; (3) a plug at the other end fitted with a projecting spring plunger to prevent leakage of trilene; (4) a spring coiled round the plunger and the neck of the ampoule to hold it in place; and (5) the vaporiser unit, which screws into the cap end of the inhaler and bears a hollow nasal nozzle tapered to fit any nostril. The nozzle can be unscrewed for cleaning and sterilisation. The other good position. The operation had produced normal anatomical structure of soft and hard palate; the consequence was normal speech.

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* Though the original work was done in England, experience showed that modifications in design were desirable, and the final instrument described here was manufactured by J. G. Dalton (Pty.) Ltd., Johannesburg, who now market it under the name 'Trilite Inhaler.' Imperial Chemical (Pharmaceuticals) Ltd., Manchester, also played a large part in its development by providing the accurate ampoule charges of trilene on which the instrument depends.

Speech Perfect except for Small Faults

In all these 26 children the palatopharyngeal valve was competent and the consonants G and K were spoken perfectly. There was no nasal escape or nasal intonation in their speech. There were, however, minor faults associated with deformity of the anterior palate or of the lip.

Anterior palate faults were found in 20 of the children, who had small imperfections in the sounds which are modified in the anterior palate and alveolar region, such as S, T, TH, D. The effect was to produce a slight lisp. The fault had an anatomical basis. Behind the incisor teeth the anterior hard palate was irregular, and the arch of the palate was unduly high owing to the repaired palate having fallen in a little towards the nasal cavity. An actual perforation at this site was found in only 4 instances.

In other cases the alveolar curve was triangular rather than rounded, or the alveolar ridge was irregular in contour, owing to malposition of the premaxilla. As a result of this unevenness the teeth were irregularly placed, sometimes very much so. These anatomical faults were naturally more common in cases of complete cleft (table I).

The operation had provided a competent palatopharyngeal valve, and the speech result of the soft-palate repair was excellent. The deformity of the anterior palate remained, however, as a cause of slight imperfection. It is difficult to see how the anterior palate and alveolar region could be repaired differently. The method aims at separate and complete nasal and buccal closure in this region, but the absence of bony palatal processes in the line of cleft leaves a tendency for the repaired mucosa to fall in towards the nasal cavity. If the cleft is wide, the two halves of the hard palate will tend to fall together, with consequent malposition of the alveolar regions. Irregularity of dentition follows.

If operative ingenuity cannot solve this problem, much might be done by orthodontic treatment. Prof. F. W. Wilkinson, director of the Dental Hospital, University of Manchester, who joined in the review of this series of cases, was emphatic that orthodontic measures could largely prevent this secondary deformity and cause the anterior palate and alveolar ridge to take up a correct position during the important early years of life.

If it is agreed, therefore, that a high level of achievement in cleft-palate surgery depends first on pædiatric skill, it should be added that final success requires the coöperation of the orthodontist. In the light of this experience we urge that, in the postoperative care of children with cleft palate, the orthodontic department should take a full share in the routine follow-up, so that any avoidable deformity can be prevented, and blemishes in speech reduced to a minimum.

Lip faults were found in 6 children, who had some difficulty in producing a normal F, V, M, P, or B. These were all cases of complete cleft, with tightness of the upper lip and adhesion of the lip to the alveolus. The deformity was greatest where the cleft had been wide and the lip elements small. The only surgical remedy seems to be to repair the lip afresh as the child approaches adolescence, when the soft tissues will be larger and more supple.

It is true that in both these types of minor defect speech therapy could correct the faults, even in the presence of anatomical deformity. If, in the search for a perfect repair, the surgeon appears to deny the presence of his ally, the speech therapist, it is only because of his insistence that normal function depends on normal structure. Wardill has said: "It should be the aim o every surgeon who is dealing with these cases to put th speech trainer out of work." Owing to the very natur of the problem, however, there must remain a residuu of cases in which the surgeon's aim is not achieved and where only the labours of the speech therapis can cause the child to speak perfectly.

Speech Imperfect

In 18 children there were more serious speech fault due to various causes: gross deformity of the jaw incompetent palatopharyngeal valve, defective speec sense, nervousness and stammering, and imbecility.

(1) *Gross deformity of the jaws* was found in 8 childre all cases of complete cleft, with considerable unde development of the maxillæ and imperfect alveol ridges and dentition; associated with this deformit was "overbite" of the lower jaw, causing severe ma occlusion. The soft palate in these cases was long an mobile, and the palatopharyngeal valve was competent The explosive sounds were excellent, but there wer gross faults in all other sounds, with lateral air escape.

These faults in speech were not related to the cle of the palate or to its repair, but to the grossly abnorma condition of the jaws. Such deformities and speec troubles occur in children whose palates are intac though they are to be expected more often in the con genital maldevelopment that leads to a cleft palat

TABLE II—SPEECH RESULTS WITH AND WITHOUT PHARYNGOPLASTY

—	No. of cases	Perfect speech or minor hard-palate or lip faults	Imperfect speech	Incompetent palatopharynge valve
With pharyngoplasty	41	36	5	0
Without "	46	36	10	2
Total ..	87	72	15	2

The palatopharyngeal valve was competent in all the cases, and therefore it could be expected that by combination of orthodontic treatment and speech therap normal speech would be possible.

(2) *Incompetent palatopharyngeal valves* were foun in 2 children, whose soft palate at operation was ver small and, in spite of extensive freeing of the soft tissue could not be approximated to the posterior pharynge wall. The operation note in these two cases foreca a poor speech result, and such was the outcome. The palatopharyngeal valve was incompetent; consequentl there was nasal escape during speech, and the variou tricks of cleft-palate speech were present. Operation ha failed in its aim because of insufficient material wit which to make the anterior part of the palatopharynge valve. Such a shortage of palate tissue occurred only twice in 100 operations, a sufficiently rare occurrence t justify the routine operative procedure.

(3) *Defective speech sense* was found in 5 children aged 6–9, in whom the palatopharyngeal valve wa competent and the explosive sounds were good, but formation of words was lacking. By their habits, manner, and appearance the children did not seem to be mentally backward, and from the condition of the palate norma speech would be expected; but coördinated speech wa completely lacking, and though the children could repeat all test sounds correctly they appeared to be lost when asked to repeat words.

The aim of the operation—complete oronasal closure—had been achieved in these children. Normal speech would only be possible, however, if the defective speech sense could be made good.

(4) *Nervousness and stammering* were found in children. In both of them complete oronasal closure

Scher's (1946) figures for his 521 cases are good. 7% fair, and 9% none. Barratt and Platts obtained successful results in 85% of their cases, also noted a high failure-rate in opening whitlows; r success rate in midwifery was 86·5%. Hill (1944) eed satisfactory analgesia in 87% of his 62 patients. e Ellingham (1944), using Hill's machine for dentistry, rather more successful with 5 failures in 100 cases.

t appears, then, that whichever machine is used, in y 100 cases trilene can be expected to produce a pletely successful analgesia, often with amnesia, in ases, partially to alleviate the pain in a further 9 or and to fail completely in the remaining 5 or 6 cases.

ig. 3—Inhaler in use.

The inhaler described here does possess some advantages over the other machines, apart from the results obtained.

Its small size ($8^1/_4 \times {}^7/_8$ in.) and lightness (weight when fully loaded 10 oz.) allow it to be easily carried in the pocket, in a corner of one's bag, or in a first-aid kit. In contrast to other machines, it is virtually unbreakable. When fully charged, the spring holds the ampoule rigidly in place, and this can only be broken by striking the plunger firmly. Provided this is not done, the charged inhaler will withstand any amount of rough handling.

Once the inhaler is charged with an ampoule it is always ready for use, and provided that the ampoule is unbroken inhaler may be left unused indefinitely but is ready n required. This is of particular importance when ms part of a first-aid kit. If the inhaler is used only ly a new charge should always be inserted after use. is used frequently this is not so necessary provided remembers that the life of a single charge is 60–90 ates of *active use. The cap should always be* aced after use, and if this is done a partially nded charge will remain soaked in the absorbent

he inhaler is used in a similar way to the familiar l inhalers, *and, if the patient is told this, it will* orrectly used at once. It can be issued as part of a aid kit in mines, ambulances, factories, &c., with implest of printed instructions. Anæsthesia cannot, ourse, be self-induced with the inhaler.

he 6 ml. ampoule of trilene has itself several advans over the larger bottle from which other machines filled. It prevents waste, provides a constant charge ch will produce analgesia for a known period, prevents by evaporation, and obviates any risk of deterioon. The ampoule is robust; when in the inhaler it been flown at a height of 10,000 ft. and tested in laboratory at a pressure equivalent to a height of 00 ft. without damage.

SUMMARY

simple, compact, unbreakable instrument is described the self-administration of trilene. It is designed to uce analgesia only and to be operated on the simplest ted instructions. It cannot self-induce anæsthesia is therefore suitable for use by unskilled personnel mines, ambulances, factories, and first-aid parties in eral. It is equally suitable for use in planned minor gery, dentistry, midwifery, &c.

t has been tested by 37 of my colleagues in 1183 cases prising 67 different painful conditions. Analgesia s "good" in 85% of cases, "fair" in 9%, and in 6% failed to develop at all. This efficiency is equal to that attained with larger and more complex machines.

I am indebted to Dr. C Langton Hewer, senior anæsthetist to St. Bartholomew's Hospital, London, and to Imperial Chemical (Pharmaceuticals) Ltd. for much helpful advice in the early stages of the development of this instrument; to my many colleagues who have been responsible for its clinical trials; to Mr. C. Whysall for the photographs; and to Dr. J. C. Thomas, senior pathologist, Natal Provincial Administration, for help in preparing this paper.

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HOLT'S DIPHTHERIA TOXOID (P.T.A.P.)

Al PO_4 CONTENT, PURITY, AGEING, AND DURABILITY OF IMMUNITY

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With a note by L B. HOLT, M SC.

PRELIMINARY investigations showing the importance of using enough aluminium phosphate in the preparation of Holt's purified toxoid, aluminium-phosphate precipitated (P.T.A.P.), were reported previously,[1] when it was indicated that other work on the same lines would be undertaken.

Two further sets of P.T.A.P. samples, with different mineral carrier contents, prepared by Mr. L. B. Holt, were investigated under the same conditions as previously described—i.e., on Schick-positive children aged 1 year, partly in the same localities. In all cases single intramuscular injections of 0·5 ml. of P.T.A.P. were given, the Lf dosage of toxoid being kept constant at 5 units. The only variable factor in the different bottles was the concentration of aluminium phosphate. The effects of these single injections were studied by means of post-Schick tests 28 days later.

The first set of samples in this new series of observations were prepared from a relatively impure toxoid, batch E.2875, containing 10 Lf units per ml. and Al PO_4 in amounts of 3, 5, 7, 9, 11, 13, and 15 mg. per ml. The work was started when the samples were freshly prepared, but there were three bottles of each Al PO_4 concentration, a fact which will later be shown to have yielded some useful information.

TABLE I—SCHICK-CONVERSION RATES YIELDED IN 586 CHILDREN AGED 1 YEAR BY RELATIVELY IMPURE TOXOID, BATCH E 2875. DOSE 0 5 ML. CONTAINING 5 LF UNITS OF TOXOID (60% PURE IN TERMS OF PROTEIN)

Sample	Dose of Al PO_4 (mg.)	Post Schick results		Conversion-rate (%)
		Positive	Negative	
H3	1·5	10	69	87·3
H5	2·5	4	79	95·2
H7	3·5	6	76	92·7
H9	4·5	5	80	94·1
H11	5·5	6	79	92·9
H13	6·5	3	81	96·4
H15	7·5	2	86	97·7

The results obtained from using all three bottles of each Al PO_4 concentration are given in table I. It appears that the differences in the amounts of Al PO_4 in the seven samples were too small to produce a clear-cut curve, but the results given by the extremes H3

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1. Bousfield, G. *Lancet* 1947, i, 286.

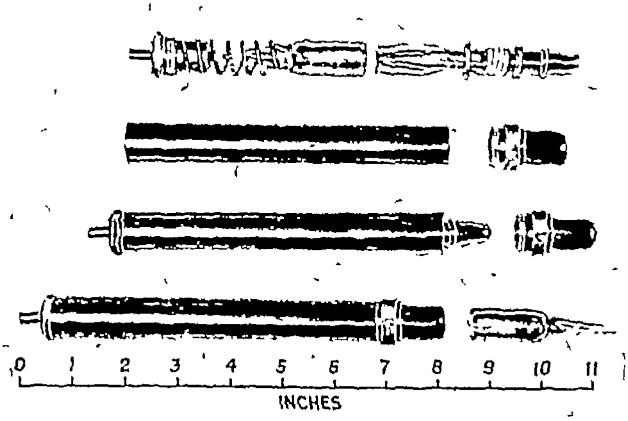

Fig. 1—Components of inhaler.

end of the vaporiser unit is tapered to pierce the base of the ampoule when necessary.

METHOD OF USE

The inhaler is loaded by unscrewing the plug, inserting a standard trilene ampoule, base foremost, and replacing the plug. The inhaler is now ready for immediate use, but it may be stored indefinitely without deterioration.

For use, the spring plunger is sharply struck against any rigid object, thus breaking the base of the ampoule against the tapered end of the vaporising unit. The inhaler is then held with the nozzle downwards for 5–10 sec., whereby the whole charge is absorbed and the wick draws trilene into the vaporising chamber. The cap is then removed, and the patient told to place the nozzle in one nostril, close the other nostril by finger pressure (fig. 3), and breathe normally in through the nozzle and out through the mouth. If the patient breathes out through the nozzle the direction of airflow is reversed and trilene wastefully blown out of the inhaler. Alternatively the nozzle may be inserted into the mouth. The patient is told to breathe normally until the pain disappears. Full analgesia is usually established with some twenty inhalations (about a minute). When analgesia has been induced, use of the inhaler is discontinued until pain begins to return, whereupon a further four or five inhalations of trilene reinduce analgesia.

A single ampoule is usually enough to maintain analgesia for 60–90 min. The patient, who is conscious throughout, is told to report any indication that the charge of trilene is becoming exhausted. The charge can be renewed in a few seconds by unscrewing the plug, removing the empty ampoule, tapping the inhaler gently to remove the broken glass fragments, and inserting a fresh ampoule.

When analgesia is required, the patient is told to breathe until a slight tinnitus or other subjective sign of analgesia develops. A further five or six breaths wi then produce full analgesia, which can be maintain either by easy continuous or intermittent inhalatio If the inhaler is used for only a short time the cap shou be replaced, and the inhaler can then be used agai but it is safer to leave the inhaler charged with unbroken ampoule. One is then always certain that t instrument is ready for instant use however long it h been put aside.

ANALGESIA PRODUCED BY THE INHALER

Type of case	No. of cases	*Analgesia*		
		Good	Fair	None
		%	%	%
Surgical, excluding whitlows	532	454 *(85·4)*	49 *(9·2)*	29 *(5·4)*
,, whitlows	26	12 *(46·2)*	8 *(30·8)*	6 *(23·0)*
Medical	38	33 *(86·8)*	4 *(10·5)*	1 *(2·6)*
Gynæcological (operative)..	65	50 *(76·9)*	9 *(13·8)*	6 *(9·3)*
Labour (normal and forceps)	116	100 *(86·2)*	11 *(9·5)*	5 *(4·3)*
Obstetric (other procedures)	105	97 *(92·4)*	4 *(3·8)*	4 *(3·8)*
First-aid	301	256 *(85·1)*	22 *(7·3)*	23 *(7·6)*
Total ..	1183	1002 *(84·8)*	107 *(9·0)*	74 *(6·2)*

The patient's subjective and objective reactions a the type of analgesia produced with this inhaler diff in no way from those produced with other apparat (Scher 1946).

RESULTS

This inhaler has been tested by a number of colleagues in various hospitals in South Africa Great Britain. Detailed reports have been rece on 1183 cases in which the inhaler was used for different painful conditions (see table). Of the analgesia was assessed as "good" in 1002 cases (85 "fair" in 107 (9%), and "none" in 74 cases (6 That is, analgesia was established in 94% of cases failed to develop in 6%. The failures were mainly Bantu patients whose coöperation is not easily obtaine

It has already been shown that trilene analgesia is effective with the most severe degrees of pain. T is strikingly illustrated by the incidence of failures dur the incision of whitlows (23%) compared with 5·4% of failures in all other surgical procedures. T inhaler was used satisfactorily by unskilled person as a first-aid measure in 301 cases of burns, fractu sprains, and abdominal, lacerated, and crushing woun In hospitals, one of its main uses is in the wards and outpatients' department when painful dressings are bei done. In the 300 cases of this kind reported the failu incidence was very low (3·7%).

Reports on the use of the inhaler in *midwifery* into two groups. There was first the series of 221 ca in the table, made up of 98 cases of normal labour, of forceps delivery, and 105 of other obstetric procedure which included 18 episiotomies, 15 manual remova of the placenta, 25 perineal repairs, 37 ruptures membranes, 4 rotations or versions, 3 cases of prolapse limbs, &c., 1 craniotomy, and 2 cases of eclamps It is notable that though in the whole series there we 24 cases in which analgesia was only fair or poor, on 4 of these failures occurred in the 105 "other procedures.

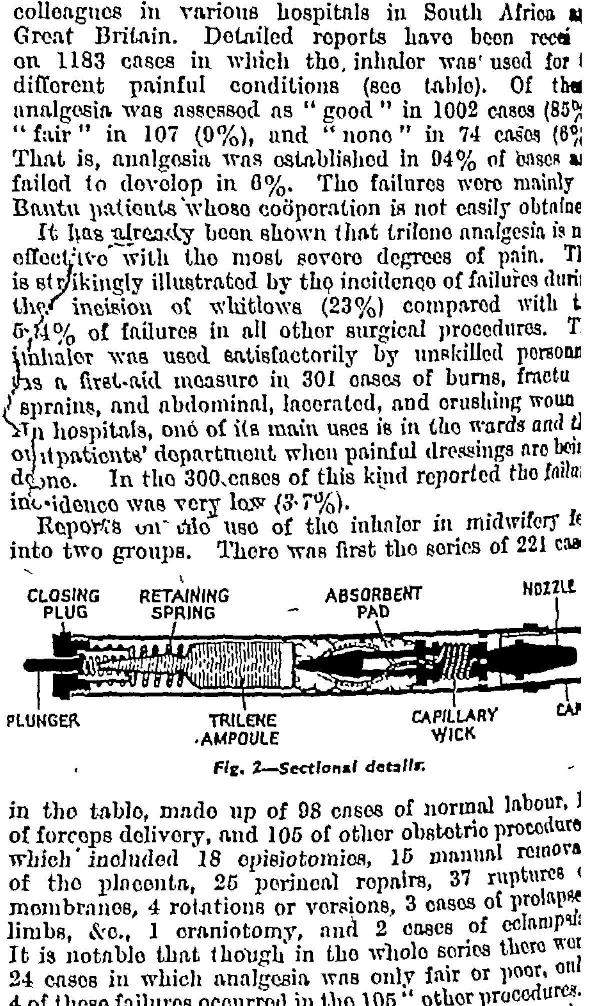

Fig. 2—Sectional details.

The second series comprised 450 cases, 300 *obtain* from a busy private practice and 150 from a native an Indian hospital where it was not possible to keep detailed records as in the first series. The results we assessed as follows:

European: Analgesia excellent .. .. 75% } 90%
,, satisfactory.. .. 15%
,, poor or none .. 10%

Native: Analgesia excellent .. .. 66% } 81%
,, satisfactory .. 15%
,, poor or none .. 19%

These results closely resemble those in the smalle series.

DISCUSSION

The efficiency of this inhaler is of the same order a the other machines available for self-administration o

Scher's (1946) figures for his 521 cases are good, 7% fair, and 9% none. Barratt and Platts obtained successful results in 85% of their cases, also noted a high failure-rate in opening whitlows; success-rate in midwifery was 86·5%. Hill (1944) duced satisfactory analgesia in 87% of his 62 patients. le Ellingham (1944), using Hill's machine for dentistry, rather more successful with 5 failures in 100 cases.

It appears, then, that whichever machine is used, in 100 cases trilene can be expected to produce a pletely successful analgesia, often with amnesia, in cases, partially to alleviate the pain in a further 9 or and to fail completely in the remaining 5 or 6 cases.

The inhaler described here does possess some advantages over the other machines, apart from the results obtained.

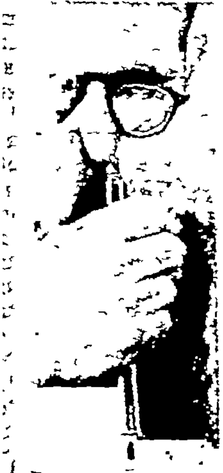

Fig. 3—Inhaler in use.

Its small size ($8^1/_4 \times {}^7/_8$ in.) and lightness (weight when fully loaded 10 oz.) allow it to be easily carried in the pocket, in a corner of one's bag, or in a first-aid kit. In contrast to other machines, it is virtually unbreakable. When fully charged, the spring holds the ampoule rigidly in place, and this can only be broken by striking the plunger firmly. Provided this is not done, the charged inhaler will withstand any amount of rough handling.

Once the inhaler is charged with an ampoule it is always *ready for use,* and provided that the ampoule is unbroken the inhaler may be left unused indefinitely but is ready when required. This is of particular importance when it forms part of a first-aid kit. If the inhaler is used only rarely a new charge should always be inserted after use. If it is used frequently this is not so necessary provided one remembers that the life of a single charge is 60–90 minutes of active use. The cap should always be replaced after use, and if this is done a partially expended charge will remain soaked in the absorbent pad.

The inhaler is used in a similar way to the familiar nasal inhalers, and, if the patient is told this, it will be correctly used at once. It can be issued as part of a first-aid kit in mines, ambulances, factories, &c., with the simplest of printed instructions. Anæsthesia cannot, of course, be self-induced with the inhaler.

The 6 ml. ampoule of trilene has itself several advantages over the larger bottle from which other machines are filled. It prevents waste, provides a constant charge which will produce analgesia for a known period, prevents loss by evaporation, and obviates any risk of deterioration. The ampoule is robust; when in the inhaler it has been flown at a height of 10,000 ft. and tested in the laboratory at a pressure equivalent to a height of 27,000 ft. without damage.

SUMMARY

A simple, compact, unbreakable instrument is described for the self-administration of trilene. It is designed to induce analgesia only and to be operated on the simplest printed instructions. It cannot self-induce anæsthesia and is therefore suitable for use by unskilled personnel in mines, ambulances, factories, and first-aid parties in general. It is equally suitable for use in planned minor surgery, dentistry, midwifery, &c.

It has been tested by 37 of my colleagues in 1183 cases comprising 67 different painful conditions. Analgesia was "good" in 85% of cases, "fair" in 9%, and in 6% failed to develop at all. This efficiency is equal to that attained with larger and more complex machines.

I am indebted to Dr. C. Langton Hewer, senior anæsthetist to St. Bartholomew's Hospital, London, and to Imperial Chemical (Pharmaceuticals) Ltd. for much helpful advice in the early stages of the development of this instrument; to my many colleagues who have been responsible for its clinical trials; to Mr. C. Whysall for the photographs; and to Dr. J. C. Thomas, senior pathologist, Natal Provincial Administration, for help in preparing this paper.

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HOLT'S DIPHTHERIA TOXOID (P.T.A.P.)

Al PO₄ CONTENT, PURITY, AGEING, AND DURABILITY OF IMMUNITY

GUY BOUSFIELD
M.D. Lond.
With a note by L. B. HOLT, M.SC.

PRELIMINARY investigations showing the importance of using enough aluminium phosphate in the preparation of Holt's purified toxoid, aluminium-phosphate precipitated (P.T.A.P.), were reported previously,[1] when it was indicated that other work on the same lines would be undertaken.

Two further sets of P.T.A.P. samples, with different mineral carrier contents, prepared by Mr. L. B. Holt, were investigated under the same conditions as previously described—i.e., on Schick-positive children aged 1 year, partly in the same localities. In all cases single intramuscular injections of 0·5 ml. of P.T.A.P. were given, the Lf dosage of toxoid being kept constant at 5 units. The only variable factor in the different bottles was the concentration of aluminium phosphate. The effects of these single injections were studied by means of post-Schick tests 28 days later.

The first set of samples in this new series of observations were prepared from a relatively impure toxoid, batch E.2875, containing 10 Lf units per ml. and Al PO_4 in amounts of 3, 5, 7, 9, 11, 13, and 15 mg. per ml. The work was started when the samples were freshly prepared, but there were three bottles of each Al PO_4 concentration, a fact which will later be shown to have yielded some useful information.

TABLE I—SCHICK-CONVERSION RATES YIELDED IN 586 CHILDREN AGED 1 YEAR BY RELATIVELY IMPURE TOXOID, BATCH E.2875. DOSE 0·5 ML. CONTAINING 5 LF UNITS OF TOXOID (60% PURE IN TERMS OF PROTEIN)

Sample	Dose of Al PO_4 (mg.)	Post-Schick results		Conversion-rate (%)
		Positive	Negative	
H3	1·5	10	69	87·3
H5	2·5	4	79	95·2
H7	3·5	6	76	92·7
H9	4·5	5	80	94·1
H11	5·5	6	79	92·9
H13	6·5	3	81	96·4
H15	7·5	2	86	97·7

The results obtained from using all three bottles of each Al PO_4 concentration are given in table I. It appears that the differences in the amounts of Al PO_4 in the seven samples were too small to produce a clear-cut curve, but the results given by the extremes H3 and H15 seem to indicate the advantage of using an adequate amount of $Al\,PO_4$.

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[1] Bousfield, G. *Lancet*, 1947, i, 286.

When these results are compared with curves constructed from work previously reported (see figure), the differences are seen to be not nearly so striking in the recent work. This may be due to the fact that the samples of P.T.A.P. used in the original work were slightly more purified than in the series quoted in table I. It is more likely, however, that the phenomenon is due to the fact that, in the more recent work, some of the subjects were London infants, who may have had a trace of basal immunity.

TABLE II—EFFECT OF AGEING ON P.T.A.P.

Sample	Dose of $Al\,PO_4$ (mg.)	Failure to convert to Schick-negative (%)	
		Bottle 1	Bottles 2 and 3
H3	1·5	14·0	10·5
H5	2·5	0·0	0·0
H7	3·5	10·0	5·6
H9	4·5	10·6	0·0
H11	5·5	11·0	2·7
H13	6·5	2·3	5·0
H15	7·5	2·2	2·2
Average for all samples ..		5·4	3·7

In the course of obtaining the results shown in table I, when I came to test children treated with the second and third bottles of each $Al\,PO_4$ concentration, it seemed that results were improving. There did not appear to have been any local changes in the prevalence of diphtheria infection to afford a degree of basal immunity to children treated with the second and third bottles. Accordingly the findings after the use of the first bottles of each $Al\,PO_4$ strength were analysed and compared with the joint findings after the use of the second and third bottles. All samples had been stored at room temperature, not in a refrigerator; this procedure was adopted deliberately, and the results (table II) appear to be significant, for bottles 2 and 3 had been subjected to several weeks of ageing under conditions which were anything but those supposed to be ideal.

Apart from group H13 (in which one or two refractory cases were possibly encountered in the use of bottles 2 and 3), there seems to be considerable evidence that better results are obtainable from samples of P.T.A.P. which have been stored for some weeks before use; and that the prophylactic improves even when stored at room temperatures. The fact also seems to emerge that if it is desired to use freshly prepared P.T.A.P. (see table II, bottle 1), the choice of $Al\,PO_4$ concentration should be about 13–15 mg. per ml. Larger amounts of mineral carrier than this cannot conveniently be used, though there is no reason to suppose that they would lead to excessive local reactions. Complaints of such reactions after intramuscular injection of P.T.A.P. have been entirely lacking, even with samples H13 and H15. No sterile abscess has been encountered, and one is forced to the view that the severe reactions which follow the injection of some batches of alum-precipitated toxoid (A.P.T.) are due to impurities brought down in the process of aluminium hydroxide precipitation.

The next investigation was made on batch E.3028, a toxoid of great purity. It was no less than 93% pure in terms of protein. This batch was also used shortly after preparation and no special precautions were taken about storage, as it was desired to find out whether the antigen retained its properties in spite of relative mal treatment. The results (table III) provide the answer t that point.

Each ml. of the samples contained 10 Lf units of toxoi plus amounts of $Al\,PO_4$ of 3, 5, 7, 10, and 15 mg. in th various preparations. The technique used was identica with that used in the children cited in table I. Th figures obtained are surprisingly good in comparison wit those of my original investigations (see figure, A). Th excellent performance of this very pure batch as com pared with series A (see figure) may be due to the fact tha here again some of the subjects were London childre Although all of them were originally Schick-positiv some may have had traces of basal immunity. Conside ing the figure as a whole, it will be noted that the critic part of the curves tends to be during the phase whe the smaller amounts of $Al\,PO_4$ are injected. Whe 5 mg. or more is injected, there is very little varia between the three curves. I regard this as an indicatio for the usage of adequate $Al\,PO_4$ in all preparation of P.T.A.P.

The results shown in table III are plotted as the cur C *in the accompanying figure, and it will be noted th* both curves B and C show a slightly better conversio rate when the mineral carrier is injected in amounts 7·5 mg.

It may well be asked: "Why all this fuss to try t obtain a few extra Schick-negative children in ever hundred as a result of a single injection of prophylactic?" The answer is that the few cases per cent. which do no become Schick-negative easily include the children wh are probably at the greatest risk if not proper immunised. It is child's play to protect about 90 *of children; but it is the last 10%* or so of relativel refractory subjects for whose sake it is necessary t *develop the very best prophylactics that we can discover* In some people the mechanism of antitoxin productio seems to be inferior or sluggish, and any immunit which they do develop appears to be relatively short lived. I have observed this repeatedly in the course o much long-range post-Schick testing.

The paramount importance of an efficient primar stimulus is too well recognised to need discussion here but it does follow that the more powerful and effectiv the *primary stimulus the better* will be the chance of permanent basal immunity being produced by a second inoculation. Thus, by using the very best prophylactics the odd 10% of *difficult cases may be* brought safely under the protection of the immunological umbrella.

TABLE III—SCHICK-CONVERSION RATES YIELDED IN 41 CHILDREN AGED 1 YEAR BY A PURE TOXOID (93% PURE IN TERMS OF PROTEIN)

Sample	Dose of $Al\,PO_4$ (mg.)	Post-Schick results		Conversion-rate (%)
		Positive	Negative	
K3	1·5	8	75	90·0
K5	2·5	7	80	92·0
K7	3·5	6	74	92·5
K10	5·0	7	70	91·9
K15	7·5	3	74	96·1

Many observations have been made on the results of using two injections of A.P.T. from various sources; but it is often overlooked *that only a really shockingly* bad sample will not produce a conversion-rate of about 95% as a result of two well-spaced injections. Samples not reaching this standard would be *found to put up* a truly woeful performance when the effect of a single injection was studied a month later, and the primary stimulus afforded must be poor indeed.

DURABILITY OF IMMUNITY PRODUCED BY P.T.A.P.

In the early stages of investigating the optimal Al PO_4 content of P.T.A.P., Schick-positive children aged 1 year were inoculated with a dose of the prophylactic containing only 3 Lf units in 0·3 ml. A similar 3 Lf dose was given a month later, and a post-Schick test was performed simultaneously. The amounts of Al PO_4 present in these 0·3 ml. doses varied from 0·15 to 1·2 mg. By taking the post-Schick tests at the same time as the second injections were given the long-range study of these cases is not upset by any additional stimulus such as would have been provided by a Schick test performed, say, 3 months after the second injection.

Of these cases, 57, which were all found to be negative as a result of a single 3 Lf dose a month after the injection but received a second 3 Lf dose at the same time as the post-Schick test, have presented themselves for long-range Schick tests two years after the original treatment. With one exception they gave a negative result.

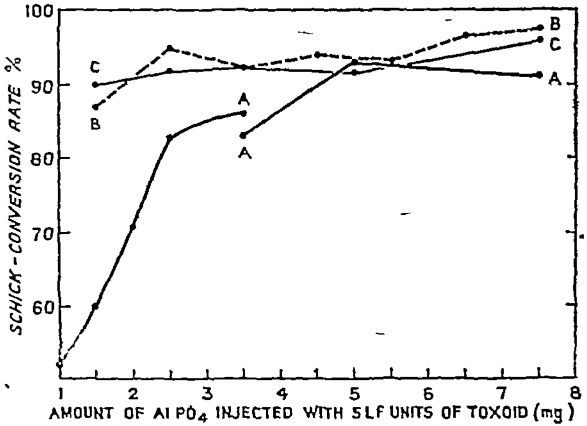
Further it has been possible to study a few cases which were Schick-positive a month after the first 3 Lf injection but had received another 3 Lf dose at the time this test was performed. These cases were all retested and found negative three months later. Of these children 47 had long-range tests two years later: 41 were Schick-negative still, and 6 had reverted to positive. All but one of the positive results in the long-range tests were in children who had been given P.T.A.P. with only smaller amounts of Al PO_4, which we now know to be inadequate for a really good prophylactic. Children given P.T.A.P. with the larger amounts of Al PO_4 have, with a single exception, maintained their immunity two years later after two 3 Lf doses of the prophylactic at a month's interval. These results can only be regarded as astoundingly good, even though the cases available for study are few; to realise just how efficient the antigen was, it is necessary to appreciate that these children received only the equivalent of 0·12 ml. of ordinary A.P.T. split into two doses. Including those inoculated with the less satisfactory prophylactic the 104 cases only show a relapse of 6·7% in two years despite the minute Lf dosage of the material used for inoculation.

TABLE IV—COMPARISON OF ORIGINAL SCHICK-CONVERSION RATES WITH PERMANENCE OF THE SCHICK-NEGATIVE STATE

Sample	Amount of Al PO_4 given in 0 3 ml. containing 3 Lf units of toxoid (mg.)	% of cases Schick-negative initially a month after 0·3 ml. dose	% remaining Schick-negative 2 yr. after 2nd 0 3 ml. dose
A	0 15	11	86 7
B	0 30	12	88 9
C	0 60	30	90·5
D	0 90	72	96 3
E	1·20	67	100 0

Relationship between Durability of Immunity and Original Schick-conversion Rate.—In the work just described five different concentrations of Al PO_4 were used in the various preparations. Results of the administration of these samples are set down in table IV to illustrate what I have long believed: that only antigens which yield a good initial conversion-rate can be expected to produce a durable immunity in most subjects.

The fact also emerges that adequate Al PO_4 must be included in all preparations of P.T.A.P. if it is desired to bestow lasting immunity, since the parent toxoid in the five samples in table IV was the same in each case. I cannot explain the original slightly lower conversion-rate given by sample E as compared with sample D except on the grounds of chance and insufficiency of cases to show the difference between two fairly good samples of prophylactic. Nevertheless the trend of the results is clear throughout the table.



Results obtained in children aged 1 year with different toxoids: A, relatively impure (63% pure) freshly prepared (results previously reported [1]); B, relatively impure (60% pure) freshly prepared (see table I); C, a toxoid of great purity (93% pure) freshly prepared. No. of children: A, 419; B, 586; C, 413. Curve A is broken because fresh material was prepared to cover the higher range.

SUMMARY

Holt's diphtheria toxoid, P.T.A.P., seems to exercise the most successful action as a primary stimulant when the amount of Al PO_4 injected with each dose is about 7·5 mg.

Judging from tables I and III, it seems clear that purification of toxoid by Holt's process does not damage the antigenic properties of the substances even when 93% purity in terms of protein is achieved.

It seems that P.T.A.P. will stand a considerable amount of casual treatment, without suffering any notable antigenic deterioration. The value of this from the practical standpoint needs no emphasis.

Long-range Schick tests have shown that the immunity conferred by only minute doses of P.T.A.P. is well maintained at the end of two years; with normal doses of 15 Lf units, instead of 3 Lf as used in the above work, it seems probable that the antigen will give a very high degree of permanent basal immunity.

Prophylactics which yield the best results from the primary stimulus may be expected to produce good durability of immunity, and the converse appears to be equally true. Further, the durability of immunity is bound up with the use of a prophylactic containing an adequate amount of mineral carrier.

My thanks are due to Dr. A. Anderson, M.O.H., Heston and Isleworth, Dr. H. W. Barnes, M.O.H., Camberwell, and Dr. P. L. T. Bennett, M.O.H., Fulham, for many facilities in connexion with the work reported here.

Additional Note

L. B. HOLT*

The following comments arise from Dr. Bousfield's clinical findings reported above.

Laboratory experiments, using guineapigs, have shown that there was no significant antigenic difference in samples of P.T.A.P. which were of the same age, and the same Al PO_4 and toxoid contents, but in which the protein purity of the toxoid was varied between the limits of 25 to 95%.

P.T.A.P. is prepared with the purest toxoid which can be obtained with reasonable economic yield, and is of the order of 1700 Lf/mg. protein nitrogen—i.e., about 75% pure. Eventually it is hoped to develop methods whereby it will be possible to use toxoid at least 95% pure for general issue.

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A major object behind this effort to obtain very highly purified toxoid is to be able to prepare a diphtheria prophylactic of very high antigenicity, and one employing the absolute minimum amount of diphtherial protein, in order that subjects of all ages may readily be immunised with the minimum of reaction in hypersensitive individuals.

It has been found by experiments on guineapigs that P.T.A.P. increases in antigenic potency on storage.

In regard to storage, the Therapeutic Substances Act lays it down that the date of manufacture shall be stated on the label of each package of diphtheria prophylactic but it defines the date of manufacture as the date when the product is released from cold storage (with a time-limit from the date of actual preparation). The date of manufacture which appears on the label of the bottle of P.T.A.P. is that on which it is removed from the refrigerator after having been matured for at least six months.

ANTISTIN

IN THE TREATMENT OF ALLERGIC DISEASES

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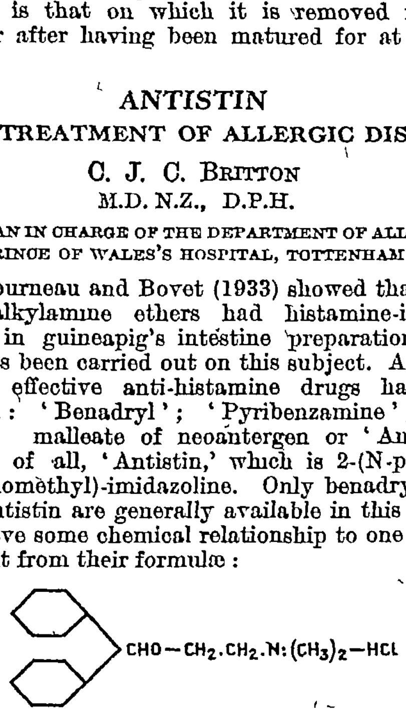
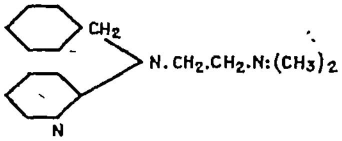
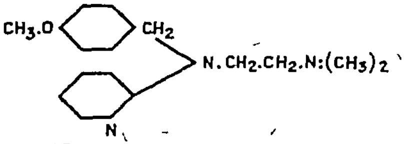
SINCE Fourneau and Bovet (1933) showed that certain phenolic alkylamine ethers had histamine-inhibiting properties in guineapig's intestine preparations, much research has been carried out on this subject. At present some five effective anti-histamine drugs have been synthesised: 'Benadryl'; 'Pyribenzamine'; 'Neo-antergan'; malleate of neoantergen or 'Anthisan'; and, latest of all, 'Antistin,' which is 2-(N-phenyl-N-benzylaminomethyl)-imidazoline. Only benadryl, anthisan, and antistin are generally available in this country. They all have some chemical relationship to one another, as is evident from their formulæ:



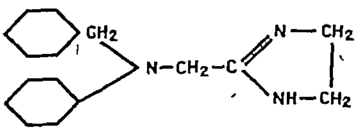
Benadryl



Pyribenzamine



Neoantergan



Antistin

They all have a similar anti-histamine action as shown by their protective value in the prevention of anaphylactic shock in animals. Unfortunately all of them cause various unpleasant side reactions which limit their use in certain patients. These side reactions vary from patient to patient and with the different drugs. Thus some patients may suffer severe side reactions from, say, benadryl but none from antistin, and vice versa.

RESULTS OF TREATMENT OF ALLERGIC CONDITIONS WITH ANTISTIN

Condition	No. of cases	Great benefit	Moderate benefit	No benefit	Reactions
Hay-fever	30	15	7	8	12
Urticaria	11	3	2	6	4
Vasomotor rhinitis .	10	3	5	2	4
Pruritus ani	1	1	—	—	—
Allergic conjunctivitis	1	1	—	—	—
Migraine	1	1	—	—	—

Two papers have been published on the use of antistin in allergic conditions. Bourquin (1946) found it of value in allergic conjunctivitis, and Schindler (1946) obtained good results in many of 39 cases of urticaria, pruritus, and asthma. Pharmacological details were published by Meier and Bucher (1946).

Of my own series of 85 cases treated with antistin only 54 could be adequately followed up and had a complete course of treatment. Of the 54 patients 30 had seasonal hay-fever (pollinosis), 11 urticaria or angio-neurotic œdema, 10 vasomotor rhinitis, 1 pruritus ani, 1 allergic conjunctivitis, and 1 migraine. No cases of asthma other than hay-asthma are included in this study, since my experience of anti-histamine drugs in this disease has not been so favourable as with the more usual antispasmodic drugs, and indeed some cases have been made much worse. Some of the patients with hay-fever also had hay-asthma. This type appears to react more favourably to these drugs, and the asthma appeared to improve in parallel with the hay-fever when it was benefited.

The dosage prescribed in each case was one tablet (0·1 g.) given at night before going to bed and again in the morning before rising. If these caused no unpleasant reactions, the dose was doubled and then increased gradually, if symptoms of the condition still persisted, until relief was obtained or until a maximum of two tablets four times a day was reached. In all 50–60 tablets were given. If relief was not obtained within this limit, the drug was considered valueless.

The table shows that antistin was of benefit in 38 (70%) out of 54 cases. In all cases the condition relapsed at once on stopping the treatment.

Side Reactions.—In 20 (37%) of the 54 cases there was some type of unpleasant side reaction, and in 7 of these it was so severe that treatment with antistin had to be abandoned. The reactions came on at any dosage; but, though they were more common with the larger doses, a fairly severe reaction might develop *with the first dose.* The *types* of reactions in order of frequency were as follows:

Nausea . ..	9	Coughing attacks	2
Drowsiness .	4	Disorientation	1
Faintness . ..	3	Depression and fever	1
Giddiness	3	Diarrhœa ..	1
Headache	2		

DISCUSSION

Antistin is an effective anti-histamine drug in many allergic conditions. Like the other anti-histamine drugs it does not cure; so desensitisation remains the only method for clinical cure in most cases of extrinsic allergy.

The place for anti-histamine drugs is during the period of investigation and until the desensitisation has reached a sufficient level to limit the symptoms. In many cases of intrinsic allergy, or where the offending allergen cannot be discovered, these drugs are invaluable.

The severity of the side reactions in some cases indicates the imperative need for beginning with a small dose and increasing it slowly. This fact must be emphasised, since deaths have been reported following the use of anti-histamine drugs. In these cases it appears that the patient was not sufficiently warned of the possible side effects and had taken a high dosage from the beginning. The side reactions to antistin appear usually to be of a type which are less troublesome than the disorientation and severe drowsiness commonly found with some other members *of this group, but all the anti-histamine drugs* are safe if the initial dosage is kept low and the patient is warned. I have found that antistin can be used with good effect in cases where benadryl or other drugs of this group have failed or have caused severe side reactions. Conversely, excellent results may sometimes be obtained with the other anti-histamine drugs when antistin has failed.

SUMMARY

In 37 of 54 cases of hay-fever, urticaria, vasomotor rhinitis, and other allergic conditions, antistin gave much relief.

Side reactions developed in 20 of the 54 cases, but only in 7 were they so severe that the antistin had to be stopped.

With all anti-histamine drugs, the patient should be warned of the possibility of side reactions. The initial dose should be kept small and the dosage increased slowly. The first dose and any increases should be given at a time when the patient will not be called on to perform skilled movements depending on acts of judgment—e.g., driving a motor-car.

I am indebted to Ciba Laboratories Ltd., Horsham, for supplies of antistin.

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Preliminary Communication

PARA-AMINOSALICYLIC ACID IN TUBERCULOSIS

EARLY RESULTS OF CLINICAL TRIALS

AMONG a series of benzoic- and salicylic-acid derivatives investigated by Lehmann [1] in Sweden, *para*-aminosalicylic acid (P.A.S.) was found to have the most active bacteriostatic *action on the tubercle bacillus and to be relatively* non-toxic to animals (except guineapigs). It was then used in human tuberculosis in Sweden by Vallentin,[2] in whose opinion the results were "fairly promising."

A new method of synthesising this compound was evolved by Mr. D. E. Seymour (director of research, Herts Pharmaceuticals Ltd.) in 1946, and, after further toxicity tests in animals, a sufficient quantity of P.A.S. became available for clinical trials to be started at the Grove Park Hospital in March, 1947.

To maintain a blood-level of at least 10 mg. per 100 ml. it was estimated provisionally that each case treated by mouth would require 80–140 g. of P.A.S. every week (we still consider this dosage advisable for parenchymatous lesions), but owing to unavoidable manufacturing difficulties continuity of treatment in such dosage has not always been possible. It was found, however, that small quantities of P.A.S. (1·5–3·0 g. weekly, as a 10% solution in sterile distilled water) had an effect on empyemata, &c., when applied locally to the pleural space; hence 9 cases have received the drug in this way alone. Two intrathecal injections, each of 0·5 g. in a 5% aqueous solution, were given, together with oral dosage, in our single case of tuberculous meningitis complicating extensive pulmonary disease. No undue disturbance was noted by such methods of medication, except that high dosage of the acid itself given by mouth produced nausea and vomiting; but this effect has been slight since we have substituted the sodium salt.

Up to date, 19 patients in the hospital have received P.A.S. All of these patients have pulmonary tuberculosis but only 6 were given the drug as treatment for their pulmonary lesions; thus these 6 cases will be referred to as the "pulmonary series."

PULMONARY SERIES

We tried to choose cases demonstrating infiltration without cavity, single cavity *with little infiltration*, pneumonic, miliary, or fibrotic lesions, but no case was chosen for P.A.S. treatment unless we had evidence that the disease was active (sputum-positive) and progressive during an observation period of at least two months immediately preceding the start of the drug.

No definite conclusions can be drawn from this small series, but the drug does seem to have had a beneficial effect. Within a few days of the first dose the temperature and erythrocyte-sedimentation rate (E.S.R.) fell sharply, and this improvement was maintained unless the treatment was interrupted, when both temperature *and E.S.R. rose towards their former level until a further* course was given, when they again fell immediately; these falls in temperature were not attended by sweating. More slowly—i.e., over a few weeks—there was a fall in the pulse-rate and an increase in weight, vital capacity, and hæmoglobin content of the blood. The quantity of sputum rapidly decreased in each case, with a striking reduction in the number of tubercle bacilli present. The morphology of the bacilli also changed; beading and striation were noted, and acid-fast granules appeared which persisted for a considerable time after ordinary bacilli had disappeared (for record purposes such sputum was still regarded as "positive"). These responses to treatment were accompanied by improvement in the general condition and in the radiological appearances; particularly striking was the reduction in size of some pulmonary cavities during medication.

COMPLICATING LESIONS

Renal Tuberculosis.—One woman was treated with P.A.S. by mouth for tuberculosis of the upper pole of her left kidney, confirmed by retrograde pyelography and by finding albumin, pus, blood, and tubercle bacilli in the urine. From the 12th day onwards no further tubercle bacilli appeared in the urine, but pus, blood, and albumin persisted until the 11th week when the urine finally became clear. She has had no recurrence of renal signs or symptoms up to date—i.e., six months afterwards.

Meningitis.—Our one case of tuberculous meningitis complicating pulmonary tuberculosis (the diagnosis was established by lumbar puncture and confirmed by autopsy) was treated by mouth and with two intrathecal injections. His meningitic symptoms became virtually negligible within twelve hours of the commencement of P.A.S. and remained so throughout treatment, while we thought that his life was slightly prolonged by this medication, particularly as he died within thirty-six hours of its cessation.

Enteritis.—Recently one patient, with miliary spread and deteriorating rapidly, developed tuberculous enteritis;

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[1] Lehmann, J. *Lancet*, 1946, i, 15; *Svenska Läkartidn.* 1946, 43, 2020.

[2] Vallentin, G. *Svenska Läkartidn.* 1946, 43, 2047.

no great improvement has been achieved so far in her general condition, but the first fortnight's administration of P.A.S. by mouth has reduced the frequent diarrhœa to one semi-solid stool daily, besides alleviating the pain.

Monaldi Drainage.—One patient, being treated by Monaldi drainage for a large apical cavity, had P.A.S. mucilage instilled daily direct into this cavity and left for eight to twelve hours without suction; the discharge was appreciably diminished, but nothing further can yet be claimed for the case.

Empyemata, &c.—Of 9 patients treated by local instillation of P.A.S. into the pleural cavity for tuberculous empyemata, 3 had open sinuses in the chest wall, another had a bronchopleural fistula in addition to a sinus, and 1 had a bronchopleural fistula but no sinus. The results obtained in these cases have been particularly rapid and striking.

The first patient in whom this method was tried had a chronic tuberculous empyema with a bronchopleural fistula; open drainage had been employed for two years before thoracoplasty and the fistula, sinus, and empyema cavity had then remained open for ten months. A 5% suspension of the pure acid in water was inserted into the empyema cavity which was then sealed for three days, and this treatment was repeated a fortnight later. Within a month of the original injection of P.A.S. the chest-wall sinus had healed, the patient's symptoms of bronchopleural fistula had gone, and by X-ray examination the pre-existing empyema cavity could no longer be seen, nor could pus be detected by needling. Without further treatment this man has worked at his former occupation for the last four months and his recent film shows no sign of relapse.

In another man multiple sinuses have healed, and there is evidence of commencing healing in 2 further similar cases. In the remainder the empyemata have either been obliterated or (in the later cases) are showing a definite tendency towards this end; in the latest bronchopleural fistula the lung is re-expanding, though the fistula remains patent, and spread in the contralateral lung has been checked. In these empyemata, radiological examination suggests a deviation from the usual mechanism of re-expansion, and a proliferation of deposit (probably fibrinous) on the parietal pleura.

In the ordinary way we would have expected at least 3 of this group to have needed a thoracoplasty for the obliteration of the empyema space, but this operation would probably have been postponed because of multiple sinuses, emphysema, contralateral disease, &c.; time saved for the patient must also be taken into account in assessing the value of the drug. Further, even with the small dosage employed, the beneficial effects of P.A.S. on the empyema, &c., have in most cases been accompanied by improvement in the pulmonary lesions; as yet no patient in this series has shown symptoms of retrogression since P.A.S. was begun as a "local application."

CONCLUSION

Time alone can determine the stability of the results so far achieved with P.A.S. But we feel justified in recording the beneficial effects noted in these patients with various tuberculous lesions, and in suggesting that the improvement has seemed to be more rapid than with previous methods of treatment.

We wish to thank Herts Pharmaceuticals Ltd. for the *para*-aminosalicylic acid, and its sodium salt, used in these preliminary trials.

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Medical Societies

ROYAL SOCIETY OF MEDICINE

Carcinoma of the Breast

AT a meeting of the section of surgery on Dec. 3, with Sir MAX PAGE, the president, in the chair, a discussion on the treatment of carcinoma of the breast was opened by Sir GORDON GORDON-TAYLOR. Tracing the evolution of treatment, he paid special tribute to pioneer workers at Middlesex Hospital, including Charles Moore, Sir Alfred Pearce Gould, and W. Sampson Handley. Sir Gordon's own surgery of mammary cancer has been largely modelled on that of Handley; but he has not followed Handley in the employment of radium at the time of operation or in the use of postoperative radiation. On over a dozen occasions he has deliberately removed the chain of anterior mediastinal glands along with the internal mammary vessels after resection of the 2nd and 3rd costal cartilages; in retrospect he regrets that he has not more often performed this manœuvre.

Confidence in preoperative and postoperative irradiation must tend to curtail the extent of surgical ablation. In 1938 four different procedures prevailed among 7 surgeons throughout Britain: (1) 25% undertook radical operation without irradiation; (2) 44% employed irradiation as a supplement to radical operation; (3) 29% used irradiation after radical operation in group 2 cases only; and (4) 2% favoured irradiation with or without a local operation. Since 1938 the exigencies of war have thrust much of the treatment on to radiotherapeutic clinics. Sir Gordon eschews postoperative radiation for cases in groups 1 and 2; "For such I have preferred a sharp knife, a stout heart, and unquenchable optimism." He was emphatic, however, that when the condition has advanced beyond stage 2, and for treatment of supraclavicular glands and bone metastases, radiation is the method of choice. Even among those who advocate routine ancillary radiotherapy there is no unanimity as to indications or method. Stuart Harrington found that, whether there was axillary-gland involvement or not, there was no appreciable difference in the 10-year survival-rate between those receiving radiotherapy and those who did not receive it. Truscott concluded that between 1926 and 1935 treatment was best when surgery alone was employed, and that from 1935 onwards the evidence was insufficient to say whether the combination of radiotherapy with surgery is better than surgery alone.

Few papers dealing with radiation refer to the morbidity from this treatment. Apart from unhappy local effects, sickness and other untoward sequelæ may lower resistance to any malignant cells remaining after operation. Recurrence has taken place as long as 32 years after operation; in some no causal factor, except perhaps age, can be impugned as fostering the recrudescence; but in others recurrence appears to have been preceded by intercurrent disease or by surgical operation for some independent condition. Sir Gordon has seen a recurrence in the scar 17 years after a radical mastectomy and a few weeks after a severe attack of acute pyelonephritis; he has also seen recurrence in the scar follow an operation for hæmorrhoids performed 16 years after the initial amputation. In three cases recurrence manifested itself shortly after a gall-stone operation, while in another patient recurrence seemed to be related to a herniorrhaphy performed under local anæsthesia. "Cancer immunity," after being broken down, seems sometimes to be restored, and Sir Gordon has seen patients survive recurrence for as long as 10 years. The vagaries of this "immunity" or "resistance" are seen in alternating efflorescence and retrogression or disappearance of cutaneous nodules and even of invaded lymph-glands: while preternaturally slow growth of a mammary tumour and the protracted absence of metastases are indicative of the same cancer resistance. Still more amazing is the disappearance of a cancerous mammary growth and its secondaries.

Investigation has shown that the average natural duration of untreated cases of mammary cancer is about 3½ years. Treatment should, therefore, be gauged by the

0-year survival-rate. Of his total of 644 cases of primary ncer of the breast submitted to radical operation, 33 were treated up to June. 1928; and among these e 10-year survival-rate was: group 1, 84·07 %; group 2, 4 %; group 3, 6·5 %. Almost without exception the nclusions of the surgeon-radiotherapist "combines" e based on 5-year survival-rates;" when their figures 10 years convincingly surpass those which I have en from radical surgery alone, I may then be preed to solicit the routine aid of radiotherapy for the oup 1 and group 2 patients."

RADIOTHERAPY

Dr. ROBERT MCWHIRTER discussed the 5-year llow-up of 2809 cases referred to the Royal Infirmary, dinburgh, between 1930 and 1945. In 364 operable cases tages 1, 2, and 3, Manchester classification) treated etween 1930 and 1934 by radical operation alone, the mber developing recurrences in the chest wall, axilla, d supraclavicular region of the affected side was almost 0% within 5 years of operation: in this proportion the peration was doomed to failure because the disease was t eradicated locally.

This observation led, in 1935, to the adoption of stoperative radiotherapy, as a result of which the rcentage of local recurrences within 5 years was duced from 40 to 14; and the 5-year survival-rate as raised from 37 % to 51 % in the treated cases.

The trauma of the operation and the opening up of ssue planes, especially in the axilla where an "en-bloc" ssection is difficult to perform and where many lymhatic trunks must be cut across, suggest that malignant lls may be disseminated before X-ray therapy can be pplied. In an attempt to overcome this difficulty ses have been treated since 1941 with simple mastecomy followed by postoperative radiotherapy. Cells ay still be liberated when a simple mastectomy is rformed, but these are unlikely to pass the intact arrier of the axillary drainage system; and by not issecting the axilla the risk of dissemination from he axilla at operation is eliminated. Moreover, the verage interval before X-ray therapy is started is horter after simple mastectomy than after the radical peration. Keynes has achieved good results by a ethod which is essentially the same except that he used adium implantation.

Dr. McWhirter underlined the importance, in assessing he value of treatments, of relating results not simply o the cases actually treated but to the number of cases o which the method can be applied. A true comparison an be obtained only by expressing the number of urvivors from each method as a percentage of the total ases referred, irrespective of the treatment used. By hese standards the 5-year survival-rate of all operable ases treated by radical surgery is 35 %, and of all cases, perable and inoperable, 20–25 %. Moreover, he said, his gures refer to a large general hospital and include many dvanced cases.

The following 5-year survival periods have been btained in operable cases: 1930–34 (radical surgery nly) 35·6 %; 1935–40 (radical surgery and postoperaive radiotherapy) 44 %; 1941–45 (simple mastectomy nd postoperative radiotherapy) 56·0 %. This gives tatistical support to the belief that by not dissecting the xilla the risk of disseminating cells is reduced. Conirmation is forthcoming from the results in inoperable ases, though it was not possible or advisable to treat all f these by the methods adopted for each period. In 1930–34 no inoperable case survived 5 years; in 1935–40 only 2·5 % survived for this period, which uggested that postoperative radiotherapy was rendered ineffective by dissemination of cells at the time of operation: lastly, in the period 1941–45 the 5-year urvival-rate was 14·1 %—or, if the localised inoperable cases are taken alone, 24·6 %.

Analysis of all cases referred to the Royal Infirmary in the 1935–40 period shows that among a total of 790 operable and inoperable cases the 5-year survival-rate was 32·4 %; and among 1345 cases in 1941–45 the rate was 43·2 %. When the cases with evidence of distant metastases are excluded, the 5-year survival-rate for 1941–45 is 50·1 %; and this figure is the more remarkable when it is borne in mind that not all cases, even in the operable group, were treated by simple mastectomy and radiotherapy.

At the Royal Infirmary the technique of simple mastectomy and postoperative radiotherapy is being continued, with the addition of X-ray therapy to the ovaries in women over the age of 35 with a view to influencing distant metastases.

Dr. McWhirter concluded with the following points in procedure: (1) preoperative preparation by iodine is contra-indicated; (2) the skin incision should be as short as possible; (3) tension on skin flaps may delay healing and the application of radiotherapy; (4) where the primary tumour is mobile on the pectoral fascia, the fascia should not be removed; (5) if there are no palpable axillary glands no dissection should be performed, but superficial mobile glands in the subpectoral region may be removed; (6) if the patient is very stout it is better to carry out a radical operation; (7) supraclavicular glands should never be removed; (8) adhesive should not be applied to the skin. In postoperative radiotherapy: (1) only one full course of X-ray treatment should be given; (2) X-ray treatment should be begun as soon as possible after operation—usually 2 weeks after; (3) the chest wall must be treated by tangential or glancing fields to avoid lung fibrosis; (4) an adequate dosage must be given; (5) the above method should not be used with an apparatus of lower voltage than 250 kilovolts since an adequate depth dose cannot be delivered to the axilla.

ASSESSMENT OF RESULTS

Sir STANFORD CADE said that the peak incidence of cancer of the breast is in the 55–60 age-group; and he therefore chose 55 years as the age at which to consider expectation of life in connexion with the disease. The breast is the least rapidly lethal of all sites of cancer —a consideration which should affect the choice of treatment. The mean duration of life in untreated cases is 39·3 months. Major Greenwood found actuarially that for a women of 55 the normal expectation of life was 18·87 years; with untreated cancer of the breast it was 3·8 years; with cancer of the breast treated under average conditions it was 5·78 years; while with cancer treated under the best conditions it was 12·93 years. The qualifications "best" and "average" are determined by (1) the stage of the disease, and (2) the type of treatment; and these two factors are the key to an unbiased assessment of treatment methods. Of all factors affecting prognosis, stage of the disease is the most important; and the following classification was suggested:

Stage 1: Tumour of the breast only.

Stage 2: Tumour of the breast, plus skin changes and/or axillary glands.

Stage 3: Tumour of the breast, plus supraclavicular gland or contralateral axillary gland or fixation to pectoral fascia.

Stage 4. Skeletal or visceral metastasis.

The zone of demarcation between good and evil prognosis is the clinical state of the axillary glands. The treatment of choice for stage 1 cases is radical mastectomy; and postoperative radiation in this group is of very doubtful value. The operative mortality is very low; in over 11,000 cases operated on in British teaching hospitals the rate was only 1·65 %. In stage 2 operation alone offers a chance of 5 years' survival in only about 20–30 % of cases. This group comprises three types of skin invasion: (1) direct spread and fungation, which is the least malignant; (2) diffuse invasion with œdema, which is of grave significance; (3) invasion of the skin by discrete nodules, which is a death sentence. With the last two types of skin involvement incalculable harm is done by radical mastectomy. Here radiation is the weapon of choice, and it converts some cases to group 1.

Simple mastectomy is suitable to the aged, for the removal of a fungating mass, in bad surgical risks with localised disease, and in cases where radiation is not available or suitable; but as a routine surgical procedure simple mastectomy is a retrograde step and is quite unwarrantable. Radiation is of value: (1) as the sole treatment in stage 3 cases; (2) as a preoperative measure in stage 2 cases; and (3) as a postoperative measure, chiefly in stage 2 cases. Methods should not be allowed to deteriorate: "If women are to be mutilated by amputation of the breast, let them at least derive the maximum benefit from such mutilation."

INTERCOSTAL GLANDS

Mr. R. S. HANDLEY said that, in association with Dr. A. C. THACKRAY, he had been removing the 2nd space intercostal gland of the internal mammary chain from cases of mammary carcinoma, to discover the frequency with which the internal-mammary glands are invaded. The 2nd space was chosen because it contains the largest and most constant gland of the internal-mammary chain. In 20 cases so far examined in this way, glandular involvement was found as follows: no glands 6; axillary glands 3; intercostal glands 2; axillary and intercostal glands 9. No intercostal gland larger than an orange pip has been found; but invasion of the space is nearly always detectable by the matting of the tissues around the internal-mammary artery. It is difficult to believe that carcinoma cells lying almost on the pleura can be harmless. If the intercostal glands are invaded, the patient clearly cannot be cured by surgery alone; additional radiotherapy is needed, and it is doubtful if radical mastectomy is then indicated. Recently Mr. Handley has done two or three cases in which the first step was a 2nd intercostal-space biopsy; if from a frozen section it was found that the space was invaded, the operation was confined to simple mastectomy.

Reviews of Books

The Human Approach

A Book for Medical Students. HENRY YELLOWLEES, M.D., F.R.C.P., physician for mental diseases, St. Thomas's Hospital. London: J. & A. Churchill. 1946. Pp. 189. 10*s.* 6*d.*

MEDICAL students will find here a vigorous and frankly personal statement of what one experienced psychiatrist thinks should be their outlook on psychological medicine. The author appears as a man of strong likes and dislikes, with a gift for homily. He warns the student not to feel alarm or elation if some statement in the book seems somewhat inconsistent with a previous or later statement; and indeed the style is free of any dry-as-dust liking for impersonal precision. The book contains a lot of shrewd advice, sometimes amusing, sometimes provoking, and continuously lively. There can be no doubt that many students will be pleased to meet here a psychiatrist who has definite views which are useful in practical life, by no means abstruse or far-fetched, and expressed moreover in colourful simple language.

Hypnoanalysis

LEWIS R. WOLBERG, M.D., lecturer in psychiatry, New York Medical College. London: W. Heinemann. 1946. Pp. 342. 21*s.*

IN psychological treatment the notion of catharsis as the essential curative process has gained wide acceptance: it is easy to grasp, because of its physical and philosophical associations, and many psychiatrists are impressed by dramatic instances of its occasional efficacy. Freud and many of his followers have stressed the limitations of the cathartic method, but abreaction still figures largely in the reports by non-Freudian psychotherapists of how their patients—especially their war-time patients—were made well. Narco-analysis and hypno-analysis are methods employed to facilitate the conscious recall of the memory of painful events; but Dr. Wolberg makes it clear that this is not the sole or primary aim of his method, in which hypnotism is brought in as a technical device for making psycho-analysis smoother and quicker, because less obstructed by resistance on the patient's part. The ingenuity and resource of Dr. Wolberg in conducting the hypno-analysis of Johan R. (the gifted schizophrenic patient to a detailed account of whose treatment the first half of the book is devoted) is of such obvious value at every stage of the procedure that hypno-analysis emerges as yet another variety of psychotherapy whose success depends rather more on the talents of the practitioner than on the particular practice he adopts. Nevertheless hypno-analysis is a technique with many advantages, as Lindner, Erickson, and some others have shown, and it is wholly to be welcomed that such a promising development in psychological treatment should be put on record, in straightforward language, to enliven the current literature of individual psychotherapy, with its intricate polemics and reports of triumphs. In part 2 the rationale of the hypno-analytic technique is fully discussed, with illustrations drawn from Dr. Wolberg's experience of other subjects besides Johan R. Neither the explanations nor the claims are extravagant. There is also a reflective critical interpretation, by Dr. A. Kardiner, of the dynamics of the therapeutic process in Johan R. Altogether this book has the merits, especially to be prized in works on psychotherapy, of having something comprehensive, balanced, and fresh to say.

Old Age: its Compensations and Rewards

A. L. VISCHER, DR.MED. With a foreword by Lord AMULREE, F.R.C.P. London: Allen & Unwin. 1947. Pp. 200. 12*s.* 6*d.*

THIS translation of a remarkable book published in Basle in 1942 is overdue; but its appearance is happily timed with the final emancipation of the aged poor from the degradation of the workhouse (which Sidney Webb just lived to see). The old people's hostels adjoining the municipal hospital in Basle may well serve as a model for our health authorities, and Dr. Vischer might be able to find Mr. Bevan a name for them that carries no slur. The delay has perhaps had something to do with the attractive format of the book and with Bernard Miall's sensitive and accurate rendering of the author's style. This matters more since the subject matter is not so much geriatrics as the wider gerontology, and the translation should appeal to a wide circle of readers among the elderly, to many of whom the original brought consolation and encouragement. Doctors who have not time to digest Cowdry's massive collection of essays on the *Problems of Ageing* will find in Dr. Vischer's work the physiological and psychic questions stated, if not fully answered.

Occupational Diseases of the Skin

(2nd ed.) LOUIS SCHWARTZ, M.D., medical director, United States Public Health Service, chief of dermatoses section; LOUIS TULIPAN, M.D., clinical professor of dermatology and syphilology, New York University; SAMUEL M. PECK, M.D., dermatologist, Mount Sinai Hospital, New York City. London: H Kimpton. 1947. Pp. 964. 63*s.*

IDEALLY all pictures of skin lesions should be in colour, though no doubt this is expensive. The second edition of this good book has 140 black-and-white illustrations to only one colour plate, and some of the uncoloured photographs do not give accurate impressions of the lesions. The authors provide fascinating and sobering accounts of the risks to which workers' skins are subjected by various irritants, and discuss fully the treatment and prevention of occupational dermatitis. The occupational skin diseases of the medical and allied professions are not often so well described as they are here, and a glance at the photographs of radiodermatitis in a physician, formalin dermatitis in an anatomist and in a morgue-keeper, procaine dermatitis in a dentist, potassium mercuric iodide dermatitis in a nurse, and verruca necrogenica in a post-mortem attendant might well give pause to aspirants to these professions. Tested for information on specific subjects the book usually passes with honours. Thus the differential diagnosis of fungus infections of the skin from industrial dermatitis is given in satisfying detail. Compensation for industrial dermatitis is considered mainly from the American angle, though a brief reference is made to the position in Great Britain and elsewhere; in all other respects the book is as useful a reference book in this country as in the United States. Its value lies in the authors' extensive first-hand experience of occupational skin lesions as well as in their exhaustive reading of the contributions of other people and of other countries.

Bamford's Poisons: Their Isolation and Identification (2nd ed. London: J. & A. Churchill. 1947. Pp. 304. 21*s.*).—The second edition of this useful laboratory manual for chemists who have to deal with cases of poisoning has been prepared by Mr. C. P. Stewart, PH.D. He has followed the practice of Mr. H. F. Bamford, the original author, in describing methods which he knows, by personal experience, to be reliable, and—apart from adding some notes on the preparation of reagents—he has left the scheme for the identification of alkaloids.

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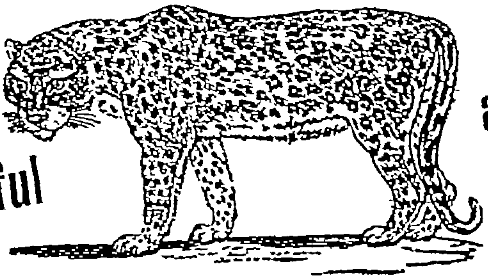

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THE LANCET

LONDON: SATURDAY, DEC. 13, 1947

Niceties of Social Work

THE general practitioner is daily faced with the resenting symptoms of social maladies which he has o time to study and treat. There is the girl complaing of constipation, who works in an office, lives in dgings, knows nobody, and takes no proper food r exercise; or the old man living alone, not ill, t beginning to find household chores too much r him; or the woman whose occupation has gone cause her children have married and left home, and he has formed no other interests; or the child with e mild behaviour disorder who looks like getting to trouble but has not yet done so Such people, Dr. BERYL HARDING [1] has suggested, could readily e helped by some friendly woman who knows the cial resources of the neighbourhood. Work of is kind, she argues, should not take up the time a highly trained person, whether health visitor or lmoner; and it might be done, she thinks, by part-me voluntary helpers under skilled supervision.

The problem is more complex than appears at rst sight; for social workers in various fields tell that though voluntary helpers sometimes work armoniously under trained staff—especially in areas here such an arrangement is traditional—the ommoner end is disharmony, either because the oluntary helper is over-confident and cannot accept udance, or because the trained worker is officious d overbearing. Nor can a new voluntary helper uckly learn precisely what resources are there to e tapped Our social services and amenities seem o have some congenital anomaly of coordination hich renders them ataxic, dysarthric, and full of ood-intention tremors. It may be that once they re supported by the spinal brace of the National ealth Service a few remedial exercises will work onders, but in the meantime no single person in n area seems to be fully informed of their scope: ertainly not the general practitioner, nor even, we re told, the medical officer of health. They are herefore exceedingly difficult for the lay newcomer o master. Even under the supervision of an almoner r a health visitor, a voluntary helper would not live p to her name until she had had several months' uided experience, and it is doubtful whether time an be spared by trained staff to teach her.

What other solutions present themselves? Who ust be responsible for ascertaining cases? It is the octor who often hears the story first. But for the ext ten years at least doctors are going to work arder than ever, and they are going to have less pportunity to deal with even the urgent problems, et alone the vague preliminaries of ill health. This s especially unfortunate at a time when students and ractitioners alike are beginning to have their minds more attuned to prevention But if we cannot do hat we would, we must be content to do what we can. Even if we had an army of health visitors or other social workers they could hardly accost passers-by with the query "Do you need help?" Clearly, then, the doctor's surgery will remain the catchment area for such cases: and rightly, for their care is a part of medicine. This being so can the doctor be given some hint to follow up, when he sees a patient for the first time? At health centres, a receptionist trained in taking social histories could be of very great service to him; her few informative lines at the top of the case-card would save him much preliminary skirmishing, and also from asking unnecessary questions. And would it not be possible for a mature and diplomatic secretary to do much the same thing for the doctor in his own surgery?

When the doctor has got the facts, what should be his next move? Sometimes he may himself be able at once to suggest the remedy—to put the patient directly in touch with a youth leader, an old people's club, a night school, a cycling club, a dramatic society, or a child-guidance clinic. More often, as things stand, he will be at a loss, simply because, at present, he has no means whatever of keeping track of the activities and services and amenities available in his area. It would, we believe, be a valuable public work on the part of the British Medical Association to make surveys of all such facilities, up and down the country, and to supply their members with local directories describing them. These directories would probably be no less welcome to medical officers of health than to doctors in practice. Where the practitioner cannot give an answer out of his own knowledge he should, in our view, get into touch, preferably by telephone, with the M O H., who should suggest the right person to give help and advice. If the M O.H. has an almoner on his staff—as many now do—he may ask her to visit the patient; or he may think the case more suitable to pass on to the education department; or he may ask the health visitor to take it over. Health visitors and almoners, however, like doctors, are going to be very scarce for many years to come. Either of them may find it impossible to see personally every patient referred to them, and we agree with Dr. HARDING that, provided it is given acceptably, they should be grateful for the help of volunteers We suggest that the health visitor should form the habit of telephoning to voluntary organisations which might help her—for example, the British Red Cross and St. John Ambulance Brigade, and the Women's Voluntary Services—and asking them to look after selected cases, reporting to her when further help is needed from her department. This system of mutual coöperation between the voluntary and municipal organisations seems more likely to succeed than any plan by which voluntary helpers are placed formally under the direction of social workers. Probably the voluntary bodies would respond well to this coöperative approach, and would make a useful study of the social amenities of the neighbourhood; moreover, the health visitor would be able to select only the cases she thought appropriate for treatment along the lines followed by the voluntary organisations. It is worth noting, besides, that in some areas there is already a council of social service which could doubtless give first-hand advice on the facilities of the area, both to doctors and health departments The present need surely is not to multiply agencies, or create competition for lay helpers, but to use more smoothly the nerves and muscles of our existing social service. *Ultimately* this can only be achieved by individuals; and under the National Health Service social medicine, far from becoming more impersonal, will depend more than ever on the ability of individuals to work together. It is for the doctor to get to know his M.O.H. as his colleague in the other department; for the M.O.H. to get to know his doctors as his colleagues in the field; for both to get to know the social amenities and services on which they can lay their hands; and for almoners and health visitors to multiply as fast as they can, since they are the eyes, ears, and tongues—the scouts, the field telephone, and the intelligence department—of the health service.

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[1] *Lancet*, Sept. 27, p. 488, and Nov. 8, p 702.

Can We Afford It?

WHEN the National Health Service is discussed in relation to the country's rather shaky finances, the cry inevitably arises—can we afford it? Sometimes the man who raises this cry is under the mistaken impression that under the present system the medical services cost scarcely anything: he does not understand that most of the charge which is in future to be borne by the citizen as contributor and taxpayer now falls on the citizen as patient and supporter of charities. Even so, the question can still be fairly asked; and, putting aside all humanitarian considerations, some sort of attempt can be made to answer it. What has first to be decided is the amount of money, lost through illness, which the medical services might be expected to save. The Social Survey report on morbidity[1] shows that, in a cross-section of the population of working age, up to 18% in any month may suffer from some ailment which disables them for at least three days. The P.E.P. report on the health services[2] stated that the loss of nearly 30 million working weeks accounted for by patients included under National Health Insurance in 1933 represented a gross under-estimate of the wastage from sickness in the population as a whole; yet even this loss cost at least £60 million in the year. The total real loss is difficult to assess, comprising as it does not only the lost produce of these idle hands but also the cost of medicinal and hospital treatment and of compensatory payments. Serious as is the loss of income through illness, the death of the wage-earner is too often a financial catastrophe for his family; and the postponement of death, like the prevention of disease, is thus of economic as well as human importance.

American statisticians have lately been computing the changes in "the money value of a man" brought about by recent advances in medicine.[3] Since the turn of the century, they say, the general death-rate in the United States—and experience in this country is similar—has declined by 40% and the "expectation of life" of a man has increased by about sixteen years. (Here the term is used in its technical sense as the number of years a child born, say, in 1900 would live were the death-rates then current to continue indefinitely.) At the death-rates for 1901, about half t
men aged twenty would live to retire at sixty-five
at 1939 rates, about two-thirds would do so. If
man aged twenty had an average income of £312 p
annum, the longer working life thus implied woul
increase his expected net earnings during his care
from £6850 to £7475—i.e., by £625. Summed ov
all the men of his age-group the monetary value
the results of the application of scientific methods
prevention and treatment, is, to say the lea
impressive. The accelerated advance of the pa
fifty years may be compared to the sluggish progre
of the centuries before the age of modern medici
and hygiene. Rough calculations put the expectati
of life in pre-Christian Rome at twenty-five year
in 1691 the same expectation for the inhabitants
Breslau was, according to Halley's first life-tabl
about thirty-three years; for the American at t
middle of the nineteenth century it had risen
forty years. Most of the dramatic decrease in mortali
in the last half-century has of course been amo
infants and children; much less has been achiev
for the older man whose earning capacity is at i
peak.

Though the rapid pace of improvement in rece
years can hardly be expected to continue, a
fear that saturation-point has been reached is sure
premature. As long as essentially preventable diseas
like diphtheria exist, and as long as there are b
social gradients in mortality, whatever the caus
there is scope for fresh endeavour in the field
medical care. But, like all else nowadays, it is
question of resources and priorities: how much hav
we been prepared to devote to the task in the pas
and what of the future? Another American study
is relevant enough to pre-war circumstances here
be of interest. In the period 1935–39, it seem
4·2% of the total U.S. consumer expenditure went o
medical services of all kinds—rather less in fact tha
the outlay on either alcohol or recreation. Partly a
a result of this expenditure, however, the America
people obtained between 1900 and 1947 an increas
of seven years in the normal expectation of lif
Much of this betterment is due to a more hygieni
environment, which is to some extent a by-produc
of applied medical science, but a great deal must b
the result of new therapeutic methods. These new
methods in their turn cost money, as the risin
proportion of medical expenditure on drugs confirms
It was cheaper to treat the diabetic with codein
during his brief remaining spell of life than it is t
increase his expectancy almost to normal limits by
continued insulin medication; the opium pill an
abdominal poultice were more economical, if les
effective, means of treating appendicitis than the
whole armamentarium of modern surgery. The long-term economic benefits of efficient medical care can be drawn only if the appropriate monetary investment is made.

To morbidity, as to mortality, these general principles apply. We are being exhorted to increase production by 10%, and to this achievement much could be contributed by even a small reduction in the enormous wastage of man-power due to illness. Typical potentially fruitful fields for further research

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1. Survey of Sickness. October, 1943–December, 1946. Ministry of Health. 1947.
2. P.E.P. Report on British Health Services. London. 1937.
3. *Statist. Bull. Metropolitan Life Insurance Co.* 1947, 27, 4.
4. Dickinson, F. G. Publication of the Bureau of Medical Econom Research, Chicago. American Medical Association 1947.

the prevention of upper respiratory diseases, hich bulk so much larger than even the commonest dustrial poisoning, and the rapid convalescence and onomic reablement of patients recovering from ous disease as well as injury. The exploitation research in these and other sectors of medical care ill need the diversion of men, money, and materials; t economic reasons in themselves give high priority such work, and above all to further research. In e long run, as RUSKIN said, "there is no wealth t life."

Penicillin Stock Taking

PENICILLIN has passed from infancy to childhood d has successfully withstood most of the ills that ect the infant. The cynical advice to use a new ug while it still acts may have struck home here and ere, but it is a fair claim that penicillin and the lphonamides should be ranked as the two greatest ntributions to the treatment of infection since lvarsan. Inevitably, however, the virtues of peni- llin are now taken for granted, for virtue has o news value, and its deficiencies are receiving creasing attention. These deficiencies, from the ctor's viewpoint, are the need for parenteral jection, the rapid excretion so that injections have be given frequently, the need to continue treatment r 4–7 days in most infections, and the fear that the ug is not today as effective as it first was. If these stacles can be overcome there is little doubt that nicillin will become the drug of choice for a much ider variety of infections even than at present, nce the almost complete absence of toxicity, even enormous dosage, gives it a great advantage over e sulphonamides. Most of the allergic reactions e probably due to impurities and may be avoided using the purer preparations now obtainable; t at a price, since the crystalline drug is much s potent against experimental streptococcal and eumococcal infections than impure preparations.[1]

When given by mouth penicillin is poorly absorbed, ther because of the action of the gastric acid or rough destruction by penicillinase-producing bacteria the gut. But McDERMOTT and his colleagues[2] und that there was a wide variation in the acidity fasting stomach contents and that absorption of nicillin was the same in achlorhydrics and in those th acid secretion. STEWART and MAY, in this issue, ve further shown that only when the reaction of e stomach contents is below pH 3·0 is penicillin ely to be destroyed within 40 minutes and that struction by penicillinase is unlikely since the per reaches of the bowel do not ordinarily harbour nicillinase-producing bacteria. They conclude that sorption of penicillin from the alimentary canal curs mostly in the duodenum, that the drug is st given in a small bulk of 5–10% glucose which ay favour absorption in some people (and incidentally ask the bitter taste), that enteric-coated capsules ve poor results, and that if an antacid is used dium bicarbonate or citrate is preferable to the ater-insoluble substances like kaolin or magnesium isilicate. A most important finding of many orkers on the absorption of penicillin by mouth is that best results are obtained if the drug is given half an hour to an hour before breakfast or about four hours after a meal. With a dosage of 50,000 units given at these times MARKOWITZ and KUTTNER[3] found that blood-levels in 55 out of 70 children aged 6–14 years were around 0·2 unit at 30 minutes and had fallen only slightly at one hour but to just detectable levels after two hours. In the remaining 15 children absorption was more variable and in some cases as little as 2% of the drug was excreted in the urine. Blood-levels were correlated to some extent with the weight of the child. The outcome of all these investigations is that oral therapy with penicillin is practicable, provided a dosage 5–10 times that used parenterally is given and that the drug is administered on a fasting stomach—that is, before breakfast or $3^{1}/_{2}$–4 hours after a meal. The pædiatrician has found oral therapy very useful in infections in infancy; this route has been used with success in acute gonorrhœa, and recently DOWLING et al.[4] have shown that penicillin by mouth is as effective as intramuscular dosage in the treatment of pneumococcal pneumonia.

The rapid excretion of penicillin, requiring doses 3–4 hourly, may be controlled either by injecting the drug in a wax-oil excipient which gives a depot effect, or by using some substance which will dam up its excretion by the kidneys. The *B.P* preparation of penicillin in arachis oil and beeswax has not become popular, since it is difficult to inject and there has been some doubt about its safety and efficacy. The alternative method, by preventing excretion, has lately received encouragement by the discovery of another substance besides amino-hippuric acid which is apparently both safe and effective. This drug—caronamide[5]—is given by mouth and has the effect of raising the blood-levels of penicillin given by mouth or by intramuscular injection 2–7 times.

Emphasis has been laid by various workers on the need for continuing with penicillin treatment long enough to avoid any recrudescence of infection. The advantage of moderate doses continued for 3–4 weeks over much larger doses given for a shorter period was well demonstrated in the treatment of bacterial endocarditis, and many workers must have had the unhappy experience of seeing a relapse of a staphylococcal infection when therapy was stopped as soon as the temperature reached normal. But we still need more information about the value of intensive dosage of say a million units per day for 2–3 days in completely eliminating the infecting organisms—for example, in throat infections like streptococcal tonsillitis and diphtheria.

There remains the problem of penicillin-resistant bacteria, of which there are two kinds—the resistant variants of bacteria that are normally penicillin-sensitive, and organisms that have some natural resistance to penicillin—e g., *H. influenzæ* and *S typhi.* The staphylococcus is the principal, and perhaps only, pathogen with a high sensitivity to penicillin which can readily be made highly resistant in the test-tube, and there is some evidence that the proportion of resistant staphylococci causing human infection is on the increase Thus BARBER[6] has

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Hobby, G. L., Lenert, T. F., Hyman, B. *J. Bact* 1947, 54, 305.

McDermott, W., et al. *J. clin. Invest.* 1946, 25, 190

[3] Markowitz, M., Kuttner, A. G. *J. Pediat.* 1947, 31, 195.

[4] Dowling, H. F., et al. *Amer. J. med Sci.* 1947, 213, 413.

[5] Crosson, J. W., et al. *J. Amer. med. Ass* 1947, 134, 1578.

[6] Barber, M. *Brit. med. J.* Nov. 29, p. 863.

reported two series: 200 strains of staphylococci (of which 99 were from infected lesions) examined in 1946 yielded 12·5% strains resistant to 10 units of penicillin in an agar ditch-plate; whereas of 100 tested in 1947, all from infected lesions, 38 were resistant. It is, however, important to note that 28 of the 38 resistant strains were isolated from patients who had already had a considerable amount of penicillin; in other words, they were a selected group and conformed to the view that penicillin-resistant staphylococci are found far more often in patients who have been in hospital for some time than in new admissions. Some of these strains may come from patients who have been infected with a penicillin-resistant staphylococcus after admission, as happened in BARBER's series, while in other cases they represent the survival of strains that are naturally resistant because of their capacity to produce penicillinase. In other (unpublished) series of cases examined at onset of infection the proportion of resistant staphylococci does not seem to be increasing rapidly, but obviously the danger of breeding resistant strains exists and needs attention. Two modes of attack may be suggested—to strike hard in the early stages of infection so as to knock out moderately resistant as well as sensitive strains, and if the infection does not respond within a few days to increase the dose still further; or to use combined chemotherapy of penicillin and sulphonamides (sulphathiazole is probably still the sulphonamide of choice for staphylococcal infections) with the object of preventing multiplication of the few resistant variants by the inhibitory action of the sulphonamide while penicillin is dealing with the bulk of the sensitive organisms. There is experimental backing for this second procedure,[7] which does not depend on synergism and which deserves more clinical trial, particularly in severe infections where treatment may have to be continued for a week or more. For infections due to partly resistant organisms, like the hæmophilus group, massive dosage seems to be the answer, as GOTTLIEB and FORSYTH[8] showed in their successful treatment with penicillin of a small group of cases of *H. influenzæ* meningitis. Similarly, discouraging or equivocal results in the treatment of typhoid fever with penicillin plus sulphonamides should not discourage further trials with larger doses, particularly if treatment can be begun early in the infection.

Coming Shortly

LAST week the Minister of Health met the Negotiating Committee and commented on the statement they had prepared for him. This statement, together with his written reply, will very shortly be circulated by the British Medical Association to every member of the medical profession and will also be issued to the press. Besides answering arguments put forward by the committee, the reply explains in detail how the Minister proposes to give effect to the recommendations of the Spens Committee on the remuneration of general practitioners, and deals broadly with the terms of service which will be offered them.

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[7] Klein, M., Kimmelman, L. J. *J. Bact.* 1947, **54**, 363.

[8] Gottlieb, B., Forsyth, C. C. *Lancet*, Aug. 2, p 164.

Annotations

CHRISTMAS FOR SOME

DOCTORS are generally well remembered at Christmas Unless they have been misguided enough to choose on of the isolationist specialties, like pathology or radiolog (or medical journalism), grateful patients waylay ther with eggs, home-made wines, cheese sent by the frien abroad, and even the unforeseen goose or turkey No-one would grudge the family doctor these tokens friendship, since for most of the year he is hard-drive in the service of his patients; but he would need to b hard-bitten as well if his own deserved good fortun failed to remind him of others who are less lucky. Th Royal Medical Benevolent Fund tries to remember a those doctors and dependants of doctors—mostly ol and sick people—who are in need at Christmas, and t send those on its list a substantial Christmas cheque.

This is not an easy time for giving; but if we are a rather poor, there is the more need to lay out our mone carefully, putting first things first. The healthy hard doctor, well able to fend for himself and his family, wi hardly fail to put the fund's Christmas appeal amon the first things. The address is 1, Balliol House, Manc Fields, London, S.W.15.

INTELLIGENCE

Prof. Lewis M. Terman[1] describes two interesti pieces of American research on the development superior intellectual ability. In the first a list was mad of 300 "eminent" persons, from whose biographies the mental development was traced back to childhoo Three psychologists, intimately acquainted with the ag norms of mental performance, independently estimate the lowest intelligence quotient (I.Q.) required for th recorded childhood achievements and assessed the valu of the evidence on which the I.Q. was based. The averag of these three estimates was used in stating the result For the 300 persons the I.Q. ranged from 100 to 200 an averaged 155—i.e., more than three times the standar error above the mean of the general population. A I.Q. of 100–120 was found only when biographical detail of childhood were scanty. The mean for philosopher was highest (170). Poets, novelists, dramatists, an revolutionary statesmen came next with 160, and wer followed by musicians with 145, artists with 140, an soldiers with 125. Scientists achieved the mean for th whole group (155).

This digging up of literary fossils must be at best chancy business, apart from the fact that a biography i usually a form of hero-worship apt to exaggerate child hood performances. More satisfaction is obtainabl from the second experiment in which, in 1922, a schoo population of 250,000 was sifted to find children with a I.Q. of 140 or more. The number of such children dis covered (more than 1050) was large enough to bear statistical analysis, and it became obvious that superio intellectual ability was associated not only with superio personality and character but also with superior physique But the experiment did not stop there, for the history of those children has been followed. When they were retested in 1928 and 1936 the figures indicated that, in comparison with the general population, the rates of mortality, insanity, and divorce were low, while the suicide-rate was about the average. By 1940 71% had married and produced about 780 children, of whom 384 over the age of two years yielded a mean I.Q. of about 127, representing the expected regression towards the mean of the general population. In 1946 the mortality and insanity rates were still lower than those of the general population, and the delinquency-rate "extraordinarily m"; about 85% of either sex had married (a rate far ore that prevailing among U.S.A. graduates) and they d produced more than 1500 children—not enough to aintain the stock. The average quality of these ildren, however, is considered very superior, the roportion of mental deficiency being about half, and e proportion with an I.Q. of 150 or more being many mes that for the general population. Plans are being ade to continue the follow-up of the entire gifted group til 1970 at least.

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[1] Psychological Approaches to the Biography of Genius. London: Eugenics Society and H. Hamilton. 1947. Pp. 24. 1s 6d

AGAINST RHEUMATISM

DURING the past year the Empire Rheumatism uncil has extended still further its activities and fluence. At the annual meeting in London last week rd Horder, the chairman, told of a Canadian Arthritis d Rheumatism Society which is being formed along e lines of advice offered by the council. Dr. C. B. Heald trying to arrange for the formation in New Zealand an official Rheumatism Council in association with the mpire body, while steps to inaugurate a similar council Australia are envisaged. The European branch of the ternational League against Rheumatism are interested making the council's journal, the *Annals of the umatic Diseases*, the vehicle for their activities; d the American branch of the league are proposing to opt the *Annals* as their official journal in association th the council.

Turning to research and teaching, Lord Horder said at fourteen "registrars" are now working on the vestigation into the factors causing rheumatoid thritis. The council's laboratory at the Hospital of S. John and Elizabeth, London, has been reopened, and research-worker has been appointed to study the lergic aspects of rheumatism. During the past year o successful postgraduate courses have been held. he rheumatism committee formed by the National al Board and Miners' Welfare Committee agreed to commend that the pilot survey into the incidence and uses of rheumatism among miners, suggested by the uncil, should be undertaken in certain coalfields; and e rheumatism research department of Manchester niversity will be approached to carry out this work.

Lord Horder was also able to show that the council s used its influence with profit in the field of adminis- ration. The Ministry of Food has acceded to a suggestion at extra milk should be allowed to sufferers from tive rheumatoid arthritis, and the Ministry of Labour s agreed that chronic arthritic patients should be ccepted as eligible for admission to the new reablement entres and "Remploy" factories, on the same terms as hose applicable to sufferers from chronic tuberculosis d chronic cardiac disease.

CURRENCY FOR TREATMENT ABROAD

THE Treasury have appointed a committee, known s the Exchange Control Medical Advisory Committee, o advise on cases meriting foreign exchange for treatment broad. It has been decided that in the present economic ituation foreign currency will be granted on health rounds only to applicants who can satisfy the committee hat this currency is needed to obtain abroad medical or urgical treatment which offers a reasonable prospect of ure and which cannot be got in either the United Kingdom or the rest of the sterling area (the British Empire except Canada and Newfoundland, Iraq, Transjordan, Iceland, and the Faroe Islands). Previously urrency was granted on the presentation of a medical ertificate stating that life would be endangered if the patient did not go abroad; but this phrase has proved to be open to loose interpretation.

It is intended that the new rule should be strictly interpreted, and since almost all forms of treatment are to be had in this country it follows that very few applications will be approved. Probably most cases coming under serious consideration will be of tuberculosis, owing to the shortage of tuberculosis beds in this country. The essential consideration will be whether the patient will recover if he is allowed to go abroad for treatment, and it is in consequence thought that such cases as these will qualify: early localised tuberculous infections with definite pulmonary and glandular manifestations; exudative pleurisy after absorption of the fluid; recent fibrosis relatively small in extent; unilateral cavitation: and certain conditions, not necessarily pulmonary, requiring special surgical technique unobtainable in this country. Cases of chronic ill health will not be considered unless there is a good prospect of recovery.

Doctors who think they have suitable cases are asked to send full clinical details, X-ray films, reports of special investigations and of consultants' findings, and an explanation as to why the patient cannot be suitably treated in the sterling area to the secretary of the committee, Tavistock House North, Tavistock Square, London, W.C.1. Normally a consultants' fee of four guineas will be payable. If the committee agree that the case is suitable they will provide a certificate on which the patient's bank will obtain the necessary currency.

HOSPITAL CARE IN THE UNITED STATES

THE report of the Commission on Hospital Care in the United States has now been published.[1] It is the most ambitious attempt yet made in America to blueprint a "coördinated national plan for the future development of the hospital service." The commission, established in 1944 by the American Hospital Association, has conducted an intensive two-year survey of general hospitals in the United States. Voluntary agencies collaborated with the United States Public Health Service, and the present report may therefore be regarded as an authoritative indication of the line that official policy is likely to take. From the first it was recognised that the making of detailed surveys would have to be delegated to the various States, and a great effort has been made to stimulate activity. Michigan led the way, and the staff of the commission undertook the detailed survey in that State as a pilot study, the report of which has already appeared.

The report will go down to history as marking public recognition of the lack of system in hospital organisation in America and the need to remedy it. Some strong phrases are used, reminiscent of much of the public debate in this country which preceded the National Health Service Act: "we refer to our splendid system of hospitals, whereas actually there is none." The current programme of supervision has had a wholesome influence, but it has "not resulted in effective controls." This will not do: "hospitals are now on the threshold of a period of development which will mark the beginning of a new era in the advancement of human welfare." There is a tendency to the platitudinous, perhaps inevitable in a document of this kind. Excellent precepts abound: "general hospitals should coördinate their efforts with those of other community agencies"; "the medical staff should maintain vigilant supervision and continuing evaluation of the quality of medical care in the hospital"; "schools of nursing should be organised on a sound educational basis." But one will search in vain for light upon the fundamental problems which in America as in this country are likely for some time to come to baffle all our best efforts. The report skims lightly over the problem of the shortage of nurses, which is probably even more acute in America than it is here. The reader will find only a reflection of current opinion and no real recognition that shortage of nurses is likely to nullify the greater part of the effort now being put into the establishment of optimum ratios of beds to population. The detailed discussion of this subject is based on the use of the "bed-death" ratio to determine the need for hospital beds in a given community. The method, which was used in connexion with the Michigan survey and also in the independent "Master Plan for Hospitals in New York," probably deserves more attention than it has so far received in this country.

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[1] Hospital Care in the United States: Commission on Hospital Care. New York: Commonwealth Fund. Pp. 631. $1.50. To be published in Britain by Oxford University Press.

In the long historical section the statement that "in the eighteenth century well managed hospitals, organised nursing, and the charitable care of the sick had largely disappeared in Protestant countries" cannot be allowed to pass. It was in the early eighteenth century that the example of the Dutch hospital system, combined with religious motives, led to the foundation of a notable group of hospitals in London (from 1720 onwards), in the English provincial cities (from 1736 onwards), and in Edinburgh (1741). It would be strange indeed if this movement was in no way connected with the foundation of the first voluntary hospital in Philadelphia in 1751 and of the first medical school in 1765. The statement that "European hospitals reached the lowest level of service in history in the eighteenth century" does less than justice to the pioneers to whom American voluntary hospitals today, as well as our own, owe so much.

MENTAL HOSPITALS FROM WITHIN

VISITORS—even medical visitors—to public mental hospitals are often disturbed by the drab and sordid appearance of the buildings and wards, no less than by the disheartened look of the patients. It is usual, on such occasions, to suppose that the patients, lost in the preoccupations of their illness, are unaware of all that strikes the visitor so painfully. Two recently published books dispel this comfortable fancy. *The Kingdom of the Lost*, by J. A. Howard Ogdon,[1] and *Certified*, by H. C. Woodley,[2] are accounts, by men who have been certified patients, of life in two of our public mental hospitals, one Scottish, one English. Both writers—Mr. Woodley outspokenly, Mr. Ogdon in passing—insist on the need for drastic reform; both tell of the added weight imposed on the sick mind by cheerless surroundings—often cold, often dirty—by the company of large numbers of fellow patients, some dirty and degraded, many deeply depressed by their inability to escape from such hateful captivity, and by the insensitive behaviour of the scarce and overworked nursing staff. Far from being unaware of such things, patients suffer mentally because of them, and may even fail to mend because they feel their cause is hopeless. After many years in such surroundings—and residence in mental hospitals is more often measured in years than months—even a healthy mind would suffer. Perhaps the most depressing passages in these books are the accounts, too simple and circumstantial to be disregarded, of the filthy conditions in lavatories and washrooms. In the older mental hospitals sanitary arrangements are barely adequate, but can be made to do if staffing is complete. Nowadays, when mental hospitals are suffering more severely than any other type of hospital from lack of nurses and domestic staff, it is clear that sometimes no pretence of hygiene or even tolerable cleanliness is maintained.

Many other points in which these writers corroborate each other will disturb the complacent. They are agreed, for example, that sedatives were the only form of treatment widely used. Mr. Ogdon says: "I must be quite definite in saying that the average 'public-assisted' patient got no treatment at all for his mental affliction. Only dope was available;" and Mr. Woodley, after a distressing account of the administration of a sedative to a patient who refused to swallow, goes on to say "So it is with him and with many more: violence—dope, violence—dope, and so on—to the inevitable end.' Both tell of uninterested doctors, and of the apathy which succeeds hope—"the deadly boredom of a mind having nothing to 'chew.'"

The implications are clear enough: standards i some of our mental hospitals are now very low, and unless the nursing crisis is handled successfully they ar in danger of falling to the level from which such men a Tuke reclaimed them.

IMMUNISATION AGAINST INFLUENZA

THE background of the recent decision to vaccinate al personnel of the United States Army against influenza was outlined by Prof. Francis G. Blake, of Yale University, in an address last month to the New York Acad of Medicine.

Between Oct. 19 and Dec. 4, 1943, 6263 students i nine universities were vaccinated subcutaneously wit 1 ml. of a formolised allantoic fluid eluate, type and B ten-times concentrated vaccine, made up of PR8 and Weiss A strains and the Lee B strain of virus at the same time 6211 controls were injected with comparable material, excluding the virus. Epidemics o influenza A developed in all these institutions in lat November or early December. In the whole group th incidence of influenza during the epidemic was 2·22 among the vaccinated, compared with 7·11% in th controls. Resistance, it was found, developed abou eight days after vaccination. During the autumn o 1945 the efficacy of this vaccine against influenza B wa tested. At one centre the incidence among the vaccinated was 1·15%, compared with 9·91% in the unvaccinated; and at another centre the attack-rate in th vaccinated was 0·5%, compared with 12·5% in the unvaccinated.

Thus, said Professor Blake, considerable success wa achieved against both influenza A and influenza B unde these conditions: (1) *with the use of a potent formolised and concentrated vaccine, in a single dose of 1 ml subcutaneously and capable of stimulating an antibody response comparable to that which develops early in convalescence*; (2) when the antigenic structure of the strains of virus used in the vaccine was closely similar to that of the strains causing the epidemics; and (3) when vaccination had been carried out within 1–6 weeks before the onset of the epidemic.

More recent trials have been less satisfactory. In an epidemic last March, apparently due to virus A with a sharp antigenic deviation from the standard PR8 strain, the vaccine failed to protect persons vaccinated four months previously; and Francis, Salk, and Quilligan attributed this failure to insufficient antigenic crossing between the strains in the vaccine and the prevalent epidemic strain. Similar unsatisfactory results were obtained about the same time among Army personnel and at Yale. Nevertheless, Professor Blake concluded that "it would not appear outside the realms of possibility that the resistance of the population as a whole may be maintained at a level sufficient to forestall and prevent another disastrous pandemic."

FROM October next women will be admitted to membership of the University of Cambridge on the same terms as men. They will thenceforward take full degrees instead of the title of these degrees, and will be eligible for nearly all university offices, including that of vice-chancellor.

WE have to record the death on Dec. 5 of Dr. R. A. FLEMING, consulting physician to the Edinburgh Royal Infirmary and a former president of the Royal College of Physicians of Edinburgh. He was 85 years of age.

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[1] London: The Bodley Head. 1947. Pp. 256. 10s. 6d.
[2] London: Gollancz. 1947. Pp. 224. 9s. 6d.

[1] *Lancet*, Nov. 15, p. 743.

Special Articles

THE URGENT NEED FOR REFORMS IN HOSPITALS

L. A. PARRY
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CONSULTING SURGEON, ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN, BRIGHTON; LATE GROUP OFFICER, E.M.S. (1939–46)

IN too many hospitals an essential fact is forgotten—that they were founded not for the benefit of doctors, nurses, or committees of management but to help to restore the patients to health.

Enormous improvement on the social side of hospital treatment is needed. The social treatment of the patient means providing for his comfort, happiness, amusement, occupation, and general welfare, which at present are too often forgotten or relegated to a subordinate position. This social medicine means so much to a patient. It not only helps and accelerates his recovery but also brings it about in a much less irksome manner.

To obtain a satisfactory system of social medicine, at least three things are necessary. First, the medical staff of a hospital must take a great deal more interest and have a much greater say in the matter of hospital management than they have at present. They must see that their patients are sympathetically treated, properly fed, occupied and amused, and made as comfortable and happy as possible. A great deal more than mere medical and surgical directions and treatment is required of them.

Secondly, we need a radical alteration in the way committees of management are elected and carry on their work. We need the members to be selected because of their suitability and their knowledge of hospital routine and procedure. Too often now we have a committee composed of excellent people totally unfitted for their position. They know nothing of hospital management and consider their duties adequately performed if they attend a meeting once a month, sit still and say nothing, and finish by having tea with the matron. They never enter the wards and know nothing of the way patients are fed, nursed, or treated. We need chairmen who are independent and strong, not those content to approve of everything suggested by the matron, having no views of their own, and merely acting as her mouthpiece.

Thirdly, we want a much more sympathetic and understanding nursing service. Nurses should know something at least of psychology, and should recognise that a patient is a human being, living in unhappy and unusual surroundings, who is craving for kindness and sympathy. He must not be merely a case. The matron should hold modern, not antiquated, views, should be trained in human understanding and psychology as well as nursing, and should be of a nature in which sympathy, affection, and kindness are predominant.

In a few, I am afraid a very few, hospitals all these three desiderata are found. We should not be content till all hospitals reach this standard.

VISITS TO PATIENTS

A visit from a friend is often the one event of an otherwise weary day that is most looked forward to. Arrangements for visits to hospitals by friends of the patients vary very much. The up-to-date progressive hospitals allow a daily visit. The backward out-of-date hospitals still keep to Sundays and Wednesdays. There should be no difficulty in arranging visits every day of the week; it is simply a question of ward routine.

If frequent visits are of advantage to adults how much more are they to children separated from their parents and in strange new surroundings, often with very little love or sympathy, and longing for a sight of familiar faces. Two arguments have been advanced against the practice. First, it has been urged that there is a serious risk of infection conveyed by visitors. But infectious diseases, such as scarlet fever and measles, for all practical purposes can be conveyed only by those who have the infection on them, not by those who have merely been in contact with the disease, and naturally those who are actually infectious would not visit the hospital. When infection does take place in a children's ward it is due to the admission in error of a child in the incubation period, not to visitors. In nursing-homes where parents are allowed to visit their children morning, afternoon, and evening those responsible are not obsessed with the bogy of infection, and practice has proved they are justified. Why this differentiation between the two kinds of institutions?

At Worthing Hospital, where for six years daily visits to the children's wards have been permitted, there has been no increase whatever in the incidence of infection. Parents are allowed to visit their children daily and not at a set time to suit the nurses, but at a variable time to suit the mothers, an arrangement which is found to work most satisfactorily and is very helpful to the nurses. Mrs. Jones comes to visit her little Sally, she reads to her an interesting tale. Soon all the ward is listening and interested, enjoying the story. The children are occupied and happy and the nurses are free to carry on their work, temporarily relieved of the care of the children. How ideal this would be if adopted by all children's hospitals.

The doctors responsible for the plastic-surgery clinic in Wellington, New Zealand, have for five years allowed mothers not only to visit the hospital when they wished, subject to reasonable regulations, but also to remain there, going home when necessary. In a plastic-surgery clinic the avoidance of infection is doubly important. Here again results have justified progressive action. No single case of cross-infection has occurred during those five years. The same arrangements have been made in one of the New York children's hospitals, with equally satisfactory results.

At one children's hospital where I tried to get the committee to allow a daily visit I was met with the stereotyped theoretical objections, the grave danger of infection and of psychological trauma. How, in the face of such dangers, the committee could reconcile it with their duty to the children under their care to allow them to run the risks on Wednesdays and Sundays passes my comprehension. For five days the risks must not be run; for two days the committee complacently decided it might. At this hospital there is a notice-board outside inviting any casual passer-by to come in and inspect the hospital. They are allowed in the wards when the mothers of the children are refused. Friends of the staff and committee are constantly taken round. How is it possible to justify these things if the terrible risks of infection really exist?

In a report issued by the British Pædiatric Association on cross-infection in children's wards, among the many precautions advocated there is no suggestion that visits by parents should be forbidden.

The second argument is that visits upset the children and do them harm. But it is found in practice that a daily visit, something to be looked forward to at frequent intervals, is far less upsetting to children than the two-days-a-week plan with its long gaps between. This has been the experience of those hospitals which are sufficiently progressive. The matron uses her discretion where difficult children are concerned. A tactful talk with the mother always ensures coöperation: she keeps away if this is considered advisable.

The medical officer of a well-known hospital writes me as follows:

> "The children's hospital here is an annexe of the Royal Infirmary, and I am in complete charge of the medical ward and oversee the general health of the children in the two surgical wards.
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> "It is true that in the medical ward there are cubicles and barrier nursing is more strictly enforced; but, on the other hand, there are many more children with infectious conditions admitted.
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> "There may be some prejudice to overcome among the senior nurses, but the benefits of visitors soon become so obvious that this is soon dispelled."

It is high time that those hospitals which are behind the times with their procedure and reluctant to put their house in order should be compelled to do their duty to the children in their charge. It is to be hoped that this will happen when the National Health Service Act comes into force and new and up-to-date committees of management are appointed.

OUTPATIENT QUEUES

The long weary waiting in the outpatient department is a real and outstanding grievance. It is remarkable that the long-suffering victims have submitted to it for so long. This waiting period is in many hospitals two or three hours, in some four or five, and in one local hospital even six hours, and then the patients are sometimes sent away and told to come another day. This leads to much resentment.

In many hospitals it is still the practice to summon all patients for the day at the same time. Forty, fifty, or more are crowded in the small waiting-hall, many of them not even able to sit down. The first patient is seen as soon as the doctor arrives, but he has probably been waiting a long time, having come early to obtain a good place in the queue.

This is all wrong. It can be put right by a system of outpatient appointments by which each person is given a fixed time to attend. No extra work falls on the doctor; he sees the same patients, but instead of a great surge at the beginning there is a steady stream throughout the session. The long, weary, unnecessary waiting is reduced from hours to minutes.

The change needs common sense and determination on the part of those responsible. Guy's, the Jewish Hospital, the Birmingham Accident Hospital, the Royal Sussex County Hospital, the New Sussex Hospital, and many others have adopted this procedure to the satisfaction of all concerned.

> I recently visited a hospital noted for the long time its outpatients were kept waiting. I had been urging for some years the advantages of an appointment system, with no success.
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> There were about 70 people crowded into a small waiting-hall. The matron said to me with a triumphant smile: "All by appointment."
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> I find it difficult to understand how a woman who had reached the important position of matron could imagine that to make appointments for 70 people at the same time was a solution of the problem.

EARLY WAKENING

The time at which patients are wakened for washing varies considerably in different hospitals. In eight hospitals in one area the official time varies between 5 and 7 A.M.; but unfortunately this official time is not always kept and there are plenty of instances in which patients are roused at 3.30 to 4 A.M. This is clearly very bad practice. Rest and sleep are very important to the sick. It is essential that his uneventful and monotonous day should start well, and that he should not be deprived of any of his natural sleep, so importan for uninterrupted recovery.

The only reason for this practice of early waking i to allow the nurses to get ready for the doctor's visits. A simple rearrangement of hours of work and of duties which can be carried out with little difficulty provide those responsible show good will and determination would put the matter right. The proper time shoul be about 6.30 or 7 A.M. This is a reasonable hour, whic obtains in many hospitals satisfactorily, and there i no reason whatever for waking patients at an earlie hour than this in any institution.

WAITING-LIST FOR OPERATION

Another factor causing patients much anxiety an strain is the long wait between the decision of the surgeon that an operation is necessary and admission to hospital. Many hospitals have a long list of patients awaiting admission, mainly for operation. The chief surgeo of one hospital in the Midlands told me recently tha at his hospital the waiting-list often exceeded 100 In one of our local hospitals a patient was told i July that she needed operation and that her nam would be put on the waiting-list and would probabl be reached by December. This is no isolated instance. This long period of anxiety is harmful to patients, an in many cases, especially those of cancer, destroys th hope of cure.

The delay is largely due to lack of beds, and the pro- vision of extra beds is an urgent necessity. But unti this happy state of affairs comes about somethin can be done. Other neighbouring hospitals can an will help. The one with no waiting-list and empty beds will help the one with a waiting-list and full beds. Recently a local hospital found itself with 65 patients urgently needing operation. With the willing and friendly assistance of a neighbouring hospital the list was completely cleared in less than a fortnight. Hospita surgeons do not like parting with their patients, nor patients with their surgeons, but the good of the sick person should come before everything.

HOSPITAL DIET

Proper meals mean a great deal to all of us, and something more than a great deal to the sick. By proper meals I mean, first, a meal selected for its nutritional, digestive, and appetising qualities, suitable to the particular patient and given in proper quantities; secondly, a well-cooked meal; and, thirdly, a meal properly served. Meals should not be lukewarm, but hot; the little amenities of the table should be observed; the crockery, glass, and tray cloths should be bright and clean; tea should not be slopped over in the saucer; and attention should be given to the many other small points which go to make a meal attractive and appetising. To carry this out requires good cooks, nurses determined to see that meals are nicely served, and, above all, someone in authority to keep a constant watch on the service of meals throughout the hospital.

Diet is too often inadequate. Neither the patients nor the nurses are supplied with enough food. King Edward's Hospital Fund for London recently investigated the matter in three hospitals in Greater London and found that in two of them the diet was inadequate. The investigators stated that, in spite of recent improvements, hospital diet was not all it should be in quantity and quality, in nutritional standards, and in matters of preparation and service.

The importance of diet is summed up in this quotation from a booklet recently issued by the Ministry of Health:

> "Experience has shown that the food provided in many hospitals is unsuitable, badly cooked, and badly served, with the result that the patient's recovery is delayed. Waste, too, is common.

"It is desirable that some person should be in supreme charge of all the feeding arrangements, including catering, cooking, and service, both for patients and staff. His responsibility must necessarily be delegated to several subordinates, but his control should be real, and not, as so many hospitals, merely nominal.

"At the same time every medical officer should be taught realise that he is as much responsible for the proper feeding of the patients under his care as he is for their proper nursing and treatment.

"Suitable meals, well cooked and attractively served, constitute just as important a part of the treatment as careful nursing and skilled medical attention."

ENVOI

In making these suggestions for the improvement our hospital administration and régime I am advocating nothing new or impracticable. The work done by hospitals is magnificent, but no-one can say it is perfect, and I am not so foolish as to say that carrying effect my suggestions would make them perfect. first-class hospitals have already adopted these reforms; our second-class have adopted some; our third-class, none. Unfortunately, first-class hospitals are in very considerable minority.

Each one of these reforms is a step forward, each for the advantage of the patients and the hospital; if they were universally adopted, the recovery of sick would be pleasanter, happier, quicker, and more complete. There is a wonderful opportunity for the new regional hospital boards. Let us hope they will use it to full.

AVOIDABLE MENINGITIS

MEMORANDUM FROM THE PUBLIC HEALTH LABORATORY SERVICE AND THE LONDON SECTOR PATHOLOGISTS' COMMITTEE

EVERY operative procedure entails some risk to the patient, but in simple operations like spinal puncture the risk ought to be practically negligible. The occurrence of meningitis following the withdrawal of cerebrospinal fluid or the administration of a spinal anæsthetic a grave reflection on the methods used in many hospitals, because these "accidents" can be avoided by the adoption of a simple and reliable technique. That such a technique is not in fact universally employed is attested by the number of cases of avoidable meningitis reported in the literature during the past few years. Furthermore, as Garrod (1946) points out, "there is a natural reluctance to publish anything which may appear discreditable. . . . It is therefore probable that meningitis following spinal anæsthesia has been far commoner than the literature of the subject would suggest." This statement is endorsed by surgeons and anæsthetists whenever the subject comes up for discussion.

NATURE AND SOURCES OF INFECTION

This memorandum is not concerned with meningitis secondary to some primary infective focus already present the patient at the time of operation. It refers solely meningitis that results from the direct inoculation of micro-organisms into the spinal canal. The organisms most frequently incriminated are *Pseudomonas pyocyanea* and related organisms which can multiply in water at room temperature; less frequently staphylococci and other skin contaminants may be responsible. Some of the water bacteria fail to grow in ordinary culture media incubated at 37°C; hence many cases have been diagnosed as irritative or aseptic meningitis which were probably the result of bacterial infection of the meninges. Organisms normally regarded as non-pathogenic may produce infection if they gain access to the very susceptible meninges.

The *sources* of contamination may be listed as follows: (1) apparatus inefficiently sterilised or contaminated during use; (2) "sterile" water or saline used to rinse the apparatus; (3) hands of operator and assistants; (4) skin of patient; and (5) anæsthetic, antibiotic, or other solutions.

PREVENTIVE MEASURES

The ideal would be to adopt the full aseptic ritual of a surgical operation for every spinal puncture. In many cases the time and place render this impossible. The following recommendations are therefore offered, not necessarily as ideal procedures but as practical methods applicable in nearly all circumstances.

1. *Apparatus.*—If facilities are available, all apparatus including manometer should be enclosed within suitable containers and sterilised either by autoclaving at 15–20 lb. pressure for 20 minutes or by dry heat at 160°C for an hour. The complete outfit can then be held ready for use at any time. If dry heat is used, the rubber tubing of the manometer should be sterilised by boiling. For syringes and needles dry heat is preferable but ordinarily necessitates the use of all-glass syringes. (Glass syringes with metal nozzles which will withstand dry heat at 160°C for two hours are now being manufactured.) Full details of these methods, together with recommendations for a hospital syringe service, are given by the Medical Research Council (1945).

If autoclaving or dry-heat sterilisation cannot be employed, all apparatus should be sterilised immediately before the operation by boiling for five minutes, preferably in distilled water. A steriliser with a perforated lift-up tray should be used; at the end of boiling the tray is removed, placed in the inverted lid, covered with a sterile towel, and left to cool. In the occasional emergency which may arise in the patient's home a perfectly clean saucepan with a lid may be used. After boiling, the water should be drained off and the saucepan left with the lid on until cool. Methods of chemical disinfection such as soaking in spirit should *not* be used.

2. "*Sterile*" *Water and Saline.*—These probably constitute the greatest source of danger. Hospital supplies are frequently contaminated either from inadequate sterilisation initially or from contamination during previous use (Smith and Smith 1941). Thus the Winchester bottle of "sterile" distilled water or saline, used repeatedly until empty, has frequently been incriminated as the source of water bacteria found in contaminated or infected cerebrospinal fluid. If apparatus is sterilised as recommended above, rinsing and cooling solutions become quite unnecessary and their use should be abandoned.

3. *Hands of Operator.*—The operator should scrub up as for a major operation, or alternatively should don dry sterile surgical gloves. When gloves are not available it is important that his hands be dry before he handles any apparatus; this may be accomplished by rinsing with industrial spirit and/or drying with a sterile towel. Where needle and syringe have to be assembled, the needle should be handled with sterile forceps. From this point onwards the operator should touch nothing except the sterile instruments and the skin of the patient until the operation is finished. The trocar when withdrawn should be laid on a sterile towel; otherwise it may infect the spinal fluid if it is introduced again to clear the needle.

4. *Skin of Patient.*—Thorough washing with soap and warm water followed by thorough, not perfunctory, swabbing with tincture of iodine or 70–90% alcohol will leave little risk of contamination of the needle by the patient's skin. The area treated should be the entire area exposed and the skin should be quite dry before puncture is made.

5. *Anæsthetic and Antibiotic Solutions.*—No cases of meningitis have been traced to the presence of bacteria in anæsthetic solutions contained in sealed glass ampoules. Such ampoules are preferable to rubber-capped bottles intended for repeated use.

The sterilisation of the outer surface of an ampoule is difficult and attended with such pitfalls that it is

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y in American and Canadian hospitals, with its dance of labour-saving devices, reflects the attention to the subject by the hospital administration, it is apparent that in this respect also hospitals in country have much leeway to make up.

SERVICE OF MEALS

the items so far discussed American hospital catering ecisively ahead of our own. In one other important ter, however, the arrangements seem to fall far short rs. In our hospitals the actual service of food to patients is the responsibility of the nurse. In America separation of responsibility for catering has meant in most hospitals the service of the food has been n out of the hands of the nurse and transferred to controlled by the dietitian. The ward kitchens which the food is served and the staff working them in every instance in the United States the responty of the dietitians, and it was in this in most itals that the system appeared to fail. In most itals trays are set by "diet aids" and carried by n to the patients from the trolleys. In theory this e is supervised by a dietitian, but in practice there hen no check, and it sometimes appeared that the ice of food was careless and the meal unappetising. e a patient required help in adjustment of pillows e feeding, the tray was placed on the bedside locker left until a nurse was available. Quite often there ed to be a long lapse of time during which the food cooling, and sometimes, when there was a serious tage of nurses, the food must have been quite cold. dietitian cannot be responsible for raising patients bed or for spoon-feeding the sick. She has not the essary knowledge of the patient's condition for first, nor the time nor staff at her disposal to feed the pless. Moreover the nurse who has no responsibility the patients' meals often fails to realise the importance proper nourishment in their treatment. This is increasly realised to be a serious defect: it not only leads to te but also in part nullifies the effort which has been into the preparation of the food.

The point touches most closely the patients in the inary wards. Though the service in the numerous des of private accommodation, which plays such a part in the American hospital system, may be paratively satisfactory, the service of the food to patients in the ordinary wards falls below the dards here. Each patient is provided with a tray, the crockery is invariably very thick and heavy, the imum of cutlery is used, and the service—owing to lack of trained staff and the extent to which the vice is entrusted to maids without sufficient superon—is rough and ready. These observations strongly est that, whatever changes are made, it is most rable to retain the system whereby the nurse is ponsible for handing the patient his meals and ending to all those little adjustments which call for ividual care and attention.

BURSARS IN HOSPITAL CATERING

How soon, one may ask, is it reasonable to hope that pitals in this country will be able to overtake arrears? ch help has already been given by King Edward's spital Fund for London and its dietetic advisory vice, and by the similar service offered by the Ministry Health. Further progress is hampered not so much the quantity or quality of the food available as by lack of skilled personnel, and especially of persons petent to organise the catering service in a large pital. The work calls for managerial qualities of a h order, for it involves not only the refinements pected in commercial catering but also a practical nowledge of nutritional principles involved in the restoration of the sick to health. An interesting experiment financed by the King's Fund is now going on. A small group of carefully chosen "bursars" in hospital catering are now undergoing training at the London Hospital, and it is to be hoped that in due course as they become available to take up appointments they will powerfully reinforce the efforts of the catering officers already appointed by many hospitals.

CLASSIFICATION OF HOSPITALS

SOME time ago the Essex Hospitals Joint Advisory Council set up a subcommittee to consider the local implications of the report of the surveyors of the hospital services of London and the surrounding area.[1] This has adopted the hospital districts indicated by the surveyors, and it advances its own scheme for the organisation of hospitals within the districts.[2]

Besides linked local or general-practitioner hospitals every district, the subcommittee holds, should have a "district hospital" or "hospital centre," which might in fact consist of more than one hospital; both the linked local hospitals and the district hospital would be under a single management committee. Each district hospital might make provision for general medicine, general surgery (including children), normal maternity, fractures, dermatology, ophthalmology, and ear, nose, and throat work, and to a limited extent for genito-urinary disease, psychiatry, and physiotherapy. Some specialties—for example, abnormal maternity, the more specialised forms of ear, nose, and throat work, pædiatrics, ophthalmology, mental diseases, and orthopædics—could not be fully dealt with in every district hospital; but each hospital should attempt to provide in one or more of these special branches a service available to other districts where that particular service has not been developed, or where the number of beds is insufficient for the demand. Such a service is classified as "subregional."

Provision for routine pathological examinations and for clinical pathology would be made at all district hospitals; but the more specialised pathological examinations would be undertaken at one or more regional laboratories; and the rarer specialties would also, of course, be a regional concern. The subcommittee points out that not all regional services would necessarily be centred on a single hospital; and it is conceivable that a district hospital might offer a regional level of service in a particular specialty. The following classification was adopted by the subcommittee:

District level	*Subregional level*	*Regional level*
General Medicine	General Medicine	Plastic Surgery
General Surgery	General Surgery	Thoracic Surgery
Ear, Nose, and Throat	Ear, Nose, and Throat	Certifiable Mental Disease
Ophthalmology	Ophthalmology	Certifiable Mental Deficiency
Physiotherapy	Physiotherapy	Neurosurgery
Pædiatrics	Pædiatrics	Radiotherapy
Psychiatry	Psychiatry	
Maternity (Normal)	Maternity (Abnormal)	
Genito-urinary	Genito-urinary	
Gynæcology	Gynæcology	
Fractures	Neurology	
Dermatology*	Radiotherapy	
Chronic Sick	Mental Deficiency	
	Orthopædics†	

* Certain skin conditions will require facilities at subregional level.

† Linked both with fractures and with rehabilitation centre and plastic surgery.

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1. Hospital Survey: the Hospital Services of London and the Surrounding Area. By A. M. H. Gray and Andrew Topping. H.M. Stationery Office. 1945. See *Lancet*, 1945, i, 600.
2. Essex Hospitals Joint Advisory Council: Report of Survey Subcommittee. Under the auspices of the Nuffield Provincial Hospitals Trust, 12–13, Mecklenburgh Square, London, W.C.1.

THE Medical Research Council have reconstituted the Dental Research Committee, whose function it is to advise and assist them in the promotion of scientific investigations in this field. The secretary of the committee is Prof. M. A. Rushton, M.D., department of dental medicine, Guy's Hospital, London, S.E.1.

better not to attempt it. The ampoule should be opened, after swabbing the neck with 70% alcohol applied with sterile swabs, by an assistant whose hands have been scrubbed and dried. It may be held in a sterile towel or piece of sterile lint. The operator must then introduce the needle of the syringe into the ampoule without fouling the mouth.

Other forms of container should be avoided except where absolutely necessary. If a rubber-capped bottle has to be used, the cap should be thoroughly swabbed with 70% alcohol or tincture of iodine and held in a sterile towel by the assistant. The bottle should be returned to the central sterilising depot after use each day.

The intrathecal injection of antibiotics such as penicillin and streptomycin demands the same high standard of aseptic technique; and all precautions should be taken to ensure that the solutions themselves are sterile.

REPORTING OF CASES

The general adoption of the measures recommended here would, without doubt, reduce the incidence of "accidental" meningitis but would not close every possible loophole for infection. Further safeguards can be found only if cases are thoroughly investigated as and when they occur and with the employment of specialised bacteriological methods. The Public Health Laboratory Service will willingly coöperate with the hospital pathologist or other officer in carrying out such investigations as are required.

[1] Gratitude is expressed to Sir Hugh Cairns and Prof. Wilson Smith for the help they gave in the preparation of this memorandum.

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HOSPITAL CATERING

A COMPARISON WITH ARRANGEMENTS IN AMERICAN HOSPITALS

MARGARET C. BROATCH
DIETETIC ADVISER TO KING EDWARD'S HOSPITAL FUND FOR LONDON

DESPITE the prevailing shortages many steps have been taken in the last few years by hospitals in this country to modernise their catering arrangements on lines recommended by King Edward's Hospital Fund for London. In some cases a large measure of success has been achieved. The old system whereby a single cooked meal at midday supplemented by simple breakfasts and suppers was considered adequate has been largely discarded, menus have been overhauled, and a much more generous basis including three cooked meals a day has come, in these hospitals, to be regarded as essential to the remedial service. Greater use is being made of the service of dietitians, and capable catering officers are much in demand. Progress is of course hampered by the current conditions, and in some quarters there is a failure to appreciate the distance which our hospitals have yet to travel if they are to offer a service commensurate with their achievements in other directions.

A comparison with the arrangements in American and Canadian hospitals indicates that, apart altogether from the well-planned menus and the variety and abundance of the foodstuffs available which allow for more attractive meals, there are two main directions in which American practice is decisively ahead of ours. In the first place, the visitor from this country is at once struck by the much higher status of the catering service. Catering is invariably entrusted to a dietitian who takes full responsibility for the running of her department financially and for the production and service of meals throughout the hospital, and ranks equally with the superintend of nurses and other heads of departments. The allocat of staff is on a much more generous scale than has e been thought necessary or desirable in hospitals o here. The famous New York Hospital, founded in 1 and rebuilt in the early 1930's, is comparable in size one of our greater teaching hospitals. It has 720 be of which 120 are for private patients and 600 in pavili (=wards) providing for semi-private and ordin patients who pay according to their means. Its sched of staff shows no less than 310 positions on the staf the catering department, ranging from dietitians, coo bakers, and butchers down to tray girls, waitresses, pantry maids. Such a ratio will strike the reader austerity Britain as beyond all reason, and indeed is an extreme example among American hospitals. N the less, many examples could be quoted in this cou of the opposite extreme, and it is a fact that in the majority of our hospitals an upward revision of staffing schedules of the catering departments is overd

MENUS

Nor is the higher standard of feeding that results any means entirely a matter of money and of suppl Much more imagination goes into the planning preparation of menus. The menus throughout are planned and varied, and three good meals a day served to all inmates of the hospitals. A point wor of special note is the abundant use of fruits, fruit jui salads, and vegetables, of which there is always a cho The work is more closely supervised by dietitians t is possible in this country, and thus many more unskil workers are trained within the hospital to become skil hands and often to hold key positions. In most of hospitals visited, meals are served to the staff in a cafeteria. This system is becoming increasingly popu since it has been found that a greater choice of fo can be given, which leads to less grumbling and m contentment among the staff.

If under the National Health Service our hospit are to offer food of a range and quality that mode hospital standards require, it will be necessary to see th an ample margin is allowed for an increase in expendit over and above the levels that prevail today. It is equal important to recognise the need for much more imagin tion in the planning and supervision of the food servi both for patients and for staff. How often a suggest innovation in diet is met by the objection that patients would not appreciate it! Only recently th answer was given to a suggestion that coffee should provided, yet many of the present ward population mu drink coffee regularly in teashops, canteens, and railw refreshment rooms.

EQUIPMENT

Secondly, the visitor is struck by the wholly differen standard that prevails in regard to equipment. Ever labour-saving device obtainable is in use not only i the main kitchens but also in the ward kitchens, a of which are equipped with water-boilers, coffee sets toasters, dish-washing machines, and racks for settin trays. Every patient is provided with a tray, the on most commonly used being made of aluminium wit collapsible legs. An outstanding feature in all hospital is the abundance of stainless steel tables and trucks an of refrigerators. A point of particular interest in the mos modern hospitals is the effort which has been made t cut to the minimum the handling of food, and individual dishes are used wherever possible for salads and desserts. Much use is now being made of frozen foods, and in many hospitals deep freeze-chambers are being installed fo storage of these. Many of the frozen fruits and vegetable are cheaper and more satisfactory than canned and hav superseded them. The high standard of equipment

Reconstruction

NEW YORK'S HEALTH INSURANCE PLAN

Sir RONALD DAVISON

LITTLE has yet been said in this country about the adventure in voluntary health insurance and medical group practice recently begun in New York.

After four years' incubation the Health Insurance Plan of Greater New York, known as H.I.P., emerged as an operative service on March 1 last. In the midst of the war that remarkable man, the late Mayor La Guardia, dreamt of this plan and set up an advisory committee to explore the possibilities of "prepaid medical care" for all families in the middle-income and low-income groups in his vast city and its environs. His dream is now becoming a reality and by the end of this year may cover as many as 100,000 people.

Neither the Federal, State, nor City governments are running this ambitious project. It is based on the private coöperation of the "consumers" of medical services, their employers and unions, and the groups of doctors who contract to provide comprehensive services of a high grade. The city government and the town hall no doubt had a good deal to do with its beginnings—if only because they were the first big employers to join—but it has the status of a voluntary non-profit corporation.

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At present H.I.P. does not directly enrol either individuals or families; it will take only groups of not less than 25 people who are associated in their employment—e.g., as members of one firm or of one trade-union. Members can, however, bring in their wives and children on certain conditions. Some sort of income limit seems to be intended, round about $5000, but in contracting for a large group *no objection has so far been raised* to some 5% of higher-salaried members. This enables executives and even employers to be included.

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A novel feature of the scheme is that the cost of the large family is spread over the units of one, two, and three persons. Thus the married wage-earner with eleven children pays no more than the married couple with one. Even so the high rates probably deter some low-paid employees from joining the scheme.

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In practice it seems that the medical group wit maximum allocation of 10,000 patients receives a g *income of $192,000 a year*, of which 35% should be aside for expenses—such as salaries for auxiliaries, r telephone, &c.—leaving $124,000 to be divided am the doctors.

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In England Now

Running Commentary by Peripatetic Correspondents

I was first introduced to a simple preventive of ickness by a patient with whom I was condoling the loss of an eye. "Well anyway," he said philo-ically, "I shall never be seasick again." On my her inquiry, he explained that he used to be the ain of a tramp steamer which took pilgrims to Mecca, he had observed that one-eyed passengers (a fairly proportion) were never sick.

thought I would discuss this novel idea with a higher ority, so I asked an ex-surgeon-rear-admiral (tem-ry) what he thought. "Of course it's true," he : and then, lowering his voice, "it was the only g that enabled me to hold down my job in the war." ppeared that he was ill if he went on the lake in nt's Park, and it doesn't look well for an admiral be sick in fine weather. Besides, it's very difficult vomit with dignity wearing a cap, and it seems that al officers mustn't take them off on duty. Anyhow n he couldn't escape going on the water (which for-tely was seldom) he developed a nasty stye so that wore an eye shade, with the happiest results. "To absolutely sure," he concluded, "stuff cotton-wool the opposite ear." To my astonished question , he murmured vaguely. "Oh, you know, semi-ular canals and things."

If these personal experiences are confirmed it will be ible to overcome a most distressing malady by the plest means. Nor is this without a military value. D-day, instead of fiddling about with hyoscine ctions, the invaders could have jumped on the ches tearing off red eye shades with one hand and ling out blue ear plugs with the other. Perhaps the rmans would have thought this was the secret weapon last and would have capitulated without resistance.

* * *

It was in the City of Loving Brothers that I came across autiful example of filial and paternal understanding affection. Both father and son were well-known skilful surgeons. The father had gained his skill the harder school of experience, the son had been ed in a world-famous clinic. I was a guest and the was booked to perform a cholecystectomy. The nt was anæsthetised and the operation-area pre-d. The father, dressed up to assist at the operation, all-attentive but unusually quiet. Suddenly the son, ing his father's thoughts and wishes, said, "I would my father to do this operation" and moved round the other side of the patient. The father, obviously tified, promptly went to work and removed an med gall-bladder and extracted stones from the mon duct in a masterly manner.

* * *

I don't suppose many people owe their lives to having ; my bearer does.

ws of the disturbances in the Punjab was scanty in hmir, and most of the many rumours appeared to be erations. Military personnel were forbidden to vel on trains going through the disturbed area, but I had to get back to Delhi, and so put on mufti at walpindi. All went well until we reached Lahore, north of the trouble. Here all the Muslims got off train, which was reduced from nine coaches to two—ving ample accommodation for the three travellers t—another European, my bearer, and myself. We ssed the Indo-Pakistan border without incident, and en the train was besieged by thousands of non-Muslim fugees. More coaches were added but every seat and ery square inch of the floor, running-boards, and roof s occupied by a mass of humanity complete with ndles, bicycles, pots and pans, innumerable children, d all the paraphernalia of the East. As we crawled t 10 miles an hour towards Delhi I breathed a sigh of lief, closed the wooden shutters on the windows, and ttled down for a sleep, confident that after all the mours were exaggerated.

I was woken by banging on the carriage doors, and ening the shutters saw that the train had been stopped n open country by a band of Sikhs armed with swords, home-made spears, and villainous little axes mounted on the end of long bamboo poles. They were searching the train for Muslims, whose fate could not be in doubt. They swarmed into the compartment, pulled the luggage from under the seats in case someone was hiding there, and showed the greatest interest in my bearer who was lying on the top berth. "Mussalman, Mussalman," they cried and began to drag him from the train. I protested that he was a Christian, and showed them, tattooed on his forearm, a naked lady. They were somewhat sceptical of this being a Christian emblem, and continued to shout "Mussalman." A large crowd had now collected round the carriage and my wretched bearer was trembling with fear. "He's a Christian," I insisted. "If you think he's a Muslim go into the lavatory and see for yourselves. He's not been circumcised." I waited outside, sick at the thought that perhaps he had not told me the truth and that he really was circumcised. The examination seemed interminable, and then came a loud laugh. The Sikhs emerged, grinning from ear to ear. "I don't know, Sahib, whether he's been circumcised or not," said one of them, "but he's certainly got V.D."

My bearer is still in hospital. It's taking a lot of penicillin to cure him, but now that the gross infection has subsided it is clear that he was somewhat inadequately circumcised in childhood.

* * *

A team of industrial psychiatrists had spent several days in an iron and steel works. Their investigations and analyses had gone smoothly except for one puzzling incident in the dispatch department. Here some twenty elderly workmen, each provided with a two-wheeled trolley, carried sacks of nuts and bolts down an incline to the edge of a canal where they tipped their load into a barge. Nineteen of the men pushed their trolley in front of them but the twentieth pulled his behind him, and this required additional manœuvring.

It was clear that this man was less efficient than his mates, but what puzzled the psychiatrists was why he pulled his trolley instead of pushing it. They spent the morning watching Sam, for that was the name of the black sheep, but came to no satisfactory conclusions, and brought the matter up at lunch in the director's dining-room. The works manager treated the whole matter with ridicule; he was a hard-headed Scot and had little time for these new-fangled investigators. Having listened with scorn to a variety of theories he said, "Och, why don't ye ask the mon why he pulls yon trolley and be done wi' it?"

Such horse-sense was irrefutable, and after lunch the party returned to the dispatch bank. The works manager was wasting no time and beckoned to Sam. "Now Sam," he said, "these gentlemen want to know why ye pull yon trolley and nay push it like t'other lads." Sam seemed quite nonplussed by the question and somewhat embarrassed. He stood on one leg and then on the other. He removed his greasy cap and fumbled it in his hands. "I don't rightly know," he replied in a raw Midland accent, "but I reckon it's because I'm sick of the sight of the bloody thing."

* * *

"Don't be worried," I told my wife, "but I've had another bleed from the old ulcer. I haven't been sick or anything yet, but we old chronics get very knowing, and there's one sign that is quite unmistakable after a time or two—the taste of the wind you bring up when you've been bleeding. Sounds rather disgusting, but I didn't want to startle you by vomiting a lot of blood in the night when you weren't prepared for it. If I can have a jerry under the bed and a bath-towel handy I shan't make any mess—in fact I needn't wake you up at all. I shall stay in bed in the morning, of course, but don't let's have any alarm or despondency this time. . . . What did you say? Couldn't it be that underdone liver we had for lunch? Good gracious, perhaps it is."

It was.

* * *

He was an experienced and skilful surgeon but absent-minded, especially when flustered. One day he was to perform a very minor operation which among certain races constitutes a religious rite. Arriving late for the appointment, he was met by the mother holding the victim in her arms. Patting the infant on the head, he said "What a delightful baby!", and then with his best smile, "Is it a boy or a girl?"

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pressure (where present) but also by damage intervertebral foramina by osteophytes and Healing of the original lesion will be by fibrosis. is partly responsible for the local stiffness, and be adequate until a sudden jolt, which, stretching adhesions on which the support depended, allows to override; produces tension on the fibrous in relation to the nerve-roots, which are further by osteophytes in the foramina; and causes wry-neck and possibly thereby local damage to

reason why so common a lesion of the nerve-roots often not recognised is that osteophytes and fibrosis intervertebral foramina may affect the larger roots more than the smaller anterior roots. the greater the damage to the posterior roots the the symptoms, though possibly severer at first. through death of the sensory fibres affected. irritation of these roots will show wide- symptoms but few signs. The greater the the poorer the muscle tone. The loss of pain manipulation—a dangerous procedure—may, on be explained by sudden death of the sensory The patient is not concerned with any further which may be compensated for by his ability other and unaffected muscle-fibres without by pain. In the case of the anterior roots, only a part of the root is injured, a variable number waste; but the loss of muscle tissue is shared many muscles that the wasting is difficult to assess. the recorded findings may be somewhat as

patient may be described as of poor muscular development, with postural scoliosis.

triceps-jerk is weak. At most some hypo-algesia of the thumb and index, and possibly of the middle, may be mentioned.

local wasting is discovered.

condition is diagnosed as "fibrositis," "myositis," "functional"—that increasingly threadbare "line" art of medical "strategy"—or the scoliosis, "postural," is considered to be the origin of the whereas it may have developed as a secondary of the lesion. Where the scoliosis is it will be aggravated by stretching of the nerve- by permanently abnormally situated vertebræ. is to be expected when, in a lesion of the C7 hypotonia and wasting affect a variable number in the muscles supplied by the posterior primary and in the scaleni, serratus anterior, and dorsi muscles.

some of the effects of a lesion of the C7 root tentatively described, other cervical or thoracic may be involved, either alone or together with C7. clinical picture, if more than one root is affecte at more complex than the one outlined abov en on frequent recourse to the principles of ana er with improve our approach to clinical medicireologists, ensure the utilisation of many proven fr treatment prevent many a new idea in med in his letter a questionable advance in uncerta he attainment those "interested in" eponymous santees a cure." that a little more thought to veen clinical and by modern radiography, migh rectly dependent The recognition of trauma tc damage. Conse- has shown us some defects in our et in before treat- *discis discissis discimus.* apossible, although On the other hand, fluid is a reflection

HORMONE TREATMENT BY PELLETS

vous system by the Horton, 85% develop ag that malaria plus

—I was interested in Dr. Simpson æticidal agent. The he reported the use of testostead serological outcome in women, and observed extr of the damaged central site of implantation. I ha uction of the invading in several cases of Simmon become negative even- necrosis of the antei l-important test is the have the pellets been d. patients have experienced paretic cannot be ignored. strength. cal hospitals will never be

CHILBLAINS

SIR,—In your annotation of Nov. 29 you referred to the fact that chilblains are almost unknown in America. I can confirm this from my own experience. I suffer moderately from this condition every winter, but when I spent two years in New England I was completely free, although one winter was very severe with considerable spells of sub-zero temperatures.

I am sure that chilblain sufferers in this country would benefit from better-heated houses as you suggest, but I believe this would be the result not so much of *warmer* as of *drier* surroundings. Chilblains, in my view, occur in damp chilly conditions rather than in really cold weather. Personally, I suffered less than usual last winter in spite of very inadequate heating. Temperatures between 30° and 39°F with wet or foggy weather are the worst. When the temperature drops sufficiently below freezing-point, with hard frost or dry snow, there is insufficient moisture to produce the condition.

I have no particular theories as to how dampness is concerned in the production of chilblains. Probably it prolongs the state of chill, since it requires more body heat to warm up socks, shoes, and gloves if they are damp and cold than if they are dry and cold. Dry snow can be readily kicked or shaken off boots and gloves, while wet snow cannot. I believe that the freedom from this complaint in America is due chiefly to their dry winter climate, assisted by properly heated houses and perhaps also by abundant sunshine.

I should be interested to know if your readers confirm my experience of comparative freedom last winter.

London, N.W.3. ROSEMARY PRITCHARD.

TUBOCURARINE IN TETANUS

SIR,—The letter of Dr. Gordon Sears (Nov. 29) describing a case of tetanus treated with tubocurarine prompts me to report briefly two cases which have occurred in this district this year.

CASE 1.—A girl of 9 years had pierced her finger with a thorn. Symptoms were severe from their onset some days later, and the child was very ill when admitted to hospital. The treatment followed the usual lines in regard to serum re penicillin, administration of fluid and paraldehyde; taken tubocurarine was given in doses of 5 mg. at the sta onset, spasms, which were very severe and perforated gastric 1-minute intervals, were de Some of the patients, frequency by the curare also of pain in the shoulder, and drug might be Mc cue that the diaphragm was involved; depressing effe ed that none of the patients in the series was though by Hamburger and McNeil had this symptom. were gi he nature of the epidemic was realised, diagnosis mus made without difficulty, and one could confidently se sure the anxious patient that the pain would be gone in 24–48 hours. Only a minority relapsed after the initial pain had disappeared. Cases of benign lymphocytic meningitis were seen at the same time, but such cases occurred among troops in other districts where no epidemic of Bornholm disease prevailed.

Lambeth Hospital, London, S.E.11. A. L. WYMAN.

TREATMENT OF BOILS

SIR,—The prevalence of boils and carbuncles in general practice, which was noted by Dr. Gottlieb in your issue of Nov. 29, will surely be confirmed by most general practitioners. I noted a similar increased incidence in the autumn of last year. May I suggest that the reason is the combination of lessened blood-supply and increased humidity of the skin, due to the damp cold air of autumn? Pathogenic staphylococci are ever present on the human skin, awaiting an opportunity to pierce the body's defences.

The general practitioner, in applying penicillin treatment, has to follow the dosage schemes issued by various research-workers. Of late one has been somewhat bewildered by rapidly changing opinions on this subject. For boils, carbuncles, and septic fingers, I have used 100,000 units twice daily, then 200,000 units once daily, and finally 500,000 units once daily. With all these dosages seemingly complete cures have been obtained. One of my patients, a girl of 17, with furunculosis of the knee, relapsed after a 3-day course as a hospital out-patient, and again after a 7-day course. On both of these

Letters to the Editor

PATHOLOGY IN THE NATIONAL HEALTH SERVICE

SIR,—It would be most helpful if official information could be given about the proposals for developing the pathology service under the new National Health Service.

From several sources unofficial information has lately come to hand that the hospital pathology service is going to be organised separately from the rest of the professional hospital services, apparently along the lines of the E.M.S. pathology services. We do not wish to belittle the great work done by this Emergency Medical Service and those who have worked in it. Nevertheless, justifiable criticisms have been brought against some aspects of it.

Clinicians and pathologists with whom we have discussed this subject, and who have given it thought, are strongly of the opinion that such an arrangement would be a great mistake and not at all conducive to the realisation of the best type of hospital medical practice. We think we are aware of the arguments likely to be put forward in favour of a separate pathology service. There is not one which approaches in importance those against such a service. For the best type of liaison between clinicians and pathologists it is essential for the latter to be an integral part of the hospital's service and staff. It is important that administratively they should be on the same footing as all other hospital medical staff. A full meeting of the members of the Royal College of Physicians on Nov. 27 last agreed to this principle without dissent.

We understand that the development of the new pathology service may already be far advanced in some regions. It is difficult to understand why we were not informed of the new proposals long ago. May we hope for full information quickly, and a realisation on the part of those organising the new service that all pathologists and clinicians are very much concerned with it and should be consulted before any arrangements reach finality?

N. F. COGHILL
Physician.

ARTHUR C. SPENCE
Pathologist.

West Middlesex County Hospital, Isleworth.

D. M. STERN
Obstetrician and Gynæcologist.

THE SYMPTOMS OF CERVICAL-ROOT IRRITATION

SIR,—Dr. Russell Brain and Mr. D. W. C. Northfield, addressing the physical-medicine section of the Royal Society of Medicine on Nov. 12, made a valuable contribution to several branches of medicine by their lucid discussion of cervical-root lesions.

Though the distribution of pain in the areas supplied by cutaneous nerves is well known, it is not adequately appreciated that irritation of cervical nerve-roots will also produce pain over a much greater area and depth, even far removed from the cutaneous nerve-supply, because of sensation carried in the nerves supplying muscles. Irritation of C7 nerve-root causes pain attributed to a small area of skin on the arm, forearm, and hand, and a larger volume of muscles, fasciæ, ligaments, periosteum, and other structures in both the trunk and the limb. Fibres of any of the following muscles may be concerned:

(1) *Via the posterior primary division:* splenius cervicis, semispinales, interspinales, and intertransversales.

(2) *Via the anterior primary division:* scaleni medius and posterior, latissimus dorsi, serratus anterior, pectoralis major, triceps, anconeus, coracobrachialis, extensors of the digits, extensor carpi ulnaris, flexor digitorum sublimis, and (possibly) longus cervicis, and extensores carpi radialis longus et brevis.

Opinions differ among anatomists about the detailed nerve-supply of all these muscles, whose degree of innervation by C7 varies from one muscle to another. Some of these muscles, besides receiving nerve-fibres from C7 and other cervical roots, also acquire thoracic innervation. Further, as Dr. Brain pointed out, additional variations exist in the case of pre- and post-fixed plexuses. Though the details may vary from case to case, the general anatomical arrangement explains why irritation of t posterior root of C7 causes a known area of skin and wider and less determinate expanse of muscle and oth deep structures to become the apparent sites of pai why damage to the anterior root is followed by wasti which, difficult to assess in any local group of muscl may be appreciable in the aggregate; and why t symptoms are so widespread and the peripheral sig so few. It is the overlapping of such widely distribut fibres with those from other roots that produces a clini picture which is confusing if the anatomy is not ke in mind.

Pain in the neck, arm, and trunk is very comm In patients with such pain careful radiography (includi oblique views) of the cervical spine often reveals a lesi There may be only an irregularity of outline of one int vertebral joint, near which one root may have be injured; or a more extensive lesion may be seen. Norm radiograms, on the other hand, do not preclude a lo lesion. It has been stated repeatedly that abnormalities are found in patients presenting symptoms referable to the cervical spine; but aga this I advance the following facts:

(1) The cervical spine is rarely radiographed unless patient has symptoms.

(2) The symptoms are not correlated with the abnormalit found; perhaps more often than is done at present some the symptoms are referable on an anatomical basis to cervical spine.

(3) Instead of such a reference many such syndromes termed "functional" or "neurotic." Yet no reasona improvement in the symptoms follows the well recogni methods of dealing with neurosis

(4) The pain is usually eased temporarily by analges which are of little value in anxiety states, unless any anx which may be present is the result, not the cause, of symptoms—i.e., relief of the organic symptoms relieves anxiety.

Therefore our views about what constitutes normal or unrelated radiographic findings should be reconsider

In the more severe phases pain in the chest and a has simulated that of cardiac ischæmia, particul when an exertion which alters the alignment of t vertebræ is undertaken. The carrying of a hea bulky object on one side—e.g., a shopping basket rather than two smaller ones, one in each hand, m necessitate a contralateral flexion of the lumbar a thoracic vertebræ with ipsilateral flexion of the cervi to maintain balance and keep the eyes horizontal. B there are countless other combinations of attitudes a angles between the vertebræ in lifting, carrying, readju ing, and lowering weights. On the whole, cervic root pain from a skeletal lesion follows the *type* movement, cardiac angina its *amount*.

Pain at night is experienced through incorrect adju ment or depth of pillows or through rotation and late flexion of the neck in sleep. Further, in the state betwe sleeping and waking the patient may stiffen up, there forcibly extending the neck.

Sneezing and coughing both cause jolting. Sympto may occasionally be prevented by flexing the ne and opening the mouth so that the chin rests on t chest, and raising and adducting the shoulders. Th combined action, besides supporting and stabilising t lower part of the neck, helps to relax the rhomboid levatores scapulæ, and some other muscles attached t the vertebræ. It also allows maximal separation of t bones at the intervertebral foramina, where the nerv might otherwise be compressed by the sudden jolt.

If a definite local obstruction can be demonstrated b myelography, this, together with the signs and oth radiographic findings, should make the diagnosis eas Why, then, is it possible for symptoms to exist withou any definite evidence of obstruction? I suggest th many of the features of the common type of lesion—that without evidence of damage to the cord—can b explained by conditions in the intervertebral foramin Prolapse of the disc allows the approximation of th adjoining vertebræ now supported only by lax muscl and ligaments. Further, the tone of some muscles wi be lost owing to damage to their nerve-supply not onl

Mr. LINSTEAD pointed out that, apart from medicines scribed under the National Health Insurance Act, the medicines prescribed today were proprietary medicines and would attract the 33⅓% tax. The old medicine stamp duty, he added, did not apply to medicines sent to the chemist to be sent out with a medical prescription.

The amendment was negatived by 278 votes to 131.

Medical Practitioners and Pharmacists Bill

This Bill, which has already passed through all its stages in the House of Lords, was given a second reading in the House of Commons on Dec. 5. Mr. BEVAN in proposing the motion stressed the necessity of getting the Bill passed into law by the end of the year. for doctors on the temporary register would otherwise be unable to continue to practise after Dec. 31. When the temporary register closed there would be, he thought, about 3500 doctors, but it was estimated that only 1500 to would wish to remain. There would also be a further Polish doctors brought here under the Polish Resettlement Scheme. Mr. Bevan admitted that the closing date, arbitrarily fixed as Aug. 4, might give rise to cases of individual hardship, but it could not be avoided. In the committee stage he would introduce an amendment to enable doctors attached to our establishments abroad to practise in this country.

Mr. WALTER ELLIOT welcomed the Bill as a measure of relaxation instead of restriction, and promised that the Opposition would afford every facility to secure its speedy passage into law. Mr. SOMERVILLE HASTINGS also welcomed the Bill, which. he added, it was an open secret, had arisen at the suggestion of the doctors themselves. He was uneasy about clause 8 which permitted foreign postgraduate students to undertake medical work in our hospitals. He suggested that the words "demonstration and instruction" should be substituted for "employment," and that such appointments should be limited to teaching hospitals where supervision was more complete.

Colonel M. STODDART-SCOTT said it appeared that the General Medical Council would undertake some sort of screening, and would decide from whom registration should be withheld. Would this decision, he asked, be made purely upon medical qualifications or service, or in what way? He welcomed the provision allowing the doctor right of appeal to the Privy Council from a G.M.C. decision. A British doctor under the National Health Service Act would not have the same privilege. Sir HENRY MORRIS-JONES suggested that there should be some form of examination, as well as a probationary period, before the new entrants were admitted.

Mr. H. LINSTEAD regretted that it had not been possible for the medical profession to do as the pharmaceutical profession had done, and omit the proviso of the closing date.

Mr. BEVAN in his reply said he was an enthusiast for providing postgraduate facilities in this country for students from abroad. It was a grief to him that students from the Colonies sometimes went elsewhere because we had not facilities for them in London. Therefore he deprecated Mr. Hastings's cold douche on the Bill's provision for the registration of these students. The Bill was only regularising a practice which already existed, and, as the students would be in hospital under supervision, the patients would be protected. The right of appeal to the Privy Council given in this Bill was not inconsistent with his views on the National Health Service. Here it was a question of professional qualifications—an entirely different matter from whether a person was giving suitable service or not. It was impossible for him to reconsider the closing date, for the Bill was an agreed measure, and it would be a breach of faith.

QUESTION TIME

Doctors in the Services

Replying to questions, the Services Ministers stated that the present ratio of medical officers to the total strength of the Navy is 3·25 per 1000; of the Army 3·5 per 1000. of the R.A.F. 3·1 per 1000.

Number of Medical and Dental Students

In reply to a question, Sir STAFFORD CRIPPS stated that the numbers of full-time medical (including dental) students attending university institutions in Great Britain were as follows:

	Men	Women	Total
Autumn term, 1947	12,389	3175	15,564
Academic year, 1938–39 ..	11,623	2013	13,636

Calorie Value of Potatoes

Mr. HENRY STRAUSS asked the Minister of Food what calorie value per oz. of potatoes he had assumed in estimating the loss through rationing at 70 calories a day.—Mr. J. STRACHEY replied: Sixteen.

Industrial Health Research Board

Mr. F. J. ERROLL asked the Lord President of the Council how long the post of secretary to the Industrial Health Research Board had been vacant; and what steps were being taken to fill it.—Mr. H. MORRISON replied: The board is part of the organisation of the Medical Research Council, and the secretarial duties are performed by members of the council's headquarters staff, one of whom has been giving whole time to the work since the board's previous secretary left at the end of September, 1946. The detailed work of the board has recently been divided among four committees dealing with special branches of occupational health and each of these has its own scientific secretary.

Obituary

CHARLES BOLTON

C.B.E., M.D., D.SC. LOND., F.R.C.P., F.R.S.

Dr. Charles Bolton, consulting physician to University College Hospital, died in London on Dec. 6 at the age of 74.

Born at Whitby, he began his medical work at the age of 16 as a pupil of a general practitioner who was a friend of his family. He especially valued this early training. for he believed that the recognition of physical signs was one of the most important and difficult parts of a medical education, and that skill in observation is most easily acquired before the mind has become burdened with much factual knowledge. Such store did he set on this form of instruction that even as a senior physician he continued to take many junior classes in clinical medicine.

Press Portrait Bureau

When he began his more formal education at University College, at which his elder brother, Joseph Shaw Bolton, had preceded him. his early experience proved of great value, and he carried off many of the medals, exhibitions. and scholarships. After qualifying in 1896, he held house-appointments under Rickman Godlee and F. T. Roberts. before becoming resident medical officer at the Evelina Hospital, and later assistant medical officer at the Eastern Fever Hospital at Homerton. It was here that his interest in medical research was aroused, and together with William Bulloch of the London Hospital he studied the origin of the agglutinins in the serum of an infant whose mother had contracted typhoid fever.

In 1900 he returned to University College Hospital. where he held the difficult office of resident medical officer during the building of the present hospital. In 1903 he was awarded a research scholarship of the Grocer's Company, and in the same year he was appointed to the staff of the Queen's Hospital for Children. Two years later he became assistant physician to U.C.H., occasions the knee had cleared up completely. I did not attempt a third course, but have used staphylococcal vaccine, with success. In using sulphathiazole, I have been disappointed several times after prescribing 20 g. in 3 days for patients with boils.

In considering the reasons for failure or relapse with penicillin or sulphonamide treatment, adequacy of dosage and proper spacing of injections are of course important. (From the general practitioner's point of view it would be a great help if single daily doses of aqueous penicillin were sanctioned by the pundits.) But it may be that staphylococci in poorly vascularised regions—and especially on the skin—get only enough contact with penicillin to enable them to develop a resistance. Instead of relying on penicillin alone for controlling boils, &c., we should perhaps return to broader lines of treatment, such as the use of vaccines, skin sterilisation, and reduction of carbohydrates in diet.

Dr. Mary Barber, writing in the *British Medical Journal* of Nov. 29, described penicillin-resistant strains of staphylococci which may or may not have acquired the resistance after penicillin treatment. Where resistant organisms occur and clinical response is unsatisfactory, dosage and spacing must be revised. In any case, vaccines prepared from penicillin-resistant strains might be of help in the treatment of recurrent infections.

Hornchurch, Essex. I. H. J. BOURNE.

ADVISERS TO THE BOARDS

SIR,—Your leading article of Dec. 6 is certainly timely, as the development of a full-time professional bureaucracy in each region would be most regrettable.

Perhaps the situation as regards psychiatry has arisen following the relative neglect of this subject by the universities. Thus, in London there are professors of medicine, surgery, and pathology at all the teaching hospitals, but only one professor of psychiatry for the whole territory, with two additional professors in the provinces. Scotland, as is not unusual, appears to be better served in this connexion.

If the community can afford a full-time "top-grade" psychiatrist in each region, surely this individual should be a professor of psychiatry at the main teaching hospital, whence his services would be available to coöperate with the regional medical advisory committees advocated in your leading article, rather than another administrator divorced from medical teaching and research.

Horsham, Sussex. T. M. LING.

Public Health

Poliomyelitis and Polioencephalitis

THE more rapid decline in notifications mentioned last week has been maintained. In the week ended Nov. 29 notifications of poliomyelitis were 103 (142) and of polioencephalitis 3 (3). Figures in parentheses are those for the week ended Nov. 22. It has been suggested that in epidemics original notifications overstate incidence. This is confirmed by the following figures for poliomyelitis supplied by the General Register Office:

	Notifications	
Quarter	*Original*	*Corrected*
June	268 ..	244
September	6192 ..	5077

Infectious Disease in England and Wales

WEEK ENDED NOV. 29

Notifications.—Smallpox, 0; scarlet fever, 1765; whooping-cough, 1513; diphtheria, 216; paratyphoid, 18; typhoid, 8; measles (excluding rubella), 2772; pneumonia (primary or influenzal), 567; cerebrospinal fever, 44; poliomyelitis, 103; polioencephalitis, 3; encephalitis lethargica, 0; dysentery, 77; puerperal pyrexia, 134; ophthalmia neonatorum, 51. No case of cholera, plague, or typhus was notified during the week.

Deaths.—In 126 great towns there were no deaths from whooping-cough, 1 (0) from enteric fever, 1 (0) from measles, 1 (0) from scarlet fever, 3 (0) from diphtheria, 61 (4) from diarrhœa and enteritis under two years, and 18 (1) from influenza. The figures in parentheses are those for London itself.

The number of stillbirths notified during the week was 189 (corresponding to a rate of 23 per thousand total births), including 27 in London.

Parliament

FROM THE PRESS GALLERY

Purchase-tax on Drugs

DURING the committee stage of the Finance Bill in the House of Commons on Dec. 2, Mr. SELWYN LLOYD moved an amendment to clause 5 to exclude manufactured or prepared drugs and medicines from the increase in purchase-tax. He said that at the moment drugs and medicines were subject to a tax of a sixth, which was now to become a third, of the wholesale value of the goods. Was it not rather sadistic that the Government should double the tax on such simple remedies as iodine, quinine, and the simple forms of nerve tonic? Almost all the ingredients of the common cough mixtures, certain of the drugs for relieving pain, and many of the simpler medicines would be subject to the increased tax. 'Vaseline' bought in a 4 oz. tin was free of tax, but in smaller quantities it was not. This imposition constituted an additional tax on sickness and on things which might prevent minor ailments from becoming more serious. If the result was to turn minor ailments into hospital cases it might easily defeat its purpose. The Government themselves were large purchasers of drugs, he continued, and the financial aspect could not therefore be important.

Sir HENRY MORRIS-JONES had never understood why drugs and medicines were subject to purchase-tax at all. In the overwhelming majority of cases they were a necessity. He urged that special consideration should be given to drugs which were preventives and sedatives.

Mr. F. J. ERROLL held the tax discriminated unfairly between different types of diseases, and added to the difficulties of the chronic sick and the aged and infirm. While there was an amazing list of drugs and medicines on which the new tax was to be levied, there were notable exemptions such as penicillin, the sulphonamide group, vaccines, and morphine. Thus we taxed the cure of toxic goitre and malaria, but left the cure of pneumonia and gonorrhœa free. There was the further point that the dispensing practitioner, particularly when he was also a panel doctor, received a fixed rate for the medicines he supplied, and any increase in the purchase-tax on their ingredients must be entirely borne by him.

Mr. H. LINSTEAD, in supporting the amendment, asked the Chancellor of the Exchequer to have a look at the whole operation of the purchase-tax as it affected medicine. When this matter was last discussed the then chancellor indicated that he could not afford the loss of revenue—something like £9 million—which the remission of the tax would entail. But it was no longer a case of balancing the budget but of curtailing expenditure on non-essentials. Nobody could maintain that drugs were non-essentials, but the Chancellor might have a good deal of sympathy if he imposed additional taxation on patent medicines.

Sir STAFFORD CRIPPS said that for some time discussions had been going on with the Ministry of Health on the question of getting the list of drugs in the exemption order extended and put on a sounder basis. He agreed that its present basis did not seem to be wholly logical. Before next April he hoped it would be re-examined with a view to excluding drugs which were of real importance. He would remind the House that prescribed medicines did not attract the tax, though some drugs in the medicine might be taxed, but looking at the proportion of the drugs and the cost, compared to the final article, it was clear that the incidence was not heavy. Most of the receipts from this tax were a substitution for the old stamp duty on patent medicines. He could not believe that the taking of patent medicines without the advice of a doctor was a good way of dealing with the health of the population. While he could not accept the amendment he proposed to look into the matter before next April to see whether a more logical system of exemptions could be devised. They would be much helped by the fact that the new National Health Service Act would be coming into operation, and they would have the assistance of the Ministry of Health, who would be large users of drugs in the hospitals and elsewhere.

Notes and News

THE DON'S WARNING

DOCTORS who read Nigel Balchin's book, *Mine Own Execu-* r, can hardly fail to be impressed by the advice a deaf spiritless don gives Milne in the first chapter. Milne, who taken a first in physiology, anatomy, and chemistry, to train forthwith as a psycho-analyst. "'Well,' says don, 'there's no doubt you'd have to qualify first. No at all. It gives you'—he waved a hand—'all the back- d.'" Milne and Mr. Balchin hardly keep their patience one so remote and ineffectual; but the rest of the book to vindicate him handsomely. If Milne had had "all ckground" would he really have thought analysis was ng for Adam Lucian? It seems doubtful. Mr. Balchin ers he made his blunder later, when he allowed Lucian tpone a critical session and go home to murder his Milne's hunch that all was not well was obscured by ache: very human, but it led to the agonising death person of remarkable quality, and the suicide of Lucian f. The strictures of the coroner are lightly wafted off e of Milne's medical colleagues, who cleverly claims part e responsibility. The lesson, for Mr. Balchin, seems to t though we all make mistakes, the unqualified analyst, er good—and Milne, his fellow-workers all agree, is good—will get no quarter when he blunders. For s, and perhaps especially for psychotherapists, the is rather that a medical training, whatever its faults, one to deal humbly and cautiously with a psychosis.

film, now showing in London, of this very interesting well-written book, is presented by Alexander Korda and ed by A. Kimmins. The script is written by Balchin, it follows the text so faithfully (though the scene with don is omitted) that it becomes a kind of documentary e book. There are some good paralysing shots at the when Milne is climbing a fireman's ladder to get to n, solitary on the parapet of the great building; but e whole the photography is competent without being g, and the same might be said of the cast.

DENTAL CARIES IN SWEDEN

Swedish Royal Medical Board is instigating investi- s into the prophylaxis of dental caries. Completely y teeth are now found in only 3 out of every 1000 h children between 7 and 15 years and in only 1 per young adults (average age 20). On the other hand, the 870 patients in the Lund hospital for ineducable l defectives 31 have perfect teeth.

CENSORSHIP OF PATIENTS' READING

question whether some form of censorship of the read by patients in hospital is desirable was discussed recent meeting of the Guild of Hospital Librarians with Buchanan in the chair. Miss Southernden, the member the Croydon Public Library staff assigned to the work in l and mental hospitals, maintained the principle, lly accepted by public librarians, that the provision of for patients in hospital is an extension of the home- service, so they would be no more subject to restrictions are ordinary readers. The suggestion that patients d of being debarred in any way in their reading should e special assistance from the librarian to guide their e of books received general support. Mrs. Mackenzie, the point of view of a lecturer in psychology, objected it was not possible to discuss the subject in relation to nts as a body. It was necessary to study the reactions the individual. The librarian can assess projection and ation. Dr. L. Fairfield, a senior medical officer of the don County Council, supported the objection to any form censorship with the one exception that patients suffering cancer should not be allowed to read books referring to t disease. Tuberculous and neurotic patients are not cted by books bearing on those subjects, and in fact the ription of their own conditions may in some cases be ful to patients. Maternity patients should not have fears d by books about abnormalities in childbirth but t well have any such ideas dissipated by good books t motherhood and child life. One type of reading to be ded by the sick is the desultory reading which leaves no ession. She condemned "the ridiculously overplayed ms of bibliotherapy" prevalent in the United States.

University of Cambridge

On Dec. 6 the regent house resolved that from the beginning of the next academic year women shall be admitted to matriculation and degrees on the same terms as men. They will be eligible for appointment to all university offices except those of proctor and esquire bedell. Girton and Newnham, instead of being "recognised institutions," will be colleges of the university.

University of London

Dr. N. F. Maclagan has been appointed to the chair of chemical pathology at the Westminster Hospital medical school.

Dr. Maclagan, who is 42 years of age, was educated at University College School and University College, where he graduated B.SC. with first-class honours in 1925. In 1926 he was appointed to a research scholarship in the biochemical department of Middlesex Hospital, where the following year he began his medical training, while continuing to act as part-time assistant in the biochemical department. He graduated M.B. in 1932, and after holding a house-appointment under Dr. G. E. S. Ward, became assistant in chemical pathology to the Courtauld Institute of biochemistry, where he later continued his researches on gastric secretion as a whole-time worker of the Medical Research Council. In 1935 he was appointed biochemist to the Westminster Hospital, but from 1939 to 1945 he was on leave of absence as pathologist at an E.M.S. sector pathological laboratory. In 1946 he returned to the Westminster Hospital medical school as chemical pathologist. Dr. Maclagan took his M.D. in 1935 and his D.SC. last year. He is also a fellow of the Royal Institute of Chemistry. His most recent work includes papers on liver function.

University of Dublin

On Dec. 3 at the school of physic, Trinity College, the following degrees were conferred:

M.A.O.—J. A. O'N. Mulcahy.

M.B., B.Ch., B.A.O.—Kurt Adler, C. L. S. Archer, Irene R. Christie, R. F. E. Coolican, Kathleen P. E. Crawford, Samuel Davis, J. R. Evans, Katherine S. P. Hill, Margaret W. Lamb, D. E. Mellon, T. J. Mills, P. R. Oliver, Irene S. Orgel, J. R. F. Smith, F. E. Williams, R. J. Yorke.

Royal College of Physicians of London

Dr. C. M. Fletcher will deliver the Goulstonian lectures at the college on Tuesday and Thursday, Jan. 13 and 15, at 5 P.M. He is to speak on Pneumoconiosis of Coalminers.

Royal College of Obstetricians and Gynæcologists

At a meeting of the council held on Nov. 22, with Mr. William Gilliatt, the president, in the chair, the honorary fellowship was conferred on Field-Marshal Jan Smuts.

The following were admitted to the membership of the college:

R. J. McC. Jamieson, Joan E. W. Mackie, Stephen Parlee (absentia), Ada Sau Haan Wong (absentia).

The following candidates have satisfied the examiners for the diploma in obstetrics:

K. D. G. Abbott, E. A. J. Alment, G. J. Amiel, Geoffrey Anderton, J. K. Armstrong, W. C. Astley, Winifred N. Backhouse, A. B. Backus, Henrietta E. Banting, C. P. Bennett, W. R. Bodenham, C. C. Bowley, Michael Bruser, C. J. Champ, J. S. L'A. Chesshire, S. N. Cole, John Colquhoun, Janet E. W. Copland, J. M. G. Costello, H. H. Crabb, Robert Crawford, R. C. Cummin, D. V. Cummins, Nora C. Curran, Reginald Cutts, C. H. De Boer, N. S. Devi, C. J. Dewhurst, L. W. D. Drabble, W. J. Driscoll, Victor Drosso, J. G. Dumoulin, Alan Eckford, D. F. Edmiston, M. S. Ellensweig, John Eskell, Joseph Firth, J. H. Fisher, G. H. Flack, H. D. Freeth, H. J. Friend, R. W. Grayburn, E. G. Hall, Archibald Hanton, S. L. Hetherington, G. E. Hewett, N. M. O'C. Hicks, Robert Hodgkinson, E. I. Holloway, D. R. Hughes, Alexander Hunter, R. W. Hutchinson, C. G. Irwin, S. B. Jahan, E. W. Jeyaratnam, Arthur Joffe, F. W. Johnson, E. P. Jones, E. W. Jones, R. A. S. Keighley, P. G. S. Kennedy, R. W. Kennon, P. M. Kerr, J. E. Kerton, B. T. Kieft, Muriel G. King, Gouri Kirtane, W. H. Laird, J. L. Lawrence, R. P. Lawrie, J. B. Lawson, J. McL. Lees, M. H. Lloyd, Mary Love, Hugh McColl, Kathleen A. McDonald, Richmond McIntosh, Muriel MacKenzie, A. G. MacLeod, J. C. MacWilliams, A. S. Majury, H. N. Mansfield, Annamma Mathan, T. K. Maurice, T. D. F. Money, Ivy M. Morgans, M. F. Morton, W. H. Oesterlein, G. C. Pattanayak, J. H. Patterson, P. C. A. Posford, M. B. Quane, W. J. Ramsay, E. B. Rayner, D. H. Rea, D. D. L. Rees, J. G. Reynolds, Henry Roberts, P. S. Robinson, E. S. Rogers, Monica H. Roper, John Rushton, G. T. Rutherfoord, Helen Samson, Mary A. Saunders, P. G. Seed, Elizabeth S. M. Sherrard, D. W. Shields, Irene M. S. Sloper, Leonard Smalley, A. A. Smith, E. M. Southern, Elizabeth M. Stokes, Alan Taylor, A. P. Walker, John Watson, Joyce Watson, A. E. B. de C. Wheeler, Joel Wilbush, Mary L. Williams, R. B. Wilson, C. H. F. Wood, Esme M. Wren, R. B. Wright.

Industrial Injuries Advisory Council

Sir Wilfrid Garrett, late chief inspector of factories, has been appointed chairman of this council, which has been set up to advise the Minister of National Insurance on questions relating to the National Insurance (Industrial Injuries) Act, 1946. The 15 other members include Prof. R. E. Lane, F.R.C.P., and Mr. E. A. Nicoll, F.R.C.S.E.

and seven years afterwards full physician. In 1908 the Graham research fund was instituted and Bolton was selected as its first director. The duties of this appointment were at first limited to the supervision and encouragement of research in the medical school, but within a few years they were enlarged to cover in addition the undergraduate teaching of general pathology. In 1914, when the directorship was joined to a full-time chair in pathology, he was succeeded by the late A. E. Boycott.

During the 1914–18 war Bolton was in charge of the medical patients of the war block at U.C.H., and for these services he was appointed O.B.E. in 1920. The Royal College of Physicians had elected him to their fellowship in 1909, and from 1933 to 1936 he was censor. He was elected F.R.S. in 1918. After being senior physician to his hospital for several years he retired from his appointments in 1935.

Few British physicians in the present century have been so successful as Bolton in combining the practice of medicine with research. Throughout his professional life he believed that a teacher in a large London medical school should actively investigate some problem in disease, and he had little sympathy with the present tendency to separate research from teaching appointments. In the course of his career he had three main research interests, and from these he seldom strayed. His early experience as a medical officer in a fever hospital deeply interested him in diphtheria, and a number of his early papers were devoted to its nervous and circulatory sequelæ. Later he turned to the investigation of cardiac œdema and gastric ulcers. For over thirty years he continued to work at these two problems, and few years went by without some published contribution upon one or both. Much of his work on œdema he brought together in his Oliver-Sharpey lectures in 1917, and on peptic ulcers in his classical monograph on *Ulcers of the Stomach* in 1913 and in his Croonian lectures on the Interpretation of Gastric Symptoms in 1928. In his research he was greatly influenced by the functional and experimental pathology of Cohnheim. He made most careful studies upon his patients to determine as closely as possible the morphological and physiological disturbances from which they suffered. He then attempted to reproduce the condition in animals in order to give greater scope for further experimental studies, and in such work his ingenuity and technical skill were outstanding. Although his main concern was always to discover the underlying functional disturbances, he spent much time on the problems of treatment, and a large proportion of his published papers were devoted to this practical aspect of medicine.

Most of Bolton's earlier papers were entirely the products of his own hands and pen, but after the 1914–18 war he collaborated more frequently. In 1922 he published with G. W. Goodhart his first paper upon gastric physiology, and began a happy and productive association which lasted for many years. In 1928 W. G. Barnard and he published their work on passive venous congestion of the liver which had been experimentally produced in animals. Even after his retirement from hospital practice, he maintained his interest in research as actively as before. With Goodhart he continued his study of duodenal regurgitation as a factor in the regulation of gastric acidity, while embarking with Payling Wright on the investigation of the paths of absorption of amino-acids from the intestines. Only on the outbreak of war in 1939, when research in the London medical schools had become almost impossible, did he reluctantly give up what had been a lifelong interest.

No-one who worked with Bolton failed to come under the spell of his personality. A fair Yorkshireman, of traditional build and appearance, he was an imposing figure in any group. While he was transparently forthright in his dealings and commanded the respect of his colleagues and assistants, his geniality shone through all his associations with his friends and patients, and no member of the staff at U.C.H. in his time was regarded more affectionately by his juniors and students. Recently one of his colleagues, F. M. R. Walshe, has again drawn attention to the objects of a teaching hospital—"to advance knowledge, to train doctors and to set an example of practice." By his success in all these objects Bolton was an outstanding figure in a particularly flourishing period in the history of his hospital.

In 1911 Charles Bolton married Ethel, the daughter of the late Henry George, who survives him.

THE LATE SIR JOHN FRASER

Prof. J. R. Learmonth writes: "Will you allow me to pay my personal tribute to Sir John Fraser? I have known and respected the man and his work for many years, when my appointment eight years ago to the systematic chair brought me into closer relationship with him. No-one could have been kinder to the newcomer. Naturally, I turned to him for guidance, and had from him wise counsel, proffered in that almost diffident way which must be familiar to the many who sought his advice, and which was inherent in the modest shy spirit that was his. Early in his life he must have forced himself to overcome his reserve, when occasion demanded, for it was clear to me that he had become a part of Edinburgh, and of Scotland, active in every cause in which he could help; and so acquiring a knowledge of people and of affairs which made him the ideal mediator (arbitrator would be the more accurate term but he would have scorned it) who unfailingly achieved the possible, as only the selfless can. For this subjection he placated his reserve by generosities and kindnesses especially to children, of number and extent known to none but himself.

"To my mind his professional work, prodigious in volume as it was, embracing all classes of society (though I doubt if he recognised these), and drawn from as wide an orbit as any I have known, provided a complete answer to the view held in some quarters that a great mind cannot obtain intellectual satisfaction from the practice of surgery. When he came to my wards in consultation he would arrive—with that attractive slightly rolling gait—radiating hope and confidence: listen attentively to the history; make the deft and gentle examination that only he could; and then stand back a little, in the attitude so many will remember—head a little to the right, the right eye half-closed, the quizzical smile. Then came the opinion—obscurities clarified, a diagnosis, a line of treatment strained to the limit to secure any hope of favourable outcome. A word or two of encouragement to the patient, and he was gone. The experience was always fresh and always instructive.

"In his operating-theatre he was the artist. Confidence there was, sureness of touch, impeccable technique: and something more. Whatever he was doing, he gave one the impression of being in the throes of creation; each procedure was to him the making of a masterpiece. I remember so well, as I watched his last operating session in the Royal Infirmary—when he had, quite characteristically, set himself only one or two minor tasks—searching in my mind for the right word to describe his use of the gauze swab. 'Swabbing' and 'mopping' could be easily discarded; 'patting' expressed the correct amount of physical effort, but was too trite: 'caressing' seemed to me to be the word. The artist was at work, absorbed in his creation.

"To give up surgery for the principalship of the university must have been a trying decision for him, and to some it seemed that the transition would be too abrupt, that the previous life of service was unsuited to the direction of great academic and business affairs. Any doubts were speedily set at rest. He was an admirable expositor, both on formal occasions and in committee; and he acquired the ability to refuse—albeit courteously—an ability of which he had not shown evidence during his professional life. His plans for the university were on a lofty scale yet evolved with a precision of detail which had been the habit of his life. Some have come to fruition, some are in the making; his love for his university permeated all.

"Last Thursday afternoon every street in Edinburgh seemed to lead to St. Giles. The ceremony was an intensely moving one: the colourful pomp of the congregation, the service almost severe in its simplicity. But the tribute which would have pleased him most was the great gathering of those who, unable to gain admittance to the crowded cathedral, waited bareheaded outside the west door in the grey December dusk. His old patients come to take their leave of him."

ATMENT OF TUBERCULOSIS WITH STREPTOMYCIN AND SULPHETRONE

D. G. MADIGAN
M.B. N.U.I.

P. N. SWIFT
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GEORGE BROWNLEE
B.Sc. Glasg., Ph.D. Lond

the Tuberculosis Chemotherapy Unit, County Hospital, Farnborough, Kent, and the Wellcome Physiological Research Laboratories, Beckenham

With an addendum on
The Histology of Typical Lesions after Streptomycin

G. PAYLING WRIGHT
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Among the most impressive experimental evidence of the chemotherapeutic activity of antituberculotic drugs are the histological signs of healing of established tubercles in animals and man. Confirmatory evidence of this kind is presented here for man and is entially similar to the histological evidence of healed miliary tubercles reported by Baggenstoss et al. (1947).

Like other drugs of natural origin, streptomycin has presented problems of purification. Besides having an intrinsic toxicity, commercially prepared streptomycin is more or less contaminated with impurities, important among which are pressor bases, depressor bases, and substances which damage the renal epithelium. The material used by us in the present trial was free from these impurities (Madigan et al. 1947) and appeared to owe such toxicity as it did possess to streptomycin itself. Further complications, however, should be clearly recognised. The possibility discussed by Madigan et al. (1947) that more than one streptomycin exists has been confirmed in the record of a third different molecule by us and Fried (1947).

METHODS AND CLINICAL MATERIAL

The opportunity to compare the efficacy of streptomycin with that of sulphone chemotherapy arose in June, 1946, with the supply of a limited quantity from the Wellcome Foundation in the form of seventeen batches which had been pharmacologically controlled. The material was supplied as a freeze-dried powder in phials containing the equivalent of 0·2 g. of pure streptomycin base, together with a supply of sterile pyrogen-free distilled water. Extensive biological control, reported in detail elsewhere (Madigan et al. 1947), had been exercised. The material had been tested for sterility and for freedom from pyrogens, histamine-like impurities, and, with one exception, antidiuretic substances. The average lethal dose of these batches in an acute experiment in mice was less than that of pure streptomycin. Towards the end of the trial it was necessary to use (intramuscularly) one batch of streptomycin which did not conform to these standards. Its history made it obvious that the histamine-like substances and pressor bases which it contained, in small amount, originated from a bacterial contaminant of the culture medium. For the purpose of intrathecal injection it was found that an isotonic solution resulted when the contents of one phial (0·2 g.) were dissolved in 18 ml. of distilled water. In practice 0·2 g. of streptomycin was dissolved in 2 ml. of distilled water, but even with such a hypertonic solution no acute toxic effects were seen.

Sulphetrone, which was included in the trial, is 4 : 4′-bis(γ-phenyl-N-propylamino)diphenylsulphone-tetrasodium sulphonate, the pharmacology and chemotherapy of which will shortly be described (Brownlee et al. 1948). Shown to modify favourably the course of inoculation tuberculosis of virulent human and bovine origin in guineapigs (Brownlee and Kennedy 1948a), it appears to be a slightly more efficient antituberculotic sulphone-derivative than 'Diasone' or 'Promin' and compares favourably with promin in the treatment of experimental tuberculosis in the guineapig (Brownlee and Kennedy 1948b). Its claim to superiority as the sulphone of choice rests on its lack of acute and chronic toxicity, in that adequate blood-sulphetrone levels have been maintained in man for longer than 12 months. (The full clinical reports of Anderson and Strachan (1948), Clay and Clay (1948), and Madigan (1948) are in preparation.)

The established regimen aims at obtaining and maintaining a blood-sulphetrone level of 7·5–10·0 mg. per 100 ml. of blood in patients treated in hospital. The daily dose is 6–9 g., fluids being restricted to 3 pints. During the period of adjustment, spread over some ten days, the initial daily dose of 1·5 g. is gradually increased. Fresh yeast and iron are given by mouth before and during treatment.

Two studies were made—(1) to assess the efficacy of streptomycin; and (2) to evaluate the possible synergic action of streptomycin and sulphetrone, in the light of the significant synergic action between streptomycin and sulphetrone reported in tuberculous guineapigs by Brownlee and Kennedy (1948b).

The limited supply of streptomycin restricted the experiment to 17 cases. The choice of clinical material was dictated by its presence in the hospital; but the main manifestations of human tuberculosis were covered.

CASE-RECORDS

Group I (Streptomycin only)

Case 1.—Girl, aged $2^1/_2$ years, admitted to hospital July 20, 1946, with *tuberculous meningitis*, intermediate stage, bacteriologically proved.

Treatment.—Streptomycin 0·2 g. intramuscularly four-hourly plus 0·2 g. intrathecally once daily from July 29 to Aug. 10 (13 days). After 24 hours' treatment, level in cerebrospinal fluid (C.S.F.) 6·4 µg. per ml.; blood level 16 µg. per ml.

Course.—Modified favourably, but patient died on Aug. 10.

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the faculty on Dec. 1, with Prof. G. B. Fleming, the president, in the chair, the following were admitted to the fellowship:

Graham Herbert Anderson, Edward Kenyon Blackburn, Samuel Dunn, Rankine Good, Arthur Thomson Hendry, James Hood, William Macfarlane Lancaster, Thomas Davidson Veitch Lawrie, George McCracken, Alastair Goold Macgregor, Robert Montgomery, Archibald Walker Sloan, George Will, qua physicians; John Cuthbertson Jeffrey, Alexander Macpherson Keith, Shreedhar Shreenivas Kirtane, Andrew Bruce MacLean, Norman McSwan, William Albert Watt Maney, Purushottam Bhagwant Sulakhe, Andrew Tomney, William Arthur Leigh Tucker, Stuart Young, qua surgeons.

Royal College of Surgeons in Ireland

The following have been successful in the fellowship examination: D. P. Beckett, R. E. Fenelon, R. S. Murray, J. R. McElroy.

Human-milk Bank at Cardiff

A human-milk bank has been opened at City Lodge Hospital, Cardiff. There is a similar bank at Queen Charlotte's Hospital, London; and plans for the establishment of a bank in Birmingham were announced last May (*Lancet*, 1947, i, 774).

Naval Appointment

Surgeon Captain L. F. Strugnell has been promoted surgeon rear-admiral and appointed deputy medical director-general of the Navy in succession to Surgeon Rear-Admiral A. E. Malone.

Delinquency and the Educator

A course of six lectures on this subject will be given at the Institute for the Scientific Treatment of Delinquency, 8, Bourdon Street, London, W.1, by Miss Barbara Low, B.A., on Jan. 27, Feb. 3, 13, 24, March 2 and 9, at 6.30 P.M.

Volunteers Needed by Common Cold Unit

Further volunteers are required by the Common Cold Research Unit, Salisbury, for intranasal inoculation with fluid which sometimes contains the cold virus. Sessions which are not filled are the 10-day periods beginning Jan. 14 and 28, Feb. 11 and 25, March 10, April 14 and 28, May 26, and June 9. Further information is obtainable from the medical officer, Harvard Hospital, Coombe Road, Salisbury.

Red Cross Relief in India

Major-General T. O. Thompson, C.B., M.D., has been released by the Army to serve as British Red Cross commissioner in India and Pakistan. In view of the likelihood of exceptionally serious epidemics next spring, especially among refugees, the society has authorised the formation of mobile hospitals, ambulance convoys, and teams of specialists, and it has already dispatched supplies of penicillin, vitamins, and blood-plasma.

Epsom College

The council invites applications for a France pension of £30 per annum for a necessitous medical man fully 55 years of age, who has been registered for 5 years.

There are also available other pensions and grants for medical practitioners or widows, when vacancies occur, and scholarships and grants for boys and girls (not necessarily orphans) of public-school age and in need of such help.

Forms of application may be obtained from the secretary's office, Epsom College, Surrey.

Appointments

The Hospital for Sick Children, Great Ormond Street, London:

FAGG, C. G., M.B. Lond., D.C.H.: house-physician.
KING, ALISON, M.B. Edin.: house-surgeon.
REDSHAW, JOAN, M.B. Sydney, D.C.H.: house-surgeon.
WILSON, B. D., M.B. Lond., M.R.C.P., D.C.H.: house-physician.

London County Council Mental Health Service:

BATT, J. C., M.D. Brist., M.R.C.P., D.P.M.: physician deputy superintendent, St. Ebba's Hospital, Epsom.
SHAW, DAVID, M.D. Lond., M.R.C.P., D.P.M.: physician deputy superintendent, Sutton Emergency Hospital, Surrey.

Ministry of Pensions Medical Services Division:

CURRAN, KEVIN, M.B. N.U.I.: surgical officer B2, Rookwood Hospital, Cardiff.
DUNCAN, MARGARET, M.B. St. And.: medical officer B2, Rookwood Hospital, Cardiff.
JAMES, T. G. S., M.A., M.B. Camb.: medical officer B2, Queen Mary's Hospital, Roehampton.
THOMSON, G. R., M.B. Glasg.: surgical officer B1, Stoke Mandeville Hospital, Aylesbury.

Diary of the Week

DEC. 14 TO 20

Monday, 15th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
3.45 P.M. Mr. D. W. C. Northfield: Intracranial Hy dynamics.
5 P.M. Prof. Alexander Haddow: Carcinogenesis.
HUNTERIAN SOCIETY
8.30 P.M. (Talbot Restaurant, London Wall, E.C.2.) Aleck Bourne, Dr. Edward Sharp, Mr. John How Menstrual Disorders in Relation to General Medicine.
ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Port Place, W.1
3 P.M. Prof. E. D. Adrian, O.M., F.R.S.: Elements of Ner Activity. (First Harben lecture.)

Tuesday, 16th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Prof. C. M. West: The Skin.
5 P.M. Prof. S. L. Baker: Absorption and Deposition of F
INSTITUTE OF DERMATOLOGY, 5, Lisle Street, W.C.2
5 P.M. Dr. J. E. M. Wigley: Pemphigus Group of Eruptions
ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE
3 P.M. Professor Adrian: Effects of the Sense Organs. (Se Harben lecture.)
EUGENICS SOCIETY
5.30 P.M. (Burlington House, Piccadilly, W.1.) Dr. J. A. F. Roberts, Dr. Eliot Slater: Genetics, Medicine, Practical Eugenics.

Wednesday, 17th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Prof. John Beattie: Autonomic Nervous Sy (Central).
5 P.M. Prof. J. W. S. Blacklock: Surgical Tuberculos Bovine Origin.
ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE
3 P.M. Professor Adrian: Activity of the Brain. (Last Ha lecture.)

Thursday, 18th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Prof. E. G. T. Liddell, F.R.S.: Pyramidal Ner System.
5 P.M. Dr. J. Hamilton-Paterson: Reticulosis and Ly gland Enlargement.

Friday, 19th

ROYAL COLLEGE OF SURGEONS
3.45 P.M. Dr. J. Douglas Robertson: Calcium Metabolism.
5 P.M. Dr. Hamilton Paterson: Myelomata and Their Relatio the Hæmopoietic Bone-marrow.
ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
8 P.M. *Obstetrics and Gynæcology.* Mr. Everard Williams, Catherine Lewis, Mr. Ogier Ward: Urological Prob in Relation to Gynæcological Surgery, with Sp Reference to the Vesico-vaginal Fistula and the Div Ureter.
LONDON CHEST HOSPITAL, Victoria Park, E.2
5 P.M. Dr. Franklin Wood: X-ray Kymography of the H and Lungs.

Births, Marriages, and Deaths

BIRTHS

GILLETT.—On Dec. 6, at Altrincham, Cheshire, the wife of Dr. R Gillett—a son.
SPENCER.—On Dec. 1, at Newcastle, the wife of Dr. Seym Spencer—a son.
STANBRIDGE.—On Dec. 2, at No. 8 R.A.F. Hospital, Germa the wife of Group-Captain R. H. Stanbridge, O.B.E.—a son.
STOTT.—On Dec. 4, at Chobham, the wife of Dr. Norman Stot a son.
TAYLOR.—On Nov. 28, at Aberdeen, the wife of Dr. J. L. Taylo a daughter.
TODD.—On Nov. 28, at Leicester, the wife of Dr. R. M. Tod a son.
WALKER.—On Nov. 29, in London, the wife of Dr. David Walker a daughter.
WELFORD.—On Nov. 25, the wife of Dr. N. T. Welford—a daught

MARRIAGES

BENNETT—CRANE.—On Nov. 28, in London, Reginald Bennet B.M., to Henrietta Margaret Crane.
IRVING—BAILLIE.—On Nov. 29, at Bletchingley, Sir Miles Irvi C.I.E., O.B.E., to Emily Elspeth Grace Baillie, M.B.
McCAULEY—TUCHMANN.—On Nov. 20, in London, Francis Jos McCauley, B.ARCH., to Anna Marie Tuchmann, M.B.

DEATHS

BOLTON.—On Dec. 6, in London, Charles Bolton, C.B.E., D.S M.D. Lond., F.R.C.P., F.R.S.
FLEMING.—On Dec. 5, at Kinloch Rannoch, Robert Alexand Fleming, M.A., LL.D., M.D. Edin., F.R.C.P.E., F.R.S.E., aged 85.
FRASER.—On Dec. 1, in Edinburgh, Sir John Fraser of Tain, baron M.D. Edin., LL.D., F.R.C.S.E., F.A.C.S., F.R.A.C.S., F.R.C.P.E., F.R.S
HIGGIN.—On Nov. 29, at Newton Abbot, Robert Francis Higg B.A., M.D. Camb.
LACEY.—On Nov. 29, in Cape Town, Bernard Warner Lac M.B. Durh.
SCOTT.—On Nov. 20, at Exeter, Robert Scott, M.B. Glasg.
THOMSON.—On Dec. 2, in London, William Brown Thom M.D. Glasg., D.P.H., aged 68.
URSELL.—On Dec. 4, at Cambridge, Siegfried Ursell, M.D. Munich.

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With an addendum on the Histology of Typical Lesions after Streptomycin

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METHODS AND CLINICAL MATERIAL

The opportunity to compare the efficacy of streptomycin with that of sulphone chemotherapy arose in June, 1946, with the supply of a limited quantity from the Wellcome Foundation in the form of seventeen batches which had been pharmacologically controlled. The material was supplied as a freeze-dried powder in phials containing the equivalent of 0·2 g. of pure streptomycin base, together with a supply of sterile pyrogen-free distilled water. Extensive biological control, reported in detail elsewhere (Madigan et al. 1947), had been exercised. The material had been tested for sterility and for freedom from pyrogens, histamine-like impurities, and, with one exception, antidiuretic substances. The average lethal dose of these batches in an acute experiment in mice was less than that of pure streptomycin. Towards the end of the trial it was necessary to use (intramuscularly) one batch of streptomycin which did not conform to these standards. Its history made it obvious that the histamine-like substances and pressor bases which it contained, in small amount, originated from a bacterial contaminant of the culture medium. For the purpose of intrathecal injection it was found that an isotonic solution resulted when the contents of one phial (0·2 g.) were dissolved in 18 ml. of distilled water. In practice 0·2 g. of streptomycin was dissolved in 2 ml. of distilled water, but even with such a hypertonic solution no acute toxic effects were seen.

Sulphetrone, which was included in the trial, is 4 : 4′-bis-(γ-phenyl-N-propylamino)diphenylsulphone-tetrasodium sulphonate, the pharmacology and chemotherapy of which will shortly be described (Brownle et al. 1948). Shown to modify favourably the course o inoculation tuberculosis of virulent human and bovin origin in guineapigs (Brownlee and Kennedy 1948a), i appears to be a slightly more efficient antituberculoti sulphone-derivative than 'Diasone' or 'Promin' and com pares favourably with promin in the treatment of experi mental tuberculosis in the guineapig (Brownlee an Kennedy 1948b). Its claim to superiority as the sulphon of choice rests on its lack of acute and chronic toxicity in that adequate blood-sulphetrone levels have bee maintained in man for longer than 12 months. (The fu clinical reports of Anderson and Strachan (1948), Cla and Clay (1948), and Madigan (1948) are in preparation.

The established regimen aims at obtaining and main taining a blood-sulphetrone level of 7·5–10·0 mg. pe 100 ml. of blood in patients treated in hospital. Th daily dose is 6–9 g., fluids being restricted to 3 pint During the period of adjustment, spread over some te days, the initial daily dose of 1·5 g. is gradually increase Fresh yeast and iron are given by mouth before an during treatment.

Two studies were made—(1) to assess the efficacy o streptomycin; and (2) to evaluate the possible synergi action of streptomycin and sulphetrone, in the light o the significant synergic action between streptomycin an sulphetrone reported in tuberculous guineapigs b Brownlee and Kennedy (1948b).

The limited supply of streptomycin restricted th experiment to 17 cases. The choice of clinical materia was dictated by its presence in the hospital: but th main manifestations of human tuberculosis were covered

CASE-RECORDS

Group I (Streptomycin only)

Case 1.—Girl, aged $2^1/_2$ years, admitted to hospital July 2 1946, with *tuberculous meningitis*, intermediate stage, bacteri logically proved.

Treatment.—Streptomycin 0·2 g. intramuscularly fou hourly plus 0·2 g. intrathecally once daily from July 29 t Aug. 10 (13 days). After 24 hours' treatment, level in cerebr spinal fluid (C.S.F.) 6·4 µg. per ml.; blood level 16 µg. per m

Course.—Modified favourably, but patient died on Aug. 3

Case 2.—Man, aged 34, admitted *Nov. 19, 1946*, with *tuberculous meningitis*, late stage, bacteriologically proved.

Treatment.—Streptomycin 0·2 g. intramuscularly four-hourly plus 0·2 g. intrathecally once daily from Nov. 19 to Nov. 21 (3 days). At 24 hours, blood level 8 μg. per ml.; C.S.F. level 6·0 μg. per ml.

Course.—No modification; patient died on Nov. 22.

Case 3.—Boy, aged 16, admitted Sept. 24, 1946, with *tuberculous meningitis*, late stage, bacteriologically proved.

Treatment.—Streptomycin 0·2 g. intramuscularly four-hourly plus 0·2 g. intrathecally once daily from Sept. 26 to Oct. 3 (8 days). At 24 hours, blood level 16 μg. per ml.; C.S.F. level 6·4 μg. per ml.

Course.—No modification; patient died on Oct. 3.

Case 4.—Boy, aged $1^1/_2$ years, admitted Nov. 4, 1946, with *tuberculous meningitis*, late stage, bacteriologically proved.

Treatment.—Streptomycin 0·2 g. intramuscularly four-hourly plus one dose of 0·2 g. intrathecally from Nov. 4 to Nov. 5 (1 day). At 24 hours, blood level 8 μg. per ml.; C.S.F. level 3·2 μg. per ml.

Course.—No modification; patient died on Nov. 5.

Case 5.—Man, aged 26, admitted Nov. 26, 1946, with *tuberculous meningitis* proved subsequently by guineapig inoculation and associated with extensive bilateral fibro-caseous pulmonary tuberculosis. *Myc. tuberculosis* grown from sputa. Radiography showed infiltration of upper half of left lung, with cavitation; tuberculous infiltration of right upper zone.

Treatment.—Streptomycin from Nov. 27, 1946, to Feb. 17, 1947 (83 days). The initial daily dosage was 1·2 g., of which 0·2 g. was given intrathecally. At 24 hours, blood level 8·2 μg. per ml.; C.S.F. level 24 μg. per ml. From Nov. 28, 1946, to Feb. 17, 1947, the dosage was 2·4 g. daily, of which, from Dec. 14 to Jan. 27, 0·4 g. daily was given intrathecally. After 24 hours on this higher dosage, blood level was 16·4 μg. per ml; C.S.F. level 82 μg. per ml. Heparin 2 mg. was given intrathecally daily from Jan. 2 to Jan. 27.

Course.—During the exhibition of streptomycin there was some remission of the clinical manifestations of meningitis. After the withdrawal of intrathecal streptomycin on Jan. 28 (62nd day) there was continuous improvement until March 4 (98th day), when no evidence of clinical meningitis was detected. There was a lag in the return of the C.S.F. to normal. No demonstrable change in lungs.

Case 6.—Woman, aged 29, admitted moribund Sept. 21, 1946, with *acute caseous tuberculous pneumonia*, bacteriologically proved, involving extensive area of right lung. Polypnœa required continuous oxygen. Radiography showed consolidation of right upper lobe and part of right lower lobe. Serial radiography showed extension of process in right lung with spread to left lung.

Treatment.—Streptomycin 0·2 g. intramuscularly four-hourly daily from Oct. 17, 1946, to Jan. 14, 1947 (89 days). Blood level 6·4 μg. per ml.

Course.—Clinical improvement. Serial radiograms showed less consolidation in right lung and apparent opening up of air spaces, but honeycombing of right upper lobe. Patient died on Jan. 14.

Case 7.—Boy, aged 16, admitted July 8, 1946, with *acute caseous tuberculous pneumonia* of left upper lobe, bacteriologically proved, with extensive bronchogenic spread. Severe constitutional disturbance. Radiography showed three segments of left upper lobe atelectatic, with large dorsal cavity; mottling of left lower zone; heart and trachea displaced to left; ground-glass shading of right upper lobe. Serial radiograms showed right paramediastinal area mottled; heavy mottling of right cardiophrenic and costophrenic angles. Extensive infiltration of left upper and lower lobes.

Treatment.—Intramuscular streptomycin 0·2 g. four-hourly from July 16 to Oct. 16, 1946 (92 days). Blood level 6·0 μg. per ml.

Course.—General condition improved. Hectic temperature reduced after 12 days of streptomycin course, but between July 8 and 27 there was a serious bronchogenic spread in right lower lobe, clinically and radiologically. Radiography on 67th day revealed remarkable clearing of right lung and reduction of infiltration in left lower lobe. Sputum not reversed. Erythrocyte-sedimentation rate (E.S.R.) unaltered.

Review at 6 months: active intervention necessary to control disease. Condition deteriorating.

Case 8.—*Girl, aged 19,* admitted Jan. 18, 1946, wi bacteriologically proved *hæmatogenous tuberculosis* originati in mediastinal glands and involving lungs, 3rd lumbar verteb and right sacro-iliac joint. Severe constitutional disturbanc Proved tuberculous abscess over upper end of right sacr iliac joint. Radiography showed loss of joint space betwe T8 and T9; erosion of lower and outer part L3; slight bo changes in right sacro-iliac joint; widespread hæmatogeno patchy infiltration of both lungs.

Treatment.—Intramuscular streptomycin 0·2 g. four-hour from July 23 to Oct. 15, 1946 (84 days). Blood level 9·0 μ per ml.

Course.—General improvement excellent. E.S.R. (Cutl fell from 20–30 mm. to 7–10 mm. (normal 2–10 mm.). Weig increased 2 st. Radiography: original foci in lungs harden and shrunk; spine unchanged.

Review at 6 months: progressive improvement; no tube bacilli found in sputum since Jan. 29, 1946.

Case 9.—Woman, aged 27, admitted May 22, 1946, wi *bacteriologically proved tuberculous bronchopneumonia* a right pleural effusion. Pronounced constitutional disturban Radiography showed bronchopneumonic mottling of rig apical and mid zones; right pleural effusion; slight mottli of left lower lobe. Second series of radiograms a month lat showed more pronounced mottling in both lungs.

Treatment.—Intramuscular streptomycin 0·2 g. four-hour from July 11 to Oct. 3, 1946 (84 days). Blood level 6·4 μ per ml.

Course.—Temperature dropped from 98–99 8° to 97·6–97 during course, and to normal 16 days before end of cour Weight increased 8 lb. E.S.R. (Cutler) fell from 25 mm. 18 or 10 mm. Sputum, which at first contained tube *bacilli*, contained none on Aug. 8, after which there w no sputum up to Jan. 2, 1947. Radiography showed th original soft focal mottling became harder and less den and pleural effusion was absorbed.

Review at 6 months: condition static; tubercle ba again appeared in sputum: radiography showed appare further clearing of mottling, but there was a small cavi at level of right 1st interspace and a large one of tens type in apex of right lower lobe.

Case 10.—Girl, aged 7 years, admitted Sept. 18, 194 with *acute miliary tuberculosis and terminal tuberculous men gitis*, bacteriologically proved. Constitutional disturban limited to high temperature. Radiography on Sept. 1 showed classical picture of fine miliary tubercles.

Treatment.—Intramuscular streptomycin 0·2 g. four-hour from Sept. 18 to Dec. 18, 1946 (89 days). From Nov. to Dec. 12 0·2 g. was given intrathecally once daily. 24 hours, C.S.F. level 6·4 μg. per ml.; blood level 16 μg. per m

Course.—Much clinical improvement until 65th da when onset of clinical meningitis was noted. Serial radi grams showed progressive clearing of miliary lung pictur Radiogram on 88th day appeared completely normal. O 71st day clinical meningitis was manifest, which pursue its usual course until death on 89th day (Dec. 18).

Case 11.—Man, aged 25, admitted Oct. 11, 1946, wit *acute generalised tuberculosis*, predominantly pulmonary an lymphatic, bacteriologically proved. Severe constitutiona disturbance. Radiography showed classical picture of fi miliary tubercles of lungs.

Treatment.—Streptomycin from Oct. 11, 1946, to Jan. 2 1947 (102 days): 1·2 g. intramuscularly daily from Oct. 11 t Nov. 13; 0·2 g. intrathecally daily from Nov. 20 to Dec. 13 At 24 hours, blood level 7·0 μg. per ml; C.S.F. level 4 8 μg per ml. Streptomycin raised to 2 4 g. intramuscularly dail from Nov. 14 to Jan. 21, with 0·4 g. intrathecally daily from Dec. 14 to Jan. 21. At 24 hours after start of higher dosage blood level 14·0 μg. per ml.; C.S.F. level 48 μg. per ml Heparin 2 mg. intrathecally given daily from Jan. 2 to 21.

Course.—Two distinct phases of almost equal duration (about 50 days). In the first phase the cervical glands regresse and the meningitis, of which clinical and cytological evidence existed on Nov. 18, disappeared by Dec. 18. Radiography showed gradual clearing of miliary picture, and by Dec. 2 lungs appeared normal except for residual miliary tubercle in left upper lobe. In the second phase the general condition deteriorated: the cervical glands enlarged and caseated and clinical evidence of mesenteric glandular involvement foreshadowed generalised lymphatic tuberculosis. Radi graphy on Jan. 13 showed generalised coarser miliary tuberc in lungs. The patient died on Jan. 21.

II (Streptomycin and Sulphetrone)

12.—Man, aged 39, admitted June 5, 1946, with *fibrocaseous pulmonary tuberculosis*, bacteriologically ved. Severe constitutional disturbance. Radiography wed acute infiltrative lesion in posterior apex; cavitation axillary area of subapical segment; infiltration in lower drant, pectoral segment of right upper lobe; infiltration pex of right lower lobe.

Treatment.—Sulphetrone from June 21, 1946, to Jan. 23, 7. Blood level 2–7 mg. per 100 ml. Intramuscular strepto- m 0·2 g. four-hourly from July 11 to Oct. 3 (84 days). od level 6·4 μg. per ml.

urse.—Hectic temperature modified 12 days after etrone; temperature became normal 3 weeks after tomycin stopped. Weight increased 11 lb. E.S.R. (Cutler) from 30 mm. to 4 mm. Tubercle bacilli were found in rous specimens of sputum up to Aug. 29, 1946. Between and Oct. 3 there were 11 negative smears, 3 negative res, and a negative animal test. Radiographic report on . 28: infiltrative process halted; cavitation now not ; acute lesion converted to chronic process.

iew at 6 months: areas of disease static, but cavity pened; sputum again positive. The patient was readmitted hospital on June 21, 1947, for collapse therapy; E.S.R. estergren) was then 28 mm. in 1st hour.

se 13.—Man, aged 47, admitted May 4, 1946, with nic *fibrocaseous pulmonary tuberculosis*, bacteriologically ved. Radiography showed fibrocaseous pulmonary lesions ight upper lobe; large cavity in right apex; fan- ped area of decreased transluceney from apex to enlarged t root; left upper lobe suspect. Serial radiograms revealed nsion of dense mottling to right middle and lower zones.

eatment.—Sulphetrone given from May 21 to Oct. 3; od level 2 mg. per 100 ml. Streptomycin 0·2 g. four-hourly en from July 11 to Oct. 3 (84 days); blood level 4·8 μg. r ml.

Course.—Diurnal temperature excursion increased, with- rsion to normal 3 days after stopping streptomycin. phases were seen. During first 2 months there were 8 tive sputa; E.S.R. (Westergren) fell from 23 mm. to mm. in 1st hour; and serial radiograms showed successive rovement. Second phase intervened at third month of apy. Radiogram on Oct. 2 showed more mottling of lower zone, with larger right apical cavity.

iew at 6 months: all sputa positive since Dec. 9; E.S.R. estergren) up to 70 mm. in 1st hour; serial radiograms rmed advance of disease. Feb. 21, 1947: onset of right ral effusion, which progressed to encysted tuberculous yema, accompanied by prostrating toxæmia, general ma, and ulceration of mouth. The patient died on Aug. 16,

Case 14.—Woman, aged 29, admitted April 27, 1945, with *bilateral tuberculous bronchopneumonia*, bacteriologically proved. Grave constitutional disturbance. Radiography showed bilateral bronchopneumonic tuberculosis affecting all lobes; and area of consolidation in right lower lobe.

Treatment.—Sulphetrone given from March 11 to Oct. 2, 1946; blood level 3 mg. per 100 ml. Streptomycin 0·2 g. four hourly given from July 11 to Oct. 3, 1946 (84 days); blood level 6·4 μg. per ml.

Course.—Slight excursion of temperature range, reduced on withdrawal of streptomycin, and normal 8 weeks later. Weight, E.S.R., and sputum unchanged. Radiography on Sept. 8, 1946, showed change to fibrocavernous lesions with evidence of calcifying foci.

Review at 6 months: extension of fibrotic changes, with foci of calcification more in evidence.

Case 15.—Boy, aged $6^1/_2$ years, admitted on Jan. 31, 1946, with *hæmatogenous pulmonary tuberculosis* of coarse miliary type, not bacteriologically proved. No meningeal symptoms; C.S.F. culture sterile. Mantoux test positive. His father had open tuberculosis. Radiography showed bilateral hæmatogenous pulmonary tuberculosis; lungs stippled with coarse miliary pattern, conforming to "chronic" miliary picture; enlarged mediastinal glands.

Treatment.—Sulphetrone given from Dec. 3, 1946, to April 17, 1947; blood level 8 mg. per 100 ml. Streptomycin given from Feb. 3 to April 17, 1947 (73 days); blood level 12·0 μg. per ml.

Course.—Clinical condition much improved. E.S.R. (Westergren) fell from 22 mm. to 18 mm. in 1st hour. Gained weight. Serial radiograms showed gradual regression of coarse miliary tubercles.

Review at 6 months: from May 30, 1947, temperature again began to swing; radiogram on June 13 showed enlargement of left root, with collapse of left subapical segment; enlarged left bronchial glands, with "hilar flare" towards subapical segment of left upper lobe; miliary mottling no longer seen; E.S.R. 52 mm. in 1st hour. Sulphetrone therapy was re-established on June 22, and by Aug. 22 E.S.R. was 6 mm. in 1st hour; weight had increased 9 lb.; radiography showed regression of root glands; and general condition had much improved.

Case 16.—Man, aged 36, admitted June 5, 1946, with *chronic renal tuberculosis*, bacteriologically proved. Ureteric catheterisation demonstrated tubercle bacilli from left kidney only. Radiography showed damage to left kidney, with some calcification.

Treatment.—Sulphetrone given from June 4 to Sept. 14, 1946; blood level 2·5 mg. per 100 ml. Streptomycin 0·2 g. four-hourly given from July 11 to Oct. 3, 1946 (84 days); blood level 10·0 μg. per ml.

Course.—No significant change.

Case 17.—Man, aged 21, admitted Sept. 13, 1945, with recently healed lesion of L2 and L3 vertebræ, *severe spinal caries* of D8–10, complicated by a large paravertebral tuberculous abscess bacteriologically proved, a large pure chylous effusion in right pleural cavity, peculiar lung mottling, enlarged cardiac shadow, and pericardial effusion. Serial radiograms to June 21, 1946, showed clearing but patchy consolidation in right lower zone, and large pear-shaped paravertebral abscess.

Treatment.—Sulphetrone given from June 21 to Dec. 19, 1946; blood level 4 mg. per 100 ml. Streptomycin 0·2 g. four-hourly given from July 11 to Oct. 3, 1946 (84 days); blood level 14·0 μg. per ml.

Course.—Positive sputum on Sept. 26, 1945, then numerous negatives (culture and animal). E.S.R. (Cutler) fell from 24 mm. to 4 mm. Weight increased 4 lb. Temperature became normal. Radiography showed lungs clearer.

Review at 6 months: clinical improvement continued; radiography showed lungs clear except for pleural thickening from right root to right cardiophrenic angle; and bony union of vertebræ T8 and T9; posterior surface of T9 wedged into T10.

CLINICAL APPRECIATION

Group I (Streptomycin only)

Cases 1–4 were of proved tuberculous meningitis in either an intermediate or a late stage. Though adequate streptomycin levels were continuously present in blood and C.S.F. for periods ranging from 8 hours to 13 days, no appreciable deviation was detected from the natural course of the disease.

Case 5 was a clinical meningitis, subsequently proved to be tuberculous by guineapig inoculation, in a patient with extensive bilateral fibrocaseous pulmonary tuberculosis. The prognosis was sufficiently grave to justify an increase of dose of streptomycin from 0·2 to 0·4 g. intrathecally for 44 days, with the result that high antibacterial levels were reached in the C.S.F. Possible obstruction of the foramina with fibrin was countered by the intrathecal injection of heparin 2 mg. (260 I.U.) daily, which immediately prevented the appearance of a fibrin web which previously had been a constant feature of withdrawn C.S.F. With the resolution of the meningitis no evidence of irreversible damage in the form of persistently raised intracranial tension, or its secondary effects, was found. The chronic pulmonary lesions, unlike those of acute miliary tuberculosis, were unaffected.

Case 6, an acute tuberculous pneumonia, showed immediate clinical improvement in 8 days owing to decreased consolidation of the right lung and opening up of air-spaces. The improvement was not maintained, and death terminated a complicated pathology in which heart-failure, a spreading venous thrombosis, and associated œdema played a part.

Case 7, also an acute tuberculous pneumonia, was treated for 92 days and had a constant blood-streptomycin level of 6·0 μg. per ml. A temporary apparent improvement was not maintained.

In case 8 a generalised tuberculosis involving mediastinal glands, lungs, right sacro-iliac joint, loss of joint space between T8 and T9, and erosion of lower and outer part of L3 showed a slow improvement which did not appear to be modified by streptomycin.

Case 9, a tuberculous bronchopneumonia with a right pleural effusion, temporarily improved under streptomycin.

Case 10, one of three cases of miliary tuberculosis which showed clearing of the lungs, was adequately treated for 3 months. Between the 6th and 8th week of treatment there was a striking improvement in the patient's general condition, and spectacular radiological evidence of clearing of miliary tubercles was observed from the 7th week until death; the subsequent pathological and histological studies (*see addendum*) furnish evidence of healing of these lesions. It is of interest that, though the routine sample of C.S.F. taken on admission subsequently grew tubercle bacilli (one colony), the first sign of clinical meningitis was not elicited until the 66th day. After that the disease in the central nervous system pursued its inexorable course until death on the 89th day of therapy. Necropsy revealed an internal hydrocephalus from obstruction of the lateral and median foramina. Histological post-mortem evidence confirmed its tuberculous origin, though no organism was cultured. We decided to use heparin in the treatment of subsequent cases because we realised that this terminal state developed from *a* mechanical blockage originating in a pathological process which appeared to be no longer active.

In case 11 clearing of the miliary lung condition was first observed radiologically 4 weeks after exhibition of streptomycin, and appeared almost complete by the second month. This was followed later by the reappearance of coarse miliary tubercles. Early signs of meningitis detected 39 days after the start of treatment consisted of abnormal changes in the C.S.F., which began to return to normal after 3 weeks' treatment, and before heparin was given. In spite of the dose of streptomycin being increased to 2·4 g. daily the cervical lymph-glands continued to enlarge, caseate, and coalesce, confirming the clinical impression that the disease was again progressing. At necropsy, besides the old lesions, there were recent miliary tubercles.

Group II (Sulphetrone and Streptomycin)

In this group 6 patients received combined treatment. Cases 13, 14, and 17 were so gravely ill that no attempt was made to reach the optimal blood-sulphetrone level. In the case of chronic renal tuberculosis (case 16) the sulphetrone was excreted so rapidly in the urine that an effective blood level was not maintained. In cases 12 and 15 the blood-sulphetrone levels were satisfactory.

In case 12, a fibrocaseous pulmonary tuberculosis in a toxic and acutely ill patient with apparently low resistance, the hectic temperature and intoxication were modified after sulphetrone. During the combined course of sulphetrone and streptomycin the weight increased, the E.S.R. fell, and the previously positive sputum became negative. The acute lesion became chronic. Improvement was not maintained on withdrawal of the drugs, and collapse therapy was necessary.

In case 13, a chronic fibrocaseous pulmonary tuberculosis with cavitation, two phases were seen during the combined course of streptomycin and sulphetrone. In the first period of 6–8 weeks there was clinical and radiological improvement, with negative sputa, and the *infiltration* appeared to be halted. The second phase began suddenly and was characterised by rapid deterioration, both clinically and radiologically. At necropsy there was evidence of a breakdown of the patient's defences, leading to a progressive virulent infiltration.

Case 15 was a hæmatogenous pulmonary tuberculos not proved bacteriologically, in a Mantoux-positive chil aged $6^1/_2$ years, whose *father suffered* from open tube culosis. Radiography gave a picture of coarse " chronic miliary tuberculosis of the lungs. There were enlarg mediastinal glands. With adequate blood-sulphetro and blood-streptomycin levels the clinical conditi improved and serial radiograms showed a gradu regression of coarse miliary tubercles. A month aft withdrawal of both drugs there was a new phase pyrexia, and radiography showed much enlargement the left lung root, collapse of the left subapical segme enlarged left bronchial glands, and a " hilar flare." T condition was later controlled with sulphetrone.

The case of renal tuberculosis (case 16), which h showed *a considerable diminution* of the numbers organisms excreted on a previous course of sulphetro was unaltered by combined therapy.

In case 17, the severe spinal caries with chylous effu in the right pleural cavity, lung mottling, and pericard effusion showed consistent improvement, which w maintained. There was sputum reversal, and the E.S. and temperature returned to normal. The lungs beca substantially clear. The improvement was probab greater than would have been expected from sulphetro alone.

TOXICITY OF STREPTOMYCIN

The interesting fact that the streptomycin suppli *by the Wellcome Foundation caused only trivial* to manifestations has been previously reported (Madig et al. 1947). That the freedom from histamine-li impurities, pressor bases, and antidiuretic substanc which characterised this material was not the sole reas is shown by the persistence of toxic signs when strept mycin from other sources has been used. Thus, in clinical trial of streptomycin of 95% purity in 17 case renal and hæmatological toxic effects were found (F rington et al. 1947) which McDermott (1947) believed t be due to the streptomycin itself. No symptoms vestibular dysfunction or impairment of hearing we noted in our small series, though the intrathecal dose 0·2–0·4 g. daily, were higher than those usually give and the intramuscular dose, 1·2–2·4 g. daily, was withi the incriminated range.

Temporary pain on injection, much of which was du to the injection of hypertonic solutions, was occasionall observed. The inorganic content was such that strepto mycin 0·2 g. dissolved in 18 ml. of distilled water ga an isotonic solution. Two patients had 0·4 g. in 4 ml for long periods by slow intrathecal injection with onl temporary pain, which could be minimised by dilutio and slow injection, and aggravated by concentration o rapid injection. The volume of C.S.F. withdrawn befor injection did not affect the severity of the pain.

A temporary pleocytosis in the C.S.F., similar to that recorded by McDermott (1947), was observed in case 5, 10, and 11 accompanied by signs of an acute increas in generalised meningeal irritation, lasting in case 11 for 24 days, and in cases 5 and 10 in a subacute form during the course of intrathecal injections. The onset of pleocytosis, mainly polymorphonuclear, and the acute meningeal irritation (case 11) coincided with the start of intrathecal injections. The pleocytosis reached a maximum in 3 or 4 days with cell counts of 8200 (polymorphs 66%), 1040 (polymorphs 72%), and 1280 (polymorphs 90%) per c.mm., compared with 25 (no polymorphs), 226 (polymorphs 49%), and 60 (polymorphs 90%) per c.mm. before intrathecal therapy.

A moderate mental confusion developed in case 5, but there was no evidence to incriminate disease or drug in no instance did delirium or major mental disturbance appear. The attitude of the patients to repeated lumbar puncture was one of cooperation, in spite of the unavoidable discomfort and occasional subsequent pain.

Signs of irritation of peripheral nerve-roots were seen in cases 5 and 11, and pain on pressure over the sciatic nerve, hyperalgesia and loss of tendon-reflexes referable to the site of injection, and pain over the sacrum in case 5. These signs resolved after withdrawal of the streptomycin.

After repeated injections, piercing the meninges caused acute local pain in cases 5 and 11. Acute cramp-like pain in the distribution of the sciatic nerve at the site of injection and lasting about 5 min. was noted in cases.

The neck-rigidity, opisthotonus, and root signs reported in case 5 decreased on trial omission of the streptomycin and reappeared on its re-exhibition. At the end of the course of streptomycin the signs quickly disappeared; the cytology and chemical pathology reverted to normal more slowly.

Necropsy of the spinal cord in cases 1, 10, and 11 revealed a local non-specific meningitis.

Heparin 2 mg. injected in the streptomycin solution showed no local or systemic toxicity.

DEVELOPMENT OF RESISTANCE TO STREPTOMYCIN

Strains of tubercle bacilli isolated before and after therapy were tested for sensitivity to streptomycin. Except in the 4 cases of meningitis and the case of acute miliary tuberculosis, from which no organisms were recovered before therapy, all 12 strains fell within the range of sensitivity of 0·25–0·5 µg. per ml. of streptomycin base. By comparison at the same time the laboratory human strains H37 and CN844 were sensitive at 0·5 µg. per ml., and the bovine strain CN809 at 1·5 µg. per ml. In 6 of the 7 cases from which the organism could be recovered immediately after 3 months' therapy there was a well-marked increase in resistance (see table). The test medium was Long's synthetic medium to which had been added 2% agar, 0·025% lecithin, and 0·005% 'Teepol.'

SENSITIVITY OF STRAINS OF TUBERCLE BACILLI BEFORE AND AFTER STREPTOMYCIN TREATMENT

Case no. ..	5	7	9	10	11	12	13	14
Before (µg./ml.)	0·5	0·5	0·5	0·5	0·5	0·5	0·25	0·5
After (µg./ml.)	25	64·0	—	0·5	12·5	4·0	1·2	12·5

Tests for sensitivity both before and after streptomycin revealed that growth was stimulated by streptomycin at a concentration just too low to inhibit it. This concentration was commonly 0·25 µg. per ml. before and after treatment and was independent of the composition of the media, being observed also with those of Corper, Petragnani, and Dubos and Davis (1946).

The clinical and histological evidence focused attention on the contrast between the ineffectivity of streptomycin in established phthisis and the healing of the young lesions of miliary tuberculosis. In an attempt to clarify this behaviour of streptomycin we carried out the following experiments in vitro.

A 14-day culture of H37 strain of tubercle bacilli of human origin grown on Petragnani slopes was washed from the slopes, lightly shaken with stainless steel balls, washed with saline, resuspended in isotonic saline to give a concentration of 0·5 µg. per ml., and stored at 37°C for 24 hours. It was next exposed to streptomycin in concentrations of 10,000, 1000, 100, 10, and 1 µg. per ml. for 24 hours, 10 days, 14 days, and 30 days before being reinoculated on to Petragnani slopes. At 24 hours no concentration of streptomycin inhibited the subsequent growth of the bacilli; after 10 days concentrations of 100, 1000, and 10,000 µg. per ml. inhibited growth; and after 14 days 10 or more µg. per ml. inhibited growth—a position which remained unchanged after 30 days.

We interpret these results to mean that streptomycin is not bactericidal.

In a second experiment the same culture of tubercle bacilli 0·5 µg. per ml. was immediately—i.e., without being stored for 24 hours at 37°C—sown on to solid Petragnani slopes containing various concentrations of streptomycin; the tubercle bacilli did not grow at concentrations above 0·5 µg. per ml. Similar results were reported by Middlebrook and Yegian (1946).

DEMONSTRATION OF VIABLE TUBERCLE BACILLI

We found it difficult to demonstrate viable tubercle bacilli in the body fluids of about half the patients treated with streptomycin. During periods of clinical improvement, and when many acid-fast bacilli were demonstrable in direct or concentrated smears, adequately controlled cultural methods repeatedly failed. That the difficulty is not entirely due to the lack of a specific reversal agent in the media is suggested by the fact that the tubercle bacilli isolated by animal inoculation at the same time appeared to be of low virulence to guineapigs. Thus, in cases 5, 9, 13, and 17 the inoculated guineapigs lived more than 6 months and, when killed, showed typical generalised tuberculosis.

DISCUSSION

Observers mostly agree that human and bovine strains of tubercle bacilli are inhibited from reproduction on favourable media in vitro by concentrations of streptomycin base ranging from 0·25 to 1·5 µg. per ml. Since there is no difficulty in maintaining a constant concentration in blood and C.S.F.—but not in brain substance (Baggenstoss et al. 1947)—of many times this amount, there is a logical experimental basis for the clinical findings.

The possibility must be considered that in the 4 cases of uncomplicated meningitis the disease and its resultant changes were too well established to respond to chemotherapy. Only case 1 appeared to show a temporary modification of the usual course. Certainly chemotherapy cannot be expected to influence, for example, the mechanical blockage of the foramina which is a terminal hazard in tuberculous meningitis. In this connexion it is regrettable that the apparent therapeutic value of heparin (see below) had not been observed at this time.

A recovery is recorded in a case of proved tuberculous meningitis complicated by extensive fibrocaseous pulmonary tuberculosis (case 5). For 62 days, during which large doses of streptomycin were given intrathecally, the concentration in C.S.F. was at least 24 µg. per ml. for the first 16 days, and thereafter at least 82 µg. per ml. During the last 25 days 2 mg. (260 I.U.) of heparin was given intrathecally daily. No evidence is offered here that these large doses of streptomycin are necessary, and the combination of smaller doses with heparin may be preferable.

The extensive healing of the miliary tubercles in cases 10, 11, and 15 was in striking contrast with the lack of healing in the progressive cases 6, 7, and 13. Not only did the serial radiograms show regression of the fine miliary tubercles in cases 10 and 11, but there was also complementary post-mortem pathological and histological evidence. In the uncomplicated picture presented by case 10 successful repair was far advanced and only minute inflammatory foci, containing no bacilli, marked the original tubercles. Though in case 11 a second phase was superimposed on the original lesion, the picture was identical. In striking contrast is the evidence of progressive disease furnished in cases 6 and 13 by the clinical, radiological, and necropsy records.

The explanation of the different effects of streptomycin must be sought in the different nature of the two pathologies. It might be supposed that the strains of tubercle bacilli, shown here to be originally equally susceptible to streptomycin, would suffer a common fate when exposed to apparently identical chemotherapy; but this is not so. Under the cloak of "apparently identical chemotherapy," very different forces are brought to bear on the tubercle bacillus. In miliary tuberculosis of the lungs arising from a hæmatogenous spread, bacillary foci may be subjected to both natural resistance (phagocytosis, &c.) and the specific chemotherapy of streptomycin. Whether this combined operation is successful must largely depend on the efficiency of the tissue reaction.

It is legitimate to infer that in those lung conditions in which therapy failed the tissue reaction was ineffective. *A bronchogenic focus is a typical example*; here the first lodgment of the bacillus is followed by pathological changes which prevent tissue resistance, in particular blood-borne resistance, from playing an effective part.

It is convenient to speak of this aspect of the host-parasite relationship as environment. We are concerned here with only those aspects of environment which influence bacterial growth and reproduction and thus reflect changes in the metabolism of the bacillus. The experimental finding that only the dividing tubercle bacillus is susceptible to streptomycin clearly reveals the device (if self-preservation may be so called) by which the tubercle bacillus survives. The capacity of the resting tubercle bacillus to develop resistance by by-passing the particular metabolic process with which streptomycin interferes does not conflict with the known facts of its inexacting metabolic requirements.

In the present series, 6 strains of tubercle bacilli which could be isolated immediately on completion of the course had acquired a resistance to streptomycin which was between five and a hundred times as great as the initial resistance. It seems significant that two of the cases which acquired resistance (cases 11 and 13) showed a preliminary clinical improvement followed by rapid deterioration. The histological study of case 11 (see addendum) provides an interesting commentary on the clinical report. The "type-I reactions" are healed tubercles in which no bacteria can be detected; they correspond in time to a phase of clinical improvement and radiographic evidence of clearing of the miliary picture; they also correspond in time to the isolation of a strain of tubercle bacillus susceptible to 0·5 μg. per ml. of streptomycin. The "type-II reactions" are young active tubercles without signs of repair and containing enormous numbers of fine acid-fast bacilli. The onset of this second phase corresponds to clinical deterioration, the reappearance of miliary tubercles seen on radiography, and the isolation of a strain resistant to 12·5 μg. per ml. of streptomycin. Case 13 showed clinical and radiological evidence of improvement for 6–8 weeks and subsequently a phase of rapid deterioration. Once again the second phase was associated with an increase in resistance, though not a very great one.

Both the terminal clinical phases and the necropsy findings in cases 11 and 13 emphasise that the deterioration was associated with unrestrained aggression by the tubercle bacilli. Case 11 at all stages showed lymphatic involvement but in the terminal state illustrated complete and gross tuberculosis of the lymphatic chain associated with enormous numbers of tubercle bacilli. Case 13, originally a low-grade infection, in its terminal stages showed overwhelming infiltration, progressing to empyema with erosion of the intercostal muscles.

The experimental observation, that streptomycin in a concentration just too low to inhibit the growth of tubercle bacilli stimulates growth, appears to have an added significance in the light of these observations. The fact that the optimal inhibition by streptomycin is exerted on the dividing cells of a sensitive strain no longer constitutes an embarrassment to a resistant strain.

The remarkable increase in resistance in strains of tubercle bacilli recovered from cases other than miliary tuberculosis is in contrast with the animal experimen in which resistance was not developed during a simil period of chemotherapy (Brownlee and Kennedy 1948 *a fact which emphasises the important effect of enviro* ment on the metabolism of the bacilli. Whether simil changes in metabolism are sufficient to explain t difficulties encountered in recovering the organism culture and by animal inoculation after streptomyc therapy is worthy of further inquiry.

The experimental evidence for the synergism of sulph trone and streptomycin is strong (Brownlee and Kenne 1948b); but the clinical evidence, owing to the natu and limited number of the cases, does not provide clear-cut answer. The impression persists, however, th the cases treated by combined therapy responded mo favourably than they would have done on either dr alone. We are convinced that the status of both dru justifies a clinical trial of their combined use in milia tuberculosis of the lungs.

For tuberculous meningitis to be treated successfully local chemotherapy, it seems essential that the ca should be treated early. Any means which can be fou to prevent blocking of the median and lateral forami should be adopted; our experience suggests that t daily intrathecal injection of 2 mg. (260 I.U.) of hepar may prove effective. Our experience suggests that milia tuberculosis of the lungs may be successfully treat but that generalised miliary tuberculosis should presumed in these cases and intrathecal thera instituted.

We believe that the systemic exhibition of strept mycin is contra-indicated in the presence of chron lesions of lungs or lymph-nodes, because it may stim late resistant strains to rapid reproduction. The u of the drug is justified in tuberculous meningitis an miliary tuberculosis however, since they do no respond to any other treatment.

SUMMARY

In 17 cases of tuberculosis affecting different orga parenteral streptomycin was given for periods of betwe 13 hours and 3 months. The intramuscular four-hour dose of 0·2–0·4 g. of streptomycin base gave blood leve of 6–16 μg. per ml. The intrathecal dose of 0·2–0·4 g injected once daily, gave C.S.F. levels of 3–80 μg. per ml after 24 hours.

In 6 of the 17 cases sulphetrone by mouth was als given, leading to a blood-sulphetrone level of 7–8 mg per 100 ml. in 2 cases, and 2–4 mg. per 100 ml. in 4 cases

The toxic manifestations were trivial.

Of 4 cases of uncomplicated meningitis treated wit streptomycin only, 1 showed a temporary modificatio of the usual course of the disease.

Within the same group, 1 adult with proved tuberculous meningitis, complicated by extensive fibrocaseous pulmonary tuberculosis, recovered from the meningitis. The tuberculosis of the lungs did not improve.

In 3 cases of miliary tuberculosis of the lungs complicated by tuberculous lesions elsewhere there was radiological evidence of temporary progression and apparently total regression of the miliary tubercles. In 2 of these cases, in which necropsies were done, histological study showed that the original tubercles were healed or healing, and that acid-fast bacilli were absent. The third patient, who received sulphetrone also, is alive and well.

Except for 2 cases which became *clinically resistant*, the results in all the cases were equivocal; but those patients who received sulphetrone *also* appeared to do better.

All twelve strains of tubercle bacilli isolated before treatment were sensitive to streptomycin: all six strains isolated immediately after treatment were five to a hundred times more resistant. This is contrasted with experiments in animals.

In 2 cases (one of generalised lymphatic tuberculosis, other of chronic pulmonary tuberculosis) from strains resistant to streptomycin were isolated resistance developed during adequate therapy.

Difficulty was experienced in demonstrating by culture by guineapig inoculation viable tubercle bacilli body fluids containing numerous acid-fast bacilli obtained from about half the patients during omycin treatment.

The possibility of producing resistant strains which be stimulated to rapid reproduction contra-indicates exhibition of streptomycin in the presence of a onic lesion of lungs or lymph-nodes.

The intractable nature of tuberculous meningitis and iary tuberculosis justifies the use of streptomycin; y diagnosis is vital, and the combined use of ptomycin and heparin is suggested.

We wish to thank Mr. C. R. Kennedy and Mr. A. E. Fenton, the Wellcome Research Laboratories, for isolating and tifying the strains of tubercle bacilli, and testing their stance; and Mr. S. R. M. Bushby for most of the ptomycin estimations.

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Histology of Typical Lesions after Streptomycin

(PROF. G. PAYLING WRIGHT)

The necropsy material in two fatal cases (11 and 10) was studied histologically to determine the tissue changes developing in cases of tuberculosis that had undergone protracted treatment with streptomycin.

CASE 11

In the lungs, liver, and kidneys two quite distinct types of reaction are present. Both are probably of a miliary tuberculous nature. The first, whose tuberculous ætiology might otherwise be in doubt, closely resembles that found in case 10, who is known to have had miliary tuberculosis. The second, though histologically atypical, contains very large numbers of acid-fast bacilli, morphologically like tubercle bacilli, in every characteristic lesion.

Type-I Reaction.—These lesions are small ovoid nodules, 400–600 μ long, lying irregularly in the affected organs regardless of their pre-existing normal structure. Fibroblasts are the most common cells in these lesions, many of which also contain some histiocytes and plasma cells. Most of the nodules are vascularised by small blood capillaries. No giant cells or typical epithelioid cells are present in any of the nodules, nor do any of them show signs of caseation. Gland-like remains of alveoli, such as are often found in areas of fibrosis in lungs, are occasionally present in and about the nodules. Between the cells of the nodule, and usually separating them fairly widely, are small irregular structureless masses which stain a light pink with eosin and a deeper pink with van Gieson's stain. From its morphology and staining reactions, this material is almost certainly recently deposited collagen. No acid-fast bacilli are present in any nodules of this type.

Type-II Reaction.—These lesions have an entirely different character and structure from those of type I, though, like them, they are distributed irregularly throughout the organs affected. They are roundish, and usually range from 200 μ to several millimetres in diameter; occasionally they are even larger. They are formed almost entirely of vast numbers of closely packed, degenerating, and dead histiocytes, though a few plasma cells are occasionally present near their margins. Only in the spleen are typical tubercles, with Langhans-type giant cells, found, and here they are fairly numerous. In the larger typical lesions the central parts are beginning to caseate, though the presence of much basophilic nuclear debris shows that this change only began shortly before death. All type-II lesions contain enormous numbers of fine acid-fast bacilli. There are no signs of any fibrous tissue reaction round the margins or in the vicinity of any lesions of this type.

Lesions in Individual Organs.—*Lungs:* numerous foci of both types distributed throughout the section. *Ileum:* active tuberculous lesions in both the submucosa and subserosa. *Liver:* one large and many small recent lesions; some of the older variety. *Pancreas:* nothing abnormal seen. *Spleen:* many lesions of both types. *Kidney:* one large recent and three old lesions. *Prostate:* nothing abnormal seen. *Thyroid:* many large recent lesions. *Brain:* very little cellular reaction in subarachnoid space; many acid-fast bacilli present.

CASE 10

In many of the organs small foci are present which have the following histological structure, and closely resemble the lesions of type I in case 11. The lesions are nodular, roughly 200–400 μ in diameter, and are distributed irregularly in the organs regardless of their pre-existing normal architecture. They exhibit various proportions of cells and intercellular material, though in most nodules the latter much predominate. All contain a large proportion of fibroblasts and smaller proportions of other types of cell. Histiocytes can be readily recognised from the dust particles in their cytoplasm. Some nodules contain many lymphocyte-like cells. No giant cells or typical epithelioid cells are present in any nodule. Many of the foci are vascularised by fine blood capillaries. All the nodules contain many small irregular masses of intercellular material, which stain pink with eosin and bright red with van Gieson's stain, and are thus almost certainly collagen. The amount of this material and the number of lymphocytes in the nodules appear to vary inversely. All evidence of the previous architecture of the tissues seems to have disappeared from these nodules, except in the lungs, where small gland-like acini, the remains of former alveoli, are sometimes discernible. No acid-fast bacilli are present in these lesions.

The lesions give the impression of being minute inflammatory foci from which the bacilli have disappeared and in which the reparative changes are far advanced though not yet complete. They may thus be regarded as indicating successful defence and reparative healing.

Lesions in Individual Organs.—*Heart:* nothing abnormal seen. *Lungs:* many characteristic nodules; some intra-alveolar œdema. *Liver:* some typical nodules, differing only from the above reaction in being rather smaller and less cellular; their distribution is irregular. *Pancreas:* nothing abnormal seen. *Spleen:* many typical nodules. *Adrenal:* nothing abnormal seen. *Meninges:* a section from the interpeduncular space shows a characteristic tuberculous reaction, with some giant cells and many epithelioid cells and lymphocytes; some of the larger foci show early caseation; no acid-fast bacilli found.

COMMENT

Though both the type-I and the type-II lesions are almost certainly of a generally disseminated miliary tuberculous nature, they present such different histological features and, by inference, such a different host-parasite relationship, that it is difficult to reject the view that they resulted from separate bacteræmias with bacilli of very different grades of virulence. The alternative explanation—that the resistance of the host had changed considerably between the two phases of dissemination—seems less probable in view of the comparatively short interval which, from the clinical history of the patient, appears to have separated the two events.

In type-I lesions all the many foci show every sign that the local infection has been successfully countered, for in all the nodules the processes of organisation and fibrosis are almost complete. These lesions closely resembled those described by Baggenstoss et al. (1947) for their case 3. In type-II lesions, which appear to have resulted from a more recent dissemination of bacilli, the foci seem to have been extending rapidly at the time of death. The lesions of this type might correctly be described as acute histiocyte abscesses. Except for some foci in the spleen, none of the lesions of either type resembled a typical miliary tubercle.

PRIMARY SPLENIC ABSCESS

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Wallace (1922), of Northern Rhodesia, appears to have been the first to describe primary splenic abscess in the African. He saw 49 cases in Broken Hill within a few years and gave an accurate account of its clinical features. The illness ran a relatively short pyrexial course with, as a rule, much constitutional disturbance. Wallace was not certain of its cause. He did not find the amœbic organism in any of his cases, and surface culture made on agar slopes at operation or post mortem never showed any growth. Wallace excluded various fevers, including relapsing, undulant, and typhus fevers, and syphilis. In some cases he recovered a spore-bearing bacillus, which he held responsible for the gas he found in the abscess.

In some of the cases reported by Wallace the condition of the spleen macroscopically resembled multiple infarction, though in most of them the entire splenic tissue was replaced by pus. I have reported sporadic cases in Mashonaland, the cause of which I could not determine (Gelfand 1947), and have suggested that splenic abscess may be a late stage of infarction in which the total blood-supply of the spleen is lost after thrombosis of the splenic vein, liquefaction with colliquative necrosis resulting. In this respect it is interesting that Wallace believed splenic abscess to be a manifestation of influenza, the causal bacillus producing the thrombosis in the spleen with subsequent softening, which was followed by invasion by gas-forming organisms from the intestine.

Wallace observed that many of his patients later developed thrombosis of the leg veins, with swelling and œdema of the affected limb. He reported inexplicable cases of cerebral and intestinal thrombosis. It is probable that these cases which Wallace encountered had idiopathic thrombophlebitis. This was later recognised as such by Fisher (1941) working in the copper belt, Northern Rhodesia.

In the case I previously reported (Gelfand 1947) a large gas shadow was seen radiographically in the abscess. In the present case a very large gas shadow is also visible. Efforts to demonstrate the cause of the gas shadow, such as gas-producing bacillus, proved unsuccessful.

CLINICAL PICTURE

Though the ætiology of primary splenic abscess remains obscure, the illness as a rule runs a characteristic course, and the diagnosis can usually be determined with little difficulty. The disease is generally seen in relatively young adults aged 18–35. My patients so far have all been males, though Wallace (1922) reports that 3 of his 49 were women. All of mine have insisted that their health was good before the onset.

The illness begins with abdominal pains, worst over the left hypochondrium. Simultaneously the patient develops pyrexia, which may be moderate or severe. He feels ill, and as a rule stops working. Soon the spleen begins to enlarge and, after a few days or a week, he becomes aware of a swelling over the splenic This swelling rapidly increases in size, and a few later can be seen as an abdominal tumour.

The tumour is tender, though later the becomes less and may indeed be absent. The of the swelling follows that of a splenic tumour. I enlarges downwards and inwards, towards and past the umbilicus. Unless one is observant, the may be labelled as one of ascites, for the abdominal wall may be much distended by the There is usually, but not always, a tympanitic note the tumour. Wallace, who placed much reliance this sign, wrote: "An abdominal tumour which sponds in position and shape to an enlarged spleen which is tympanitic on percussion is, I consider, nomonic of splenic abscess." A fluid thrill may felt. In the case reported below, a succussio was clearly audible on turning the patient som rapidly on to either side. The blood usually shows moderate leucocytosis.

Generally the patient will appear for treatment largely because of the abdominal swelling, which reaches its maximum within a fortnight. After this it remain constant in size. It would be interesting to know how long a patient with such a large collection of pus may continue without serious consequences. One young adult native male had an acute swelling which reached its greatest extent within two weeks, and I saw him in apparently good health four years later, with an enormous splenic tumour. According to Wallace, the tumour, if left untreated, usually ruptures into the abdominal cavity. This possible event I have not so far encountered, though it appears the most obvious complication.

DIAGNOSIS

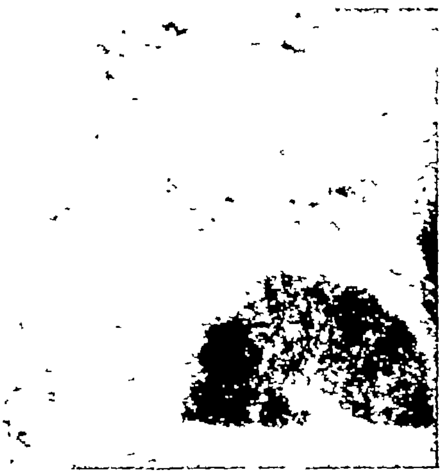
As a result of the gross enlargement of the spleen, the left dome of the diaphragm is considerably raised, producing a distinct dullness, with a poor air entry or absent breath sounds, posteriorly at the base of the left lung. Thus the condition may easily be mistaken for pneumonia or an empyema in this region.

The elevation of the left dome can best be demonstrated radiologically. As a result, too, the heart is displaced to the right side (see figure). In my last three cases gas shadows were demonstrable. Wallace (1922) believed that gas-forming organisms were responsible for the gas he found in the abscess at operation. I have not, so far, been able to isolate any such organism. The radiological appearance of the gas shadow beneath the much elevated left dome of the diaphragm, with a fluid level below, might be attributed to the gastric gas shadow normally seen on radiography. This is possible but very unlikely, since the stomach lies beneath the spleen, and therefore, with so great a splenic enlargement, one would expect it to be displaced downwards and medially.

Thus, radiologically, there are three points which make the diagnosis of primary splenic abscess almost certain:

(1) Elevation of the left dome of the diaphragm
(2) Contralateral displacement of the heart.
(3) A gas shadow below the dome and above a distinct fluid level. So large a gas shadow with a fluid level may be mistaken radiologically for a hydropneumothorax or an eventration of the left dome of the diaphragm.

After positive radiological proof has been obtained the diagnosis is confirmed by aspiration. The pus is chocolate brown or reddish-brown and very like anchovy-sauce pus; but this colour is probably derived from the deep brown splenic tissue. Microscopical examination reveals amorphous material with little structure and few or no pus cells. Culture is usually sterile. Amœbæ are not demonstrable.



X-ray photograph of chest showing elevation of left dome of diaphragm almost to level of sixth intercostal space, with large gas shadow and fluid level below, and heart displaced to right.

In the present case a careful effort was made to isolate the gas-producing organism in the pus, but this proved unsuccessful. There was no history suggesting amœbic disease. Amœbic abscess of the spleen has previously been reported, but the course in primary splenic abscess is quite different. This applies particularly to its rapid onset and the appearance of an enormous tumour within a short time. Emetine is without effect.

TREATMENT

The treatment of primary splenic abscess recommended by Wallace is surgical drainage. So inflammatory a tumour cannot be removed, owing to the perisplenic adhesions. Secondly, the tumour is so enormous that successful removal in toto is rendered impossible. On the other hand, aspiration is often disappointing: owing to the chronically inflamed capsule which is left behind, a pus-discharging sinus usually persists many months.

CASE-RECORD

An adult native male, aged about 27, was admitted to the Native Hospital, Salisbury, on June 29, 1946, his home lay in the Mrewa Reserve, about 55 miles away. He was intelligent and gave a coherent account of his illness. He was apparently in very good health until a week before admission, when he had noted pain in the splenic region and a mass which had rapidly increased in size. The mass had reached its present size in about seven days. Otherwise he made little complaint, there being no cough, headache, vomiting, or history of hæmoptysis. There was no previous history of dysentery, diarrhœa, or any disturbance of micturition.

On examination he was poorly nourished and thin. Conjunctivæ well coloured. Corneal opacity in right eye. No icterus. Tongue furred, but edges of good colour. Gums not spongy. Well-marked signs of pellagra over legs, forearms, and trunk. No œdema or adenopathy. Fingers not clubbed. Neck veins slightly distended.

Temperature on admission 101·6°F, and this figure was maintained to a greater or less extent both before and after the operation. Apex-beat about 1 in. within left nipple line. *Systolic murmur present, best heard over mitral area.* Dullness both anteriorly and posteriorly in lower zone of left lung. Scattered rhonchi audible in rest of left lung and in right lung.

Blood-count: red cells 4,310,000 per c.mm., Hb 67%, colour-index 0 77, white cells 17,300 per c.mm. (neutrophils 37%, lymphocytes 52%, monocytes 9%, eosinophils 2%).

A large fluctuating swelling occupied the left hypochondrium and the epigastrium. *Umbilicus displaced downwards.* Lowermost limits of swelling extended to about 2 in. to right of and just below umbilicus. Lower edge of swelling could be fairly easily defined. Mass slightly tender; fluid thrill easily elicited. On moving the patient on to either side a succussion-splash was also audible. Mass resonant to percussion. Both flanks dull. Whole abdomen distended, superficially resembling ascites.

Radiography of chest showed left dome of diaphragm to be considerably elevated, reaching up to sixth intercostal space. Beneath dome was a gas shadow about $3^1/_2$ in. high and about 5 in. across. Below gas shadow was a dense shadow showing a fluid level. Heart displaced to right (see figure).

Wassermann reaction of blood negative. No parasites found in stools. Urine contained albumin and numerous leucocytes.

On the 30th a diagnostic aspiration was performed and the diagnosis of splenic abscess confirmed. The pus was of an anchovy colour. No organisms were isolated on culture of the pus, and no amœbæ were discovered. The cytology of the pus revealed nothing characteristic, only a few scattered pus cells being present.

Treatment and Progress.—The case was referred to Mr. E. Barnett, who drained the abscess on July 3. At least 14 pints of watery chocolate-coloured pus was evacuated. Two drains were inserted through the abdominal wall, one laterally and the other anteriorly. After the operation a course of emetine was administered (gr. 1 daily for ten days by intramuscular injection) but without any significant effect on the discharge.

The patient made satisfactory progress in hospital except that pyrexia up to 101·5°F continued in an irregular manner and the pus continued to discharge through the anterior drain. His general condition, however, was much improved. He was discharged from hospital in the middle of August and returned to the clinic in the Mrewa Reserve. Inquiries made at the clinic a month later revealed that the discharge from the abdominal sinus was still fairly profuse.

SUMMARY

A case of primary splenic abscess in a young African adult is described.

The chief radiological signs of the disease include elevation of the left dome of the diaphragm; a large gas shadow, with a fluid level, beneath the left dome of the diaphragm; and contralateral displacement of the heart.

The clinical features of primary splenic abscess are described.

My thanks are due to Dr. R. M. Morris, medical director of Southern Rhodesia, for his kind permission to publish this paper.

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ANTITHYROID ACTIVITY OF ERGOTHIONEINE IN MAN

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With comments by

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THE finding of Lawson and Rimington (1947) that ergothioneine has an antithyroid effect of a magnitude similar to that of thiouracil when tested in rats is of great interest, as has already been pointed out (*Lancet* 1947). The natural occurrence of this substance in blood suggested that it might be involved in the regulation of thyroid function. Also, since the quantity in the blood is said to depend partly on the diet (Eagles and Vars 1928), it seemed possible that this substance might be important in the genesis of simple goitre. It was therefore desirable to test the antithyroid effect of the compound in man. A simple method for doing this, using radioactive iodine, has recently been described (Stanley and Astwood 1947).

The ergothioneine was isolated from commercial powdered extract of ergot (Lilly) by the method of Pirie (1933). It was purified by recrystallisation from water as the hydrochloride and converted to the free substance by neutralisation of an alcoholic solution of the hydrochloride with pyridine; the precipitated free ergothioneine was dried in vacuo over sulphuric acid. The hydrochloride melted at 210–211°C (uncorrected), and the free substance at 260–265°C (uncorrected) with decomposition. Analysis showed—

Calculated for $C_9H_{15}O_2N_3S$: C, 47·17 ; H, 6·59 ; N, 18·33 ; S, 13·98.

Found : C, 47·14, 46·89 ; H, 6·36, 6·51 ; N, 19·05, 18·87 ; S, 14·17, 14·28.

The intensity of the colour produced with Hunter's reaction (Hunter 1928) was in agreement with the artificial phenol-red standard solution described by Hunter. The substance gave a positive test with Grote's reagent (Grote 1931). After addition of the material to whole blood, so that the final concentrations were 2 to 12 mg. per 100 ml., analysis by Hunter's method, after deproteinisation with tungstic acid, revealed an average recovery of 60%. Attempts to determine the material in whole blood after its administration were uniformly unsuccessful, indicating that concentrations in the blood of more than 0·05 mg. per 100 ml. were not achieved with the doses used.

Ergothioneine was administered by mouth to five normal persons in doses of 50, 200, and 400 mg., and intravenously in doses of 120 and 400 mg. Fig. 1 shows that each of the tests with radioactive iodine on these persons was completely negative. Fig. 2 shows the results obtained in four normal persons: one untreated; one injected intravenously with 1 g. of sodium thiosulphate, a substance said to be beneficial in thyrotoxicosis (Biancalana 1947); and, for purposes of comparison, one given 10 mg. of mercaptoimidazole, a potent antithyroid agent, and one given 50 mg. of methylthiouracil.

In view of these unexpected results ergothioneine was tested in rats by the usual method of feeding in the diet (Astwood et al. 1945), and by the method of Lawson and Rimington (1947) of daily subcutaneous injections. The daily injection of as much as 5 mg. to rats weighing 50–100 g. exerted no significant effect on the weight or on the iodine content of the thyroid gland in ten days. Likewise, the feeding in the diet of as much as 0·03% of ergothioneine for ten days was completely without effect on the thyroid gland. Parallel experiments with small doses of thiouracil yielded the usual result.

To test the possibility that some other antithyroid compound closely related to ergothioneine might be present in the ergot extract, a crude preparation consisting of the entire cuprous ion-precipitable material was fed to rats for ten days. Each animal received a quantity of "ergothioneine" amounting to 20 mg. daily as determined colorimetrically. The weight and the iodine concentration of the thyroid glands remained unchanged. Similar tests with sodium thiosulphate administere subcutaneously in doses of 0·5 and 5 mg. twice dail or given in the diet in 1% concentration were entirel negative.

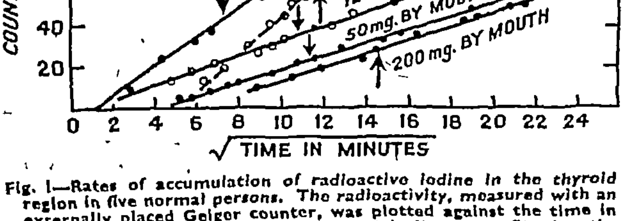

Fig. 1—Rates of accumulation of radioactive iodine in the thyroid region in five normal persons. The radioactivity, measured with an externally placed Geiger counter, was plotted against the time in minutes on a square-root scale, and straight lines were fitted to the points by eye. The arrows indicate the time when the ergothioneine was administered either by mouth or intravenously (I.V.), and the various doses expressed in mg. of the hydrochloride are shown. It is to be noted that no significant deviation from the predicted rectilineal curve of uptake was brought about by the ergothioneine.

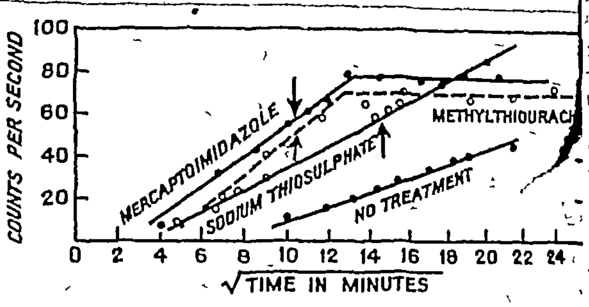

Fig. 2—The course of iodine accumulation in four normal persons shown for comparison with fig. 1. The usual straight-line course was observed in the untreated subject. The intravenous injection of 1 g. of sodium thiosulphate did not modify the course of iodine uptake. The administration of 50 mg. of methylthiouracil by mouth caused the iodine uptake to cease, and the inhibition lasted for four hours. Mercaptoimidazole in a single dose of 10 mg. by mouth completely inhibited the iodine accumulation; in this instance the effect lasted for twenty-four hours.

It was concluded that, by the methods used, th substance isolated from ergot extract, giving appropriat analytical data for ergothioneine, failed to exhibit a antithyroid effect in the human being, or in the rat, i the dosages employed.

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Comments

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Professor Astwood has kindly allowed us to read his communication with Dr. Stanley. We have some comments to make on their findings, and further observations to report.

Since our first publication (Lawson and Rimington 1947) we have obtained sufficient ergothioneine to carry out therapeutic trials in two patients with thyrotoxicosis. The drug was administered by intramuscular or subcutaneous injection at a level of 100 mg. of hydrated hydrochloride, equivalent to 79 mg. of ergothioneine base, per patient per day for fourteen days in one case and seventeen days in the other.

This amount was chosen as being roughly equivalent, from our previous rat tests, to the dose of thiouracil normally given by mouth to thyrotoxic patients in University College Hospital. In neither case was there any change in the basal metabolic rate or other sign of clinical response.

Much effort has been spent on the problem of the quantitative determination of ergothioneine in whole blood, plasma, and urine; but so far a reliable procedure has not been devised. Experience with the Hunter (1928) method quickly showed that, though satisfactory for solutions of pure ergothioneine, it was inapplicable to biological fluids. Recoveries of ergothioneine added to blood or even to blood filtrates were low and variable, and such losses were particularly great with plasma. Some, but not all, of the factors responsible for these irregularities have been detected.

Sullivan and Hess (1933) have used Folin's uric-acid reagent for the determination of ergothioneine in urine, but they were able to isolate only a small percentage of which this reagent indicated to be present. se of this method appeared to us unsafe until results be confirmed by a more specific procedure. Our ue, Dr. C. E. Work, has therefore adapted the que of paper-partition chromatography to the m in a roughly quantitative manner, details of h will shortly be published. This method, which the great merit of specificity, afforded figures for l urinary excretion of about 150 mg. of ergothioneine ly. In view of such a surprisingly high figure, it may be that the dosage level of 79 mg. used for our ats was totally inadequate.

Astwood and Stanley have apparently experienced same difficulty with the Hunter technique as we have, we do not understand their statement that blood-thioneine levels no higher than 0·05 mg. per 100 ml. e achieved with the doses they used in normal s. If this is the total ergothioneine they measured, less than 1% of the amount stated by Hunter to be nt in normal human blood.

Astwood and Stanley have also not observed a lowering the iodine content of the thyroid glands of rats dosed h ergothioneine by mouth or even by injection of amounts of the drug. This difference from our own ts we cannot at present explain.

There seems to be no reasonable doubt about the ity of the materials used. Our preparations, d in vacuo, afforded the following figures on lysis:

Preparation A: melting-point 112°C. Found: N, 15·87, S, 11·95, 12·08; Cl, 13·35, 13·33.

Preparation B: melting-point 112–113°C. Found: C, 39·85; H, 6·21; S, 12·25.

Theoretical: C, 40·76; H, 6·04; N, 15·82; Cl, 13·37; 12·05.

all experiments the material given was the hydrochloride.

When we first used the extraction method of Pirie (1933) without modification, we invariably obtained, ther with ergothioneine, a product which was inactive the rat test and appeared to be guanine. Guanine gives intense colour with the diazo reagent but no colour the gold-chloride test, and is free from sulphur. When method of extraction was modified, a good yield of thioneine was regularly obtained.

In constructing our reference assay curve for thiouracil by the rat method,* we noted that the line we obtained ting thyroid iodine to dose per kg. of body-weight log. scale) was displaced much to the left of that lished by McGinty and Bywater (1945). In other ds, the fall in iodine content of the glands from the an figure of the controls (about 58 µg. per 100 mg. of t weight) was some three or four times greater in our mals than in those of the Detroit workers. This erence may be due to differences in the iodine contents the basal diets, since Vanderlaan and Vanderlaan (1947) have shown that antithyroid drugs of the thiouracil pe do not lessen the power of the glands to concentrate dide from the blood, and that the residual level of dine determined in the glands of drug-treated animals resents mainly the inorganic iodide which these have taken up from the body fluids. McGinty and Bywater (1945) say they fortify their diet with 12 µg. of iodine per rat per day, given as potassium iodide. Our basal diet was unfortified. It is at present being analysed for iodine.

We also noted that, whereas thiouracil in doses of 2·5 mg. or more per kg. of body-weight brought the gland iodine of our animals to a minimum of about 5 µg. per 100 mg. of body-weight, even large doses of ergothioneine rarely lowered this beyond about 10–15 µg. per 100 mg. of body-weight. The reason for this difference is not clear.

Astwood and Stanley mention that they did not note any hyperplasia of the thyroid produced by ergothioneine. In our experience this was not pronounced (at 20 mg. per kg. of body-weight subcutaneously for fourteen days) but, we venture to think, unmistakable, as in the following example:

WEIGHT OF THYROIDS OF CONTROL AND ERGOTHIONEINE TREATED RATS DOSE 20 MG. PER KG OF BODY-WEIGHT SUBCUTANEOUSLY FOR FOURTEEN DAYS

—	Controls			Treated			
Body-wt. (g.)	166	144	145	151	171	157	173
Thyroid wt. (mg.) ..	13	11	13	15·5	20·5	17·5	16
Thyroid wt. (mg. per 100 g. of body-wt.) ..	7·83	7·65	8·97	10·25	12·0	11·15	9·25

In view of the findings of Astwood and Stanley, we are repeating our experiments on rats to discover the cause of our disagreement. A consideration which has not escaped us is the possibility that ergothioneine (R.SH) may suffer oxidation to the disulphide (R.S-S.R) and we have reasons for thinking that an equilibrium may exist in vivo between these forms, thus accounting for many of the difficulties of quantitative determination. A disulphide form might have little or no antithyroid effect.

We are indebted to Messrs. Burroughs Wellcome & Co. for generously preparing 16 g. of ergothioneine hydrochloride from ergot, which enabled us to conduct the preliminary trials. The patients were under the supervision of Prof. H. P. Himsworth, Dr. W. R. Trotter, and Dr. M. E. Morgans, whom we wish to thank for their collaboration. We are indebted to Dr. R. E. Moore for the thyroid weights quoted.

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WERNICKE'S ENCEPHALOPATHY SIMULATING DIABETIC COMA

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HYPERGLYCÆMIA with Wernicke's encephalopathy has not been described before, and the case reported here closely resembled diabetic coma.

A man, aged 63, was admitted to hospital with a history that two weeks previously he had gone to bed with a septic corn on the left foot. The leg became red and swollen to the knee.

Three days before admission he became drowsy and refused food and drink. His wife said that his usual diet was: breakfast, bread and butter, tea; lunch, meat and vegetables; tea, bread and butter with jam or fish or meat paste, tea.

On Examination (in the casualty department).—A wasted dehydrated man, with a red glazed tongue, too apathetic to give more than a vague account of himself. The urine contained much sugar and albumin but no ketones. His left foot showed brown discoloration, with increased segmentation

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* Our assays are conducted on immature rats weighing uniformly 45–55 g. as recommended by McGinty and Bywater (1945).

* Dr. Robinson died shortly after this paper was written.

Time	Blood-sugar (mg. per 100 ml.)	Insulin (units)	Intravenous fluid (litres)	Blood-pressure (mm. Hg)
12 noon	800	50 I.M. 50 I.V.	2 of normal saline, rapidly	Unrecordable
4 P.M.	1000	50 I.M. 50 I.V.	..	95
8 P.M.	1000	200 I.M.	..	110
12 midnight	750	200 I.M.	1 of plasma taking 2 hr.	70
3 A.M.	..	..	2 of 5 % glucose-saline	70
9 A.M.	..	..	2 of 5 % glucose-saline	115
12 noon	380	100 I.M.	..	110

pattern of the skin, and a septic corn on one toe. No cheilosis.

Progress.—He was admitted as a case of inanition but within twenty-four hours deteriorated to a restless comatose state, with irregular nystagmus and quick jerking movements of the face, neck, and arms. His breathing was irregular, jerky, and interrupted by short grunts.

Nervous System.—The limbs were rigid and the deep reflexes absent; Chvostek's and Trousseau's signs could not be elicited. The cerebrospinal fluid was under increased pressure but otherwise normal (total protein 0·05 g. per 100 ml.; Lange's test 00000000; lymphocytes 1, polymorphs 9, and red blood-cells 2380 per c.mm.). Feeding by mouth had been impossible, and the dehydration and emaciation were more striking. Peripheral failure was well marked, the blood-pressure being unrecordable and the extremities cyanosed.

Urine.—Catheter left in for incontinence. Urine contained much sugar and albumin, with pus cells and *Bact. coli*, but still no ketones; nor could any acetone be smelt in the breath. Blood-urea 114 mg. per 100 ml.

Diagnosis.—He was regarded at first as being in diabetic coma and not excreting ketones because of renal failure: but when blood examinations showed neither lipæmia nor ketones (Rothera) a hypothalamic vascular lesion was considered. Wernicke's encephalopathy was not diagnosed until the third day, when intensive treatment with vitamin-B complex was begun.

Further Treatment and Progress.—The treatment given and findings during the first twenty-four hours are shown in the accompanying table.

At 6 A.M. next day the blood-sugar was 150 mg. per 100 ml. and the patient was conscious enough to use the commoner expletives and take fluid by mouth. His general condition was much improved and dehydration less.

For the next fifteen hours his blood-pressure remained 110 mm. Hg and his general condition improved further, so that he could answer questions. *During this time he* vomited altered blood several times and passed several melæna stools. There was still slight nystagmus, but the other muscular movements had almost disappeared. T limbs remained rigid.

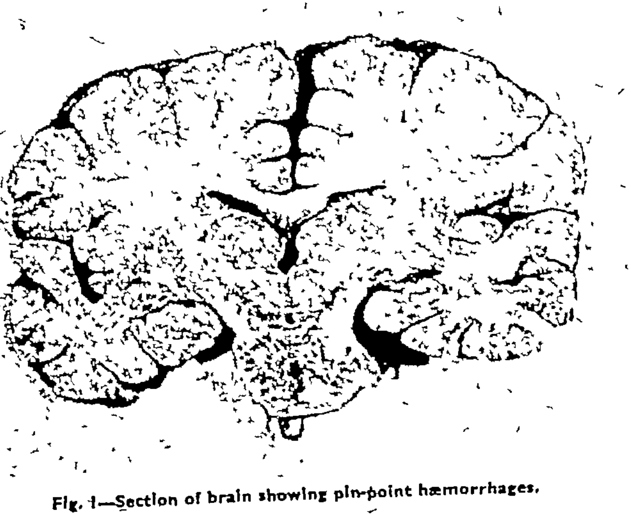


Fig. 1—Section of brain showing pin-point hæmorrhages.

He was given 500 mg. of ascorbic acid, 25 mg. of aneuri once, and nicotinic acid 100 mg. five times, all by injection.

At 9 A.M. next day the blood-sugar was 500 mg. per 100 m and he was given 50 units of insulin intramuscularly.

At 12 noon the blood-sugar was 300 mg. per 100 ml. T patient died two hours later of pulmonary œdema.

Necropsy Findings.—Emaciated body, œdema of lun heart normal except for some hardening of aortic valv bilateral pyelonephritis, normal pancreas.

Brain showed many small "flea-bitten" areas, mostly pons and subthalamic region (fig. 1). Corpora mammila were free, but fornix and anterior commissure showed sm hæmorrhages.

Histological examination showed gross irregular cap dilatation, small "ball" hæmorrhages (fig. 2) and also sm ring-shaped (fig. 3) hæmorrhages, and some areas of demye tion and perivascular necrosis. These changes are consiste with a diagnosis of Wernicke's encephalopathy.

COMMENTS

The clinical features correspond more closely to t nicotinic-acid-deficiency encephalopathy described Jolliffe et al.[13] and Sydenstricker[20] than to Wernicke encephalopathy. Besides the clouding of consciousne ocular disturbances, and peripheral neuritis, there w *cog-wheel rigidity of the extremities.* The distincti is probably a fine one, for the morbid anatomical ba is apparently identical. Campbell and Russell[5] sugg that Wernicke's syndrome and the picture described Jolliffe et al. differ in the intensity of the deficiency of aneurine and of nicotinic acid present.

Neither type has previously been described with hyperglycæmia, and two possibilities must be considered in the case described here—did the encephalopathy develop in a diabetic, or was the hyperglycæmia du to the injury of a hypothalamic area by minute hæmor rhages, corresponding to that produced in animals by Claude Bernard[4] by puncture of the floor of the fourth ventricle ?

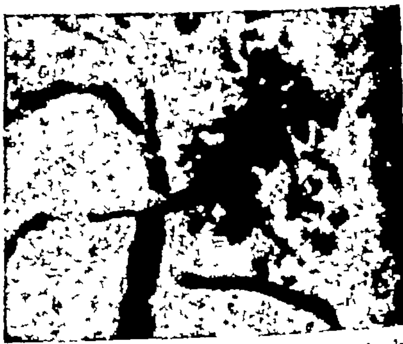


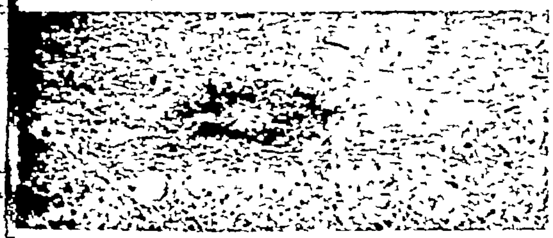
Fig. 2—Portion of brain under high power, showin typical "ball" hæmorrhage. (× 350)

Diabetes seemed improbable, for an underweight patient with coma would certainly have had thirst and polyuria. The absence of ketones in the urine was not conclusive. Ketones may not be excreted if there is severe renal failure, and their absence may also be explained by an excess of β-hydroxybutyric acid with little acetone or aceto-acetic acid to give the colour reactions.[19] In this patient there was some impairment of the renal function (blood-urea 114 mg. per 100 ml.), and post mortem there was bilateral pyelonephritis, but the Rothera test was negative in the blood-plasma. The possibility of an unusual partition of ketones was not excluded. A further point against diabetes was the absence of lipæmia. The explanation favoured in this case is to attribute the hyperglycæmia to injury of the hypothalamic area by a minute hæmorrhage. It is of interest that there was considerable insulin insensitivity, 850 units being needed to lower the blood-sugar.

The previously reported cases of diabetic coma without ketosis[1–3 6–12 14–17 19 21] have been reviewed, but in only that of Evans 7—did it seem likely that a similar logy was responsible. Unfortunately in that case clinical data given were scanty and there were morbid anatomical findings.

This punctuate hæmorrhagic encephalopathy has ally been found associated with alcoholism or with es of the alimentary tract which have impaired the rption of food, and the lesions probably represent action to a vitamin-B-complex deficiency.

It is difficult to explain why this patient should have eloped an encephalopathy, but an acute deficiency may e been precipitated by the infection of the foot and ary tract causing increased demands on vitamin-B complex when perhaps no reserves existed. This mechanism s been described in patients after operation.[18]



1—Portion of brain under low power, showing typical "ring" hæmorrhage. (× 100.)

SUMMARY

A fatal case of Wernicke's encephalopathy is described h a blood-sugar level of 1000 mg. per 100 ml. but no . It is suggested that the hyperglycæmia was the lt of a minute hæmorrhage into the hypothalamus.

Our thanks are due to Dr. W. Pagel for his report on the ology, and to Dr. Richard Asher for his constructive icism.

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. . . There can be little doubt that Surgery is facing further change in the relative emphasis placed on the component parts of its content. Science will increase, and scientifically based Technology will slowly replace Empiricism. There are certain to be changes in the organizational patterns formed by Hospital, University, and State These changes may be brought about by explosive forces in the restless external social order, or anticipated by a sensitive government. Change is to be feared only if those responsible for the preservation of essential values falter in their task. In fact, change is welcomed in so far as it may strengthen the profession to meet the new challenges that confront our civilization. In times of change there is need for wisdom both in the external social order and within the profession. . . . A hold-fast in science is essential, but this represents only a part of the strength of Surgery. By maintaining the ancient bond with humanity itself through Charity—the desire to relieve suffering for its own sake—Surgery need not fear change if civilization itself survives."—Dr. Edward D Churchill, *Ann. Surg.* October, 1947, p. 381.

DEATH FROM RENAL ANOXIA AFTER MYANESIN ANÆSTHESIA

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Hæmoglobinuria following intravenous 'Myanesin' anæsthesia has lately been reported by Pugh and Enderby.[1] Their patients recovered, but attention was drawn to the possible occurrence of serious renal damage. Earlier in the year we had investigated a death following the administration of myanesin and were of the opinion that the drug might have been responsible; but, since we failed to determine the nature of the illness for which the patient was admitted to hospital, we did not feel justified in reporting the case. The demonstration of hæmoglobinuria attributable to myanesin prompts us to report it now.

A woman, aged 22, gave a history of rheumatic fever three years previously, when she was confined to bed for four months. She was said to suffer from asthma, having had an acute exacerbation two years ago, and was regarded as a semi-invalid, though there was no history of dyspnœa or distress on exertion The abdominal symptoms, ascribed to appendicitis, for which she was admitted had been present for seven months.

On admission she weighed 54 kg. The respiratory system was normal. There was a systolic murmur, but no cyanosis, clubbing of the fingers, congestion, or œdema. She could hold her breath only 15 sec., but she was very nervous on examination Her pulse-rate was 100 per min. The urine had a specific gravity of 1 024 and contained a trace of reducing substance but no albumin.

Operation (Feb. 18, 1947): appendicectomy and pelvic exploration. The appendix was not diseased. Anæsthesia: *8.30* A.M. *'Nembutal' gr.* $1^1/_2$ *(100 mg.)* by mouth, 9.30 A.M. 'Omnopon' gr. $^1/_6$ (11 mg.) and scopolamine gr. $^1/_{300}$ (0·22 mg.) intramuscularly; 10.30 A.M. thiopentone 250 mg. intravenously, followed by nitrous oxide and oxygen by the semi-closed method. Myanesin 13 ml. (1·3 g.) was given intravenously just after the incision was made. Relaxation being unsatisfactory, two further doses of 5 ml. and 10 ml. were given during the operation, making a total of 28 ml., equivalent to about 56 mg. of myanesin per kg. Pulmonary ventilation remained adequate, and the patient's colour was good throughout the operation, but considerable cardiovascular depression developed 10 min. after the third dose of myanesin, and the systolic blood-pressure fell to 70 mm. Hg. The patient was kept under observation in theatre for half an hour after the end of the operation, by which time the systolic pressure had risen to 95 mm. Hg.

Postoperative Course.—The patient vomited several times on the day of operation, and continued to vomit for next four days. On Feb. 22 hæmaturia was noted On the 23rd she had a series of epileptiform convulsions. Her blood-pressure was 140/90 mm. Hg and the blood-urea 290 mg. per 100 ml. Hæmaturia continued. A catheter specimen of urine taken in the evening had a specific gravity of 1·010 and an alkaline reaction; it contained numerous blood-cells and some granular casts. Pulmonary œdema developed during the day and became rapidly worse, and the patient was comatose by the evening. She died on the morning of Feb. 24.

Necropsy.—A well nourished well-built young woman 156 cm. in length, with some cyanosis, no œdema, and no cutaneous hæmorrhages. There were numerous minute hæmorrhages in the connective tissue between the muscles of the chest wall anteriorly. A few small recent hæmorrhages were also present in the mediastinum and alongside the epicardial veins on the posterior aspect of the heart. The appendicectomy wound was healing well, and the abdominal cavity was apparently healthy. The heart weighed 320 g. (slightly above average), but there was no apparent hypertrophy of any of the chambers, and the valves and coronary vessels appeared normal. There were no endocardial hæmorrhages. The aorta and large arteries, including the renal arteries, were entirely free from atheroma, and the venæ cavæ and large veins contained no thrombi but were considerably distended with blood. The renal veins appeared entirely healthy except for some distension. The air passages contained frothy fluid, and the lungs were extremely œdematous, with a few recent intra-alveolar hæmorrhages but no gross or histological evidence of infection. The liver and spleen were acutely congested. Examination of the shaft of the right femur revealed active red marrow throughout its whole length. Histologically this marrow showed active erythropoiesis and a rather large number of megakaryocytes. No abnormal cells were seen.

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[1] Pugh, J. I., Enderby, G. E. H. *Lancet*, Sept. 13, p. 387.

The kidneys were much swollen, each weighing 170 g. The capsule of each stripped easily, leaving a perfectly smooth pale grey surface. On section the two kidneys were identical and had a striking appearance. The cortex was leaden grey, looking almost necrotic, and was evidently œdematous. There were no hæmorrhages in the cortex but some streaks of fresh hæmorrhage in outer zone of medulla, which was darker in colour. The renal pelves showed some petechial hæmorrhages but were not dilated or hyperæmic. The ureters appeared normal. The bladder was empty and showed some groups of recent hæmorrhages above and external to each ureteral orifice. There was no sign of infection of the bladder.

Histologically the kidneys showed much interstitial œdema but no cellular exudate. The glomerular capillaries contained little or no blood, but the afferent arterioles were uniformly dilated. There was no evidence of any arterial or arteriolar damage. All the convoluted tubules, the loops of Henle, and the collecting tubules were considerably dilated. The collecting tubules contained brownish granular material, much of which was present in the form of brownish ribbon-like casts. In places these casts were impacted in the tubules; at these sites there was some necrosis of the lining epithelium, and in one place a tubulovenous anastomosis was seen. The general appearance was that found in various conditions of the renal anoxia. There was no evidence of any antecedent renal lesion.

Histological examination of other organs showed no evidence of hypertensive vascular disease. The endocrine organs showed no change from normal.

DISCUSSION

This girl had never done any heavy work and was regarded as an invalid by her parents. Her rheumatic fever left no recognisable changes in the heart, and the clinical diagnosis of chronic appendicitis was disproved at operation. The only positive finding at necropsy that could have been present before the operation was considerable hyperplasia of red bone-marrow in the femur. No free iron was demonstrable in liver or spleen, and there was no history of jaundice; hence, with no hæmatological examination before death, the nature of the underlying blood disorder could not be determined.

Since the presence of hæmaturia was proved by microscopic examination of the urine during life, one cannot attribute the necropsy finding of brown debris in the renal tubules to intravascular hæmolysis. Hæmoglobinuria may or may not have been present. The important point is that the renal changes were those common to the numerous conditions attributed by Maegraith et al.[2] to renal anoxia. The presence of blood pigment blocking the tubules is to be considered a secondary factor, contributing in some degree to the renal embarrassment but not an essential part of the syndrome.

Intravascular hæmolysis, as in incompatible blood-transfusion, is one of the possible causes of peripheral vascular failure and so of renal anoxia; it is not necessarily accompanied by clinical jaundice. Now that hæmoglobinuria has been reported in association with myanesin anæsthesia, we feel justified in concluding that this anæsthetic was responsible for the fall of blood-pressure and thus for the renal changes. Since we were unable to determine the nature of the illness that led t patient to seek advice we cannot say to what extent may have contributed to the fatality.

SUMMARY

A postoperative death from uræmia is reported wi necropsy findings similar to those in incompatible bloo transfusion.

Reasons are advanced for ascribing the renal chang to the use of myanesin as an anæsthetic.

We are indebted to Mr. H. J. Croot, F.R.C.S., for permissi to use his clinical notes.

BILATERAL ZOSTER

REPORT OF A CASE

E. W. Prosser Thomas
M.D. Camb.

Bilateral herpes zoster is extremely rare. Epste and Jacobson in 1936 traced only 46 reported cases a they added 2 of their own. Subsequently, 1 case each h been reported by Rattner (1938), Ambler (1939), a Fourestier (1939).

In bilateral zoster the lesions may appear at the sa level on the two sides, but in most recorded cases th have been at different levels. The onset may be simu taneous on the two sides, or the second zoster may delayed for a day or longer. The bilateral disease see to have more severe prodromal symptoms than ordina zoster. For example, Rattner's patient had dizzine fever, vomiting, and severe headache for some da before the eruption appeared. In Ambler's case, in whic both sides of the neck were involved in the distributio of the 4th cervical nerves, there was a sudden onset wi malaise and fever (104°F), the eruption developin twenty-four hours later. Epstein and Jacobson, howeve doubt whether on the average the prodromata are an more acute than in ordinary zoster.

The dorsal nerves are said to be most often involve in bilateral zoster, and then the cervical nerves (includin the brachial plexus). There seems to be no particula tendency in bilateral disease for the eruption to be sever or for recovery to be delayed.

A married woman, aged 33, was admitted to hospita with lower abdominal pain of four days' duration. Th pain began in the umbilical area and later became generalise all over the abdomen. It was constant, with periodica exacerbations, which the patient likened to labour pains Menstruation had begun at about the same time and wa somewhat heavier than usual.

She had 2 children, who were well, and had had 4 miscarriage —1 at six weeks and 3 at seven months.

On admission she described the whole abdomen as feeling bruised. There was tenderness in both iliac fossæ and some guarding on the left side, with release pain. On vaginal examination a mobile anteverted uterus was felt, and there was tenderness and a suggestion of induration in the posterior fornix. The adnexa were not palpable. There was no psoas sign. Her temperature on admission was 99°F but was normal thereafter, as was her pulse-rate. No definite diagnosis was made, but salpingitis was suspected.

Within two days of admission the abdominal pain had subsided; but she complained of an ache in the small of the back. *A rash then appeared in this area* (about six days after the onset of the illness).

The eruption was a bilateral herpes zoster of mild but typical appearance. Groups of tiny pearly close-set vesicles on an erythematous base were distributed at about the same level on both sides in the upper sacral area and extended outwards over the hips and upper part of the buttocks. Some of the lesions on the left side were abortive, consisting only of patches of slightly raised erythema. The upper inguinal lymph-nodes on both sides were enlarged and tender. The lower lumbar spine was tender on pressure. Radiography of the lumbar spine showed no bone or joint disease.

The patient was treated with injections of 'Pitressin,' 0·5 ml., twice daily for three days. The herpes blisters dried

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2. Maegraith, B. G., Harvard, R. E., Parsons, D. S. *Ibid*, 1945, ii, 293.

secondary infection, the lumbar neuralgia subsided, patient was discharged well about a week later.

I am indebted to Mr. Douglas MacLeod for permission publish this case.

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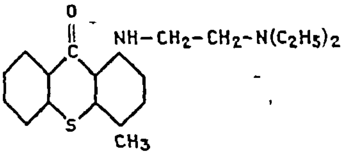
Preliminary Communication

THE EFFECT OF MIRACIL D ON HUMAN SCHISTOSOMIASIS

'MIRACIL D' is the hydrochloride of 1-methyl-4-beta-hyl-aminoethylaminothioxanthone.



t was synthesised by Mauss and was shown by uth and Gonnert to have considerable therapeutic vity for mice and monkeys infected with *Schistosoma soni.*[1] According to them, mice are cured—i.e., ms killed—with six doses of 60–120 mg. per kg., monkeys are cured with two doses of 5 mg. per kg. r the occupation of Germany this compound was ther studied in England. The pharmacology in small mals has been described by Wood,[2] and methods for mation in the body fluids have been described by ner et al.[3]

The pharmacology and toxicology in monkeys and n have been studied by two of us (F. H. and W. F. R.). compound is administered by mouth, since it is e toxic, or causes more local irritation, if injected venously or intramuscularly. Monkeys tolerate mg. per kg. four times a week. In man it is apparently rapidly absorbed from the alimentary canal, and hours after single doses of 0·2 g. the concentration the blood rises to about 1 mg. per litre. Over 90% miracil is degraded in the body, and only about 7% creted in the urine. There is little tendency for it accumulate in the body. The concentration in the ma is about twice that in the red blood-cells; the centration in the leucocytes is probably much higher. In animals deliberate long-continued overdosage may roduce degenerative changes in the liver and the renal tubules, but these are usually less than would be expected. In man the maximum tolerated dose for repeated administration is about 0·2–0·3 g. a day. In healthy British volunteers overdosage produced nausea and general prostration; insomnia and yellow discoloration of the skin and sclerotics also occurred. These symptoms came on after a latent period of about a day. Apparently they were not due to a direct action on the alimentary canal but rather to the formation of some degradation product of miracil.

CLINICAL TRIALS

By the kindness of the Southern Rhodesian Public Health Department it has been possible to carry out clinical trials at Salisbury.

Methods.—The patients were arranged in four groups. Group I, consisting of 3 African men, received 14 doses of 200 mg. Group II, consisting of 9 African schoolboys, received 12–13 doses of 100 mg. followed by 12–13 doses of 300 mg. Group III, consisting of 13 African school-children, received 18–22 doses of 200 mg. Group IV consisted of 17 Eurafrican children; 6 larger boys received 19 doses of 200 mg., and 11 smaller children received 6 doses of 100 mg. and 13 doses of 200 mg. The compound was administered as uncoated tablets, once daily after the midday meal, for six days a week; preliminary doses of 50 mg. were given to each patient, to exclude idiosyncrasy, before the above courses were begun.

At the start the patients were passing viable ova of *S. hæmatobium* or of *S. mansoni*; but, apart from hæmaturia in a few of them, they were not suffering from any obvious disability as the result of their infection, and they seemed all vigorous healthy subjects. All but 3 of the patients infected with *S. mansoni* were also infected with *S. hæmatobium*. The patients were examined at intervals of four- to seven days during treatment, and then at fortnightly intervals for two months after the last dose.

Results.—Immediately after the cessation of treatment 6 of 41 patients with *S. hæmatobium* infection, and 2 of 12 with *S. mansoni* infection, were no longer passing eggs. At the end of four weeks 11 of 41 with *S. hæmatobium* infection, and 4 of 12 with *S. mansoni* infection, were no longer passing eggs. At the end of eight weeks 9 of 40 with *S. hæmatobium* infection, and 2 of 11 with *S. mansoni* infection, were no longer passing eggs. One patient with a double infection was not examined.

The criterion of a case being negative was the absence of eggs on microscopical examination. Thus 22% of patients with *S. hæmatobium* infection and 18% of patients with *S. mansoni* infection became negative eight weeks after the treatment ceased.

DISCUSSION

Most of the patients who ceased passing eggs had been only lightly infected; so too much significance should not be attached to them. In some the cessation of egg-passage during the three-month period of observation may have been spontaneous. In some the passage of eggs ceased during the period of observation but eggs were found again at later examinations. It is concluded that in this clinical trial the therapeutic action of miracil D, if any, was slight.

Possibly the drug was responsible for cure in some of the cases, but this cannot be proved. Certainly the great majority of the patients continued to pass living ova after these courses of treatment, which are considered to be about the maximum tolerated. Even on the most favourable interpretation of the results the therapeutic effect of miracil D was greatly inferior to that usually exerted by antimony preparations, and it was not great enough to be of any practical value.

These courses of miracil were well tolerated by most of the patients. One man in group I had intense nausea, anorexia, and weakness for several days at the end of the course; these symptoms may have been due to miracil. Two others had slight or moderate nausea. Various boys reported slight abdominal pains when questioned, but these are common among African children and are probably not significant. There were no significant alterations in the hæmoglobin or white-cell counts during and after treatment. One European (not included in the results recorded above) became distinctly yellow in the conjunctivæ and skin while taking miracil, but he had no other symptoms; eight weeks after treatment he still continued to pass occasional viable eggs of *S. hæmatobium*.

Details of these investigations will be published in the *British Journal of Pharmacology and Chemotherapy*.

SUMMARY

Miracil D is a new compound which has been reported to be therapeutically active for infections of mice and

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[1] Combined Intelligence Objectives Subcommittee (1945) File no. XXV, vol. 54; British Intelligence Objectives Subcommittee (1946) Final report, vol. 116.

[2] Wood, D. R. *Quart. J. Pharm.* 1947, 20, 31.

[3] Latner, A. L., Coxon, R. V., King, E. J. *Trans. R. Soc. trop. Med. Hyg.* 1947, 41, 133.

monkeys with *Schistosoma mansoni*. It was given in maximum tolerated dosage for three weeks to 42 African and Eurafrican patients infected with *S. hæmatobium* (38 cases) and/or *S. mansoni* (11 cases). The results were disappointing. Two months after the end of treatment, 86% of the patients were still passing living ova.

In this series of cases the therapeutic effect of miracil was not great enough to be of real clinical value.

Grateful acknowledgments are due to the Medical Director, Southern Rhodesia, for clinical facilities and encouragement; to all the workers mentioned above for information about their results and for material; and to the volunteers who made possible the study of the pharmacology of miracil in man.

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Reviews of Books

British Surgical Practice

Vol. I. Editors: Sir E. Rock Carling, F.R.C.S., F.R.C.P., consulting surgeon, Westminster Hospital; J. Paterson Ross, M.S., F.R.C.S., surgeon and director of surgical clinical unit, St. Bartholomew's Hospital, professor of surgery in the University of London. London: Butterworth. 1947. Pp. 536. 60*s*.

The publication in this country of a comprehensive new textbook of surgery is a notable event. The last big book of this kind published in Great Britain was Maingot's *Post-graduate Surgery*, but the rapid advances of the past ten years have dated it, and have made its great predecessor, Choyce, seem positively old-fashioned. The time was ripe for the appearance of *British Surgical Practice*, the first of the eight volumes of which has now appeared, and Sir Ernest Rock Carling and Prof. Paterson Ross, as general editors, have collected round them a distinguished team of contributors.

The work is intended as a guide for surgeons who have no easy access to libraries, being written neither for the expert in any particular specialty nor for the undergraduate. Operative technique is described in detail, but operations which are no longer regularly employed have been excluded. The old regional grouping has been discarded, and the sections substituted are instead arranged alphabetically. Thus, vol. I contains 45 sections, starting with abdominal emergencies and ending with the autonomic nervous system. Almost every section is by a different author, each an accepted authority in his own sphere. The book is beautifully printed, illustrated, and bound, and each volume has an index. A comprehensive index is to be published, at the end, as a separate volume to cover and cross-reference the other volumes.

The sectional arrangement is thought to make for easy reference; but how it will work out can scarcely be judged until the book has been used on the day-to-day problems of practice. The editors must have had some trouble to decide the headings and scope of each section, and to avoid undue dissection and separation of subjects: one section, for example, is entitled "Anus, artificial (management)" and one wonders why this matter is not dealt with where the operation of colostomy is described; and the operation of tracheotomy, details of which might be required in a hurry, is described under "Air Passages." The comprehensive index no doubt will overcome such difficulties as these, but it is evident that the sectional alphabetical arrangement brings its own problems.

In these days of rapid progress and rapid change of fashion in surgical thought, the bound volume is at a disadvantage: parts of it are out of date almost as soon as printed. *British Surgical Practice* is to be kept up to date by the publication of an annual supplement—in some ways a less satisfactory solution than the production of a new edition, but necessary when a new editi costs £25 a set.

There are many valuable articles in this first v and little to criticise. One or two of the sections mi have been telescoped: acidosis scarcely merits 7 and could have been included in a later section dehydration and chloride deficiency following. The section on the abdominal wall is concerned with the surgical anatomy of incisions and their repai good as it is, it should surely also say something abo the diseases affecting this region. Achlorhydria cann easily be discussed apart from the stomach, and t section on adiposity would have been more useful some specimen menus had been included. These a small things to set against such articles as those abscess (Prof. Geoffrey Hadfield), amputations (M George Perkins), acute appendicitis (Mr. Wardlewor Nuttall), and arthritis (Mr. Norman Capener). Those w possess the first volume will be eager to see its successo

Textbook of Pathology

(6th ed.) E. T. Bell, M.D., professor of patholo University of Minnesota. London: H Kimpton. 19 Pp. 910. 50*s*.

Two years after the last, the sixth edition of Bel well-known textbook is presented from the departme of pathology in the University of Minnesota, w Professors Clawson and McCartney contributing before. The text is concise rather than discursive, a the student must needs remember most of what he rea The large majority of the key references at the e of each section are, understandably, to the Americ literature. The book has been well revised, with or slight increase in size, but although the blood-level f severe ethyl-alcohol intoxication has been reduced fro 0·4 % to 0·3 % in this new edition the amount "consider sufficient to cause death" remains at the high value 1% (0·5 % according to Glaister and Jetter). In Pr fessor Bell's experience "the chronic drunkard has large fatty liver, seldom with cirrhotic changes"— contrast to the findings of many other American write The book is good and comprehensive; in a futu edition the remaining drawings could well be replac by photomicrographs.

Curare

Its History, Nature, and Clinical Use. A. R. McIntyr M.D., PH.D., professor of physiology and pharmacolog University of Nebraska. London: Cambridge Univers Press. 1947. Pp. 240. 27*s*. 6*d*.

This book surveys past and present knowledge of t use of curare in all its aspects, and includes a compr hensive bibliography. Although investigated over sever centuries curare has only recently been used in clinic medicine for the control of tetanus and other convulsi states; and now that a standardised preparation available the clinical applications have multiplie rapidly. It promises well as an adjuvant in anæsthesi inducing muscular relaxation in the lightly anæsthetise patient. The glowing reports from experts may, howeve lead the inexperienced into using it in a thoughtless o too light-hearted manner. Bronchospasm is among th possible dangers, and abolition of respiration among it peripheral actions. More important is the fact that i also has a central action which may be induced by a heav initial dose or by prolonged curarisation.

A Short Textbook of Surgery (4th ed London: J & A Churchill. 1947. Pp. 680. 30*s*.)—This edition, though shorte by a few pages than its predecessor, includes entirely ne sections on arterial injuries, dysphagia, and rehabilitation Many chapters have been completely rewritten, all have bee brought up to date, and 26 new illustrations have been added It is inevitable that where space is rigidly economised man controversial subjects must be treated somewhat scantily but on the whole Prof. C. F. W. Illingworth has preserved skilful balance, and has avoided dogma. Some of the illus trations should be either improved or dispensed with—e.g. the one showing investigation of an inguinal hernia by invaginating the scrotum, and that depicting injection of pile into the centre of its substance. The book as a whole however, is sound and useful.

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THE LANCET

LONDON: SATURDAY, DEC. 20, 1947

The Issue

THE Negotiating Committee's long-awaited statement is brilliant but a little disappointing. Instead of discussing how best the National Health Service Act can be made to work, they seem to have spent the past nine months in elaborating the case for its amendment. Nevertheless the documents released this week broadly fulfil the prediction made last spring that the controversy would narrow down to a single major issue—whether doctors joining the service should continue to own the goodwill of their practices. The majority of the committee are convinced that they should do so: "the ownership of goodwill," they aver, "is regarded by the medical profession as fundamental to its freedom." They have therefore endeavoured to deflect the Minister from his purpose by proving that abolition of the sale and purchase of practices is unnecessary and that (as the Act now stands) it might cause grave hardship and grave injustice.

First, then, is abolition necessary? The ostensible reason for insisting on it immediately is that in the National Health Service the Minister is expected to ensure that medical resources are distributed throughout the country in accordance with needs: it will be impossible to do this so long as doctors are able to buy practices wherever these are vacant, for in so doing they tend to concentrate in the pleasanter or more lucrative areas. This argument the Negotiating Committee counters by saying that when the same medical payment is to be had in respect of every person in the country the doctors will tend to concentrate on previously under-doctored areas where they are likely to collect more capitation fees; and so far as necessary they can be attracted to specially unpleasant or sparsely populated districts by the offer of additional payments. The Minister does not dispute this favourable tendency, but he thinks "it cannot be assumed," especially when doctors are scarce, that it will result in their distribution according to population. In so far as the committee is right, and defects in distribution will automatically be corrected in a service providing payment for every citizen, the need for interfering with the present method of filling practices by purchase is diminished. And as distribution improves there will be correspondingly less need to invoke those powers of "negative direction" to which so much exaggerated objection has been taken. The Minister is justified in claiming that power to close a vacant practice in an over-doctored area is necessary if he is to be sure of carrying out his duties; and, as he remarks, it is unusual to insist on receiving publicly remunerated work—as a school-teacher for instance—wherever one chooses to do it. But we should all prefer to see such powers kept in the background, and the creation of a fund of about £400 000 a year for positively attracting doctors to unpopular areas should do much to that end.

On the effects of the Act, the committee put up an impressive case in favour of their opinion that "abolition of the custom of buying and selling practices creates more problems than it solves." Certainly many doctors who were otherwise prepared to surrender the goodwill of their practices—in return for compensation at an average figure of over £3600—have been alarmed at the complex penal clauses by which the lawyers have tried to prevent circumvention of the Act. Their fears will be increased by the committee's picture of chaos created by ambiguities of wording and by uncertainty whether partnership agreements will stand after the appointed day; and particularly by the examples of difficulties that may arise over the apportionment of compensation and interest, the sale of houses, and the appointment of assistants. By all this recital, however, the Ministry remains apparently unperturbed: it holds that in general the problems can be solved by appropriate regulations, and that the exceptional case can be met by partners varying their agreements to fit the new circumstances. Nobody will deny that the difficulties exist, but "hard cases make bad law." Perhaps too, the committee would have found the difficulties less formidable if they had shared the widespread opinion that discontinuance of the sale and purchase of practices is in itself a good thing, worth pursuing at the cost of temporary inconvenience. To the Government, to a large proportion of the public, and to a great many doctors the sale of practices is an anachronism comparable to the sale of commissions in the Army; more, it is a manifestation of the commercialism which has infiltrated medicine with deplorable consequences and which we are anxious to reduce. To a majority of the committee, however, it remains a cause worth fighting for.

Nor is their argument negligible by any means. First, the desire to increase the capital value of a practice is an incentive to good and keen work. (But so, to some extent, is the desire to increase income and pension.) Secondly, ownership of goodwill provides a basis for coöperation between practitioners. (But, as the Minister says, there seems to be no reason why the buying and selling of shares should be regarded as the essence of a medical partnership.) Thirdly, and more important, so long as a man has a practice which is his own, in the sense that he can sell it, he has a feeling of professional independence. He is like the employee with private means who can snap his fingers at his employer: he is a sovereign State with a medical service of his own. True, the goodwill of his practice does not really give him much more security than an equivalent balance at the bank or in the Treasury, but in either case he has an advantage over the young doctor entering the National

Health Service with neither one nor other. If the practitioners of the future are not to enjoy the private security of a saleable practice they must be given a high degree of public security—the certainty of fair treatment with no possibility of being victimised for holding heterodox or unwelcome opinions. The penalty of removal from the service will become increasingly severe as the possibilities of private practice contract, and it is a sound instinct which has led the profession to ask repeatedly that the final decision on removal shall be made in a law-court and not at the Ministry. The Minister has not got over this difficulty by his offer to consult another advisory body; but conceivably a way out is indicated by his remark that an aggrieved doctor can go to the courts on the grounds of unlawful action. If after failing to convince the medical services subcommittee (set up by the local medical committee and the local executive council), the tribunal, and the Minister with his advisory committee, a practitioner is still able, under the Crown Proceedings Act, to sue the Minister for wrongful dismissal, may we not be satisfied? The answer is yes—but only if members of the service remain perpetually alert in the cause of professional freedom and ready to defend it at all levels. As with so much in this service, the remedy here lies with ourselves. Whatever the Negotiating Committee may say, the proposed organisation offers the profession great opportunities of influence, and these opportunities will further increase if they are well used. Whether the service is good or bad depends chiefly on what we choose to make it. The spirit is far more than the letter

This rôle of doctors in shaping the service is not something potential which we have merely imagined: it is an extension of something already begun. On regional hospital boards and local executive councils many medical men and women have begun to play their part, and they have discovered that decentralisation of responsibility under this Act is a reality —that the tasks offered them are anything but trivial In the vast reorganisation of hospitals which is now in progress, the medical profession is already deeply involved. All of which takes us back to a brief paragraph at the beginning of the Negotiating Committee's statement which admits that certain parts of the Government's scheme are commended or accepted by the profession, including the proposed planning and development of hospital services on regional lines, the general structure of local executive councils, and the principle that the service should be available to the whole community. This paragraph is in fact more significant than any that succeed it; for it virtually buries the possibility that the profession will in the end refuse to take part in the National Health Service—though concessions may be necessary before it commits itself. The only big question which remains to be decided is whether general practitioners are prepared, on entering the service, to surrender the goodwill of their practice in the manner laid down under the Act The scale of compensation long ago arranged, and the range of remuneration now offered, are reasonable without being lavish; and, though the new proposals would probably increase the income of a large number of practitioners and would make things much easier for new entrants to practice, they are not so dazzling as to blind anyone to a vital principle. Is the ownership of goodwill really a vital principle? Is the Negotiating Committee right in thinking that it is "in the best interests of the public and the profession" that general practitioners should retain it? These are questions on which we shall all have to make up our minds. But even if the profession decides that the Minister's proposals about goodwill are unsound or intolerably vexatious, this need not necessarily mean that the general-practitioner service cannot be started next July. Rather than face a postponement which would be highly inconvenient to the profession as well as the Government it would be possible to bring the Act into operation without applying those sections which alter the present methods of filling vacant practices. In this way the difficulties now arising through the shortage of time could be overcome, and the legal situation could be more fully explored. Preferable as it would be to a paralysing dispute, this expedient might nevertheless (as the committee said of abolition) create more problems than it would solve—especially for the many younger men who have lately taken on large commitments. We sincerely trust therefore that it will not have to be considered.

Mr. ANEURIN BEVAN is a controversial figure who attracts accusations. He is accused of deceiving the Negotiating Committee in that he was never really prepared to submit an amending Bill to Parliament before the Act was tried He is accused of using a politician's guile to divide the profession, because he seems to listen rather more readily to the spokesmen of specialists than to the spokesmen of general practitioners He is accused of a failure in political wisdom because, when he feels sure of his position, he does not allow his opponents to capture those minor trophies without which they cannot comfortably reappear at home An outstanding Parliamentarian, the Minister may in fact have faults as a negotiator. Two things, however, must be said in his favour: he has already been proved right in his bold solution of the almost insoluble problem of the hospitals; and he has also—on paper at least—been consistently conciliatory and reasonable in his pronouncements of the past year. In one sentence only of this week's memorandum does he react to the tone used by the Negotiating Committee—when he says that hardly any major step to better social services has provoked more misstatements or misunderstandings than his Act Not everyone would agree that this is so, but none can deny that the less attractive features of the National Health Service have had disproportionate emphasis The Negotiating Committee has of course good reason to claim that "the medical profession itself has provided the main impetus towards the establishment of a comprehensive health service"; but the cautious attitude of the profession has been such that in the eyes of the public it has seemed to oppose all schemes for such a service, from the Coalition's white-paper onwards Certainly among doctors the result of this caution has been a widespread feeling of dissociation from a reform which, though it goes farther and faster, embodies what the profession has long demanded; and errors on both sides have unhappily created the mentality of the conscript in men who ought to be volunteers. Fortunately it is not too late for a change of attitude. The Minister's new appeal for genuine and willing cooperation is one that must not go unanswered, for the opportunities of this early stage of the service are opportunities that will never recur.

Pandemic Diphtheria

THE extent to which diphtheria became pandemic during the late war is not generally realised. Stowman,[1] consultant epidemiologist to the World Health Organisation Interim Commission (WHOIC), estimates that in Europe, excluding the Soviet Union, Poland, and the Balkans, for which data are either absent or inadequate, there were soon after the war began not less than 600,000 cases a year, and that the total deaths for the war and immediate post-war years probably exceeded 150,000 The pandemic is now receding, but in 1946 the cases reported in this area numbered 336,000, which is still two-thirds of the peak incidence

When the war broke out Germany differed from the neighbouring countries in having a diphtheria incidence which had been steadily rising for nearly fifteen years Inoculation against diphtheria was not compulsory for German children, nor was it being practised in Germany on a big enough scale to offset the increased risks of infection arising from the extensive development of community life, particularly among young people The main focus of epidemic diphtheria in Germany, then as now, was the North Sea area—i e. Hanover, Schleswig-Holstein, and Berlin. It was probably from this focus that a wave of high diphtheria incidence spread when the German armies broke through on all sides in the spring of 1940 Sweden and Denmark managed to resist this epidemic wave to some extent, but Norway and Finland suffered severely, as did the Netherlands, where an epidemic promptly appeared on the heels of the invaders and with them reached Belgium and France, also spilling over slightly into neutral Switzerland. In several ways our own position during these momentous events was exceptional. In the first place the United Kingdom was not at the outbreak of war an area of low incidence, the median of cases reported annually from 1928 to 1938 being about 75,000 Then communications with the Continent were almost completely interrupted in four of the war years, and the efforts of an energetic public-health service pursuing a well-organised campaign of child immunisation apparently built up a substantial resistance to diphtheria by the time communications were reopened in 1944 England, Scotland, Wales, and Northern Ireland went through the war without any epidemic of diphtheria, and by 1946 the annual incidence of confirmed cases had fallen to 16,000, less than a quarter of the 1928–38 median. Eire, where no extensive immunisation of the child population was carried out during the early war years, had a very different experience, with a peak incidence of diphtheria in 1944 three or four times the incidence in 1941 Mediterranean Europe, and North and South America, escaped the pandemic altogether. The resistance of Mediterranean Europe and the Latin American countries, unlike that of the United States and Canada, cannot be claimed as a result of artificial immunisation and must be ascribed to the unknown factors which have for a long time made these areas unfavourable to the spread of diphtheria. In the Pacific area, where Japan with a rising pre-war incidence seems to have played a part resembling that of Germany in Europe, there was an epidemic in the invaded Philippines and a substantially increased prevalence, reaching a peak in May–July, 1946, in New Zealand.

Denmark was almost the only affected country in which the epidemic wave was carefully studied. Mortensen[2] has shown that in Copenhagen between 1939 and 1945 there was a striking change in the age-distribution of diphtheria cases; of the recent admissions to hospital only a third were children as against three-quarters in pre-war years. Immunisation in Denmark did not begin until 1941, but in Copenhagen the campaign was very successful and as many as 95% of the children were inoculated. Nevertheless in 1944 that city had 1754 cases of diphtheria, compared with only 41 in 1942 Typing studies showed that the outbreak in 1944 was caused chiefly by gravis strains of *C diphtheriæ*, which appeared to have a greater capacity than mitis strains for breaking down the defence conferred by inoculation and were associated with a high case-mortality rate in the uninoculated.

Large-scale international studies of global epidemiology require reliable national data collected in a uniform manner. In Sweden, where diphtheria carriers as well as cases are notified, the reporting of about equal numbers in the two categories suggests that an attempt should be made to reach some international agreement on the definition of a diphtheria case. It is already evident that information on the number of cases and deaths will need to be supplemented by data regarding prevailing types of infection, the age-incidence, and the state of inoculation of the population at risk, before the maximum possible control of diphtheria can be achieved

Synthesis of Vitamin A

NEARLY twenty years ago von Euler et al.[3] reported that carotene possesses the physiological activity of vitamin A; and soon afterwards Moore[4] showed that animals are capable of converting this yellow plant pigment into the colourless vitamin The chemical investigations of Karrer et al.[5] confirmed that vitamin A is a carotenoid derivative, and indicated that it is an alcohol with a molecular weight about half that of the parent hydrocarbon Karrer's structural formula, consisting of a terpene-like β-ionone nucleus joined to a polyene side-chain with a terminal hydroxyl group, has been accepted by all subsequent investigators.

Despite this relatively simple structure, the vitamin has proved difficult to synthesise, largely because of its sensitivity to oxidation and its general chemical instability. Both Karrer and Heilbron, with their respective schools, have done valuable exploratory work. The first claim to have synthesised the vitamin was made in 1937 by Kuhn and Morris[6]; but their product was admittedly impure, and the synthesis appears to have been neither exploited by themselves nor confirmed by others. Later the synthesis of a derivative of vitamin A, in the form of the corresponding methyl ether, was reported by Kipping and Wild,[7] but again confirmation was lacking. Isler et al.[8] have also claimed the synthesis of the same ether by a different route, and have found it to have biological activity. Milas[9] has apparently synthesised several biologically active ethers and esters, and also the vitamin itself in impure form. Since all his products were somewhat inferior to the natural vitamin in their biological activity he concluded that they contained a high proportion of *cis* isomers. These modifications differ from the natural *trans* isomer in having their polyene side-chain bent back upon itself instead of straight, presumably with a considerable reduction in biological activity.

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[1] Stowman, K. *Epidem. vit. Stat. Rep. W.H.O.I.C.* 1947, 1, 69

[2] Mortensen, V. *Acta med scand.* 1946, 125, 283.

[3] von Euler, H., von Euler, B., Hellstrom, H. *Biochem. Z.* 1928, 203, 370

[4] Moore, T. *Lancet*, 1929, ii, 830.

[5] Karrer, P., Morf, R., Schöpp, K. *Helv. chim. Acta*, 1931, 14, 1431.

Another claim to have synthesised vitamin A, this time by a novel and interesting procedure, has recently been made by the young Dutch chemists, van Dorp and Arens.[10] With β-ionone as a starting-point they obtained by a well-established procedure the C_{18} ketone corresponding to vitamin A. This compound was then treated with ethoxyethylene magnesium bromide to add four more carbon atoms, and the resulting C_{22} ketone was partially hydrogenated, and rearranged and hydrolysed by treatment with hydrochloric acid to form vitamin-A aldehyde. This product was spectroscopically identified with vitamin-A aldehyde as obtained by oxidation of the natural vitamin; and it was reduced by treatment with aluminium isopropoxide to yield vitamin A itself, though not yet in a pure state. Whether the method is suitable for exploitation on a large scale remains to be decided: there should at least be no shortage of the starting material, β-ionone, which can be readily extracted or prepared from vegetable sources. Even on a laboratory scale, however, a successful and indisputable synthesis of vitamin A in pure and stable form would fulfil an ambition long cherished by organic chemists, and confirmation of the new work will therefore be awaited eagerly. Meanwhile the claim made by the Dutch workers[11] to have synthesised the acid corresponding to vitamin A may perhaps be still more interesting to those studying the vitamin from a biological angle. This acid appears to have a potency equal to that of vitamin A when it is administered orally as the sodium salt.[12] It is said to differ in two ways from all other substances having vitamin-A activity: (1) even large doses do not give rise to storage of vitamin A in the liver[13]; and (2) subcutaneous injections of the sodium salt are only slightly inferior in biological activity to the same doses given orally. These two findings, if confirmed, will have bearings both on our knowledge of vitamin-A metabolism and on vitamin-A therapy in diseases where intestinal absorption is impaired.

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EARLY RECOGNITION OF RHEUMATIC HEART DISEASE

We are still curiously ignorant concerning the incidence of rheumatic heart disease and its early signs. The mass examination methods of war-time provided a unique opportunity to stop these gaps in our knowledge, and Parkinson and Hartley[1] have analysed their findings in 2500 men referred by medical boards in 1940–45 because of suspected heart disease. Of these men, 806 were found to have heart disease, and in 609 of them (i.e., 76%) rheumatic heart disease was diagnosed. This ratio of rheumatic to non-rheumatic disease closely follows the American figure, for Wilburne and Coccolini[2] found that heart disease accounted for 6% of the rejections of recruits on mental or physical grounds, and that 63% of the cases were rheumatic. In the hospital population as a whole Bruce Perry[3] found that 38% of heart cases were rheumatic.

In the recognition of rheumatic heart disease Parkinson and Hartley place greatest reliance on radioscopy and a careful examination, including auscultation with the patient erect (or sitting), lying on his back, and lying on his left side after exercise. The history is also important, but it is unreliable because it can easily be falsified. Routine electrocardiography was soon discarded because its value was found to be limited except in specially difficult cases or those with arrhythmia. Of the entire group, 264 (i.e., 32% of all rheumatic cases) had mitral valvular disease, 184 of these having mitral stenosis and 12 mitral incompetence, while in 68 the diagnosis was "mitral valvular disease probable." Of the 184 recruits in whom mitral stenosis was diagnosed, 104 had a presystolic murmur, 13 a mitral diastolic murmur, 5 a loud apical first sound, 2 no auscultatory abnormality

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3. Perry, C. B. *Brit. med. J.* 1931, i, 278.

radiological evidence of mitral stenosis, and 60 only systolic murmur. This last group is the most important from the point of view of early recognition, and two questions immediately arise—(1) is the murmur functional ("incidental," as Parkinson calls it) or indicative of valvular disease; and (2) if the latter, does it denote mitral incompetence or stenosis? The series contained three groups of cases with an apical systolic murmur—the 60 thought to have mitral stenosis, the 12 diagnosed as mitral incompetence, and 45 of the 68 mitral-disease-probables. How were these differentiated? The two main criteria of stenosis were the loudness and length of the murmur and the typical cardiac outline on radiography. The 12 cases diagnosed as mitral incompetence had apical systolic murmurs; 6 had a history of previous rheumatic infection; and 5 showed general enlargement of the left ventricle. Of the 68 recruits in the "probable" group there was a previous history of rheumatic fever or chorea in 45; a history of dyspnœa in 14 and of hæmoptysis in 1; an apical systolic murmur in 45; an accentuated apical first sound in 24; a doubtful systolic murmur in 9; some radiological evidence of enlargement in 38; and right axis deviation in 4. In this group the history, symptoms, and signs together strongly favoured the diagnosis, but they were not conclusive, and in half of them the X-ray note was "doubtful enlargement of the left auricle."

Aortic incompetence was found in 202 of the 2500 men, and all of these had a typical diastolic murmur. That so many cases were found is a striking commentary on the ease with which the diagnosis may be missed in the early stages. The murmur may be so soft as to be missed unless it is specifically and correctly listened for—i.e., to the left of the sternum in the 3rd or 4th interspace, with the patient erect or sitting up and leaning forwards while holding his breath. With these precautions it should not be missed except by those unfortunate auscultators whose hearing is defective in the higher ranges. In the early stages, however, the murmur may not be present all the time, so repeated auscultation may be necessary. Aortic stenosis, of which there were 14 examples in the series, provides no great difficulty. This diagnosis may be made in the absence of a thrill, but a thrill is usually present, though it may be missed if the hand is pressed too hard over the aortic area; light but firm pressure is the secret of successful palpation.

In his Lumleian lectures some years ago Parkinson[4] said: "By radiocardiology we shall reach a more vital anatomy and physiology, and—earlier in disease—a dynamic pathology of the living heart." His latest investigation confirmed the vital importance of radiology in the diagnosis of heart disease. A full clinical examination is a sine qua non but will not reveal every case. Clinical examination and radiology together make it possible to recognise the vast majority, though there are still a few cases (60 in this series) in which doubt must remain; in these phonocardiography may well provide the diagnosis. It is abundantly clear from this investigation (though the fact has not yet penetrated to the textbooks) that a presystolic murmur is not the earliest sign of mitral valvular disease. From what we know of the natural history of the disease this is not altogether surprising. As the mitral cusps become gradually involved in the rheumatic inflammatory process it is logical to assume that, before becoming adherent to each other and producing stenosis, they should pass through a stage where they are merely slightly retracted and therefore incompetent. This stage is not commonly recognised because there are no symptoms and therefore the patient is not examined unless he wants to join the Forces or insure his life.

TETRAETHYL AMMONIUM IN PEPTIC ULCER

THE major feature of modern therapeutics is the constant stream of new drugs, but a minor one is the discovery of new uses for familiar compounds. Thus the tetraethyl ammonium compounds were investigated pharmacologically many years ago, but are now being reinvestigated both in this country and in the United States. Principal interest has hitherto centred on their effect on blood-pressure, which, though transient, may be useful in the diagnosis and even the treatment of hyperpiesia and peripheral vascular disease. From animal experiments the compounds appear to act by blocking autonomic ganglia, but there is some doubt whether they exert an exactly similar action in man. Little et al.[1] have now studied their effects on gastric ulceration artificially produced in rats. This is not the occasion to discuss how far peptic ulcers in animals resemble those in man. The important thing is that the course of peptic ulcers produced by pyloric ligation in rats appears to be significantly modified by the administration of 1 mg. doses of tetraethyl ammonium chloride intramuscularly before operation and hourly afterwards. The treatment was continued until the death of the controls from perforation or of the treated by sacrifice, and there was a striking difference in number and size between the ulcers in the control and in the treated group. Further, whereas the ulcers in the controls mostly perforated, the treated rats showed only minor lesions and 3 had none at all. These results have been thought sufficiently promising to justify a tentative clinical test, and Little and his co-workers, encouraged by the results in two cases, are staging more extended trials.

BOECK'S VERY FIRST SARCOID

John H. Stokes and his associates[2] have defined the sarcoid group of disorders as cutaneous affections ranging from erythema to tumour formation, characterised by a benign course and absence of ulceration. They find the lesions distinctive in the formation of proliferative tubercles composed of endothelioid cells and sparse numbers of Langerhans giant cells, usually with a slight lymphocytic reaction; caseation does not take place. Tubercle bacilli or other organisms cannot normally be demonstrated in the lesions. In their classification of the group they include four forms: Boeck's benign miliary sarcoid, lupus pernio of Besnier, angiolupoid of Brocq and Pautrier, and the subcutaneous sarcoid of Darier-Roussy.

Prof. Cæsar Boeck's patient in 1896, aged 36, and in 1940, aged 80. (Reproduced from Prof. N. Danbolt's paper.)

Cæsar Boeck's first case of "multiple benign sarcoid of the skin" has been re-examined by Danbolt,[3] who says that this patient's record was published by Boeck work. The first claim to have synthesised the vitamin was made in 1937 by KUHN and MORRIS [6]; but their product was admittedly impure, and the synthesis appears to have been neither exploited by themselves nor confirmed by others. Later the synthesis of a derivative of vitamin A, in the form of the corresponding methyl ether, was reported by KIPPING and WILD,[7] but again confirmation was lacking. ISLER et al.[8] have also claimed the synthesis of the same ether by a different route, and have found it to have biological activity. MILAS [9] has apparently synthesised several biologically active ethers and esters, and also the vitamin itself in impure form. Since all his products were somewhat inferior to the natural vitamin in their biological activity he concluded that they contained a high proportion of *cis* isomers. These modifications differ from the natural *trans* isomer in having their polyene side-chain bent back upon itself instead of straight, presumably with a considerable reduction in biological activity.

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[4] Parkinson, J. *Lancet*, 1936, i, 1399.

[1] Little, J. M., Ogle, B. C., Yeagley, J. D., Cayer, D. *Science*, 1947, 106, 448.

[2] Handbook of Fundamentals of Medical Dermatology, Philadelphia, 1942.

[3] Danbolt, N. *Schweiz. med. Wschr.* 1947, no. 44, p. 1149.

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Special Articles

DIET AND DISEASE IN THE SUBARCTIC

A. C. DUNCAN
M.D. Manitoba
PHYSICIAN, ST. MARY'S HOSPITAL, DAWSON CITY,
YUKON TERRITORY

This article was prompted by a trip "outside" some years ago. At that time, after ten years of general practice in the Yukon, I once again saw children crippled rheumatic fever, again heard the words mitral stenosis, chronic nephritis, and toxæmia of pregnancy. It was then that I fully realised that these afflictions do exist in my section of the far north.

Having determined to record these peculiarities, I [illegible] three years in confirming my original observations. [illegible] been my opportunity to follow and observe a rather unique natural experiment.

Profitable mining at Dawson has held 1500–2000 people [illegible]ally isolated and surrounded by vast sparsely inhabited lands. For the past fourteen years it has been pleasure and responsibility, at times with one substitute, to administer complete medical and surgical to this community. The area involved is provincial [illegible], and consequently it is almost impossible for people to go outside for anything but the most serious of [illegible] surgery. The nearest large centre is Edmonton, far south of us as Winnipeg is east of Vancouver (half the width of Canada). This situation leaves me work of what might be called a "totalitarian" general practice; the residents must see me, and I must treat them, for everything from cataracts to dandruff.

This group of people is subjected to an environment that is unique and constant. Consequently the incidence disease therein may with reason be attributed to the presence or absence of factors that differ from other parts of Canada. For one thing, the diet is certainly unusual, and nutrition alone may explain some of the facts about to be related. Every person in the community, wealthy or poor, has about the same diet. There are no slums here, nor can the well-to do avoid [illegible] physical activities commonly called chores. It is unusual here to see stout flabby men in any walk of life. The tough arctic winter treats all classes with equal disrespect.

RHEUMATIC FEVER

Rheumatic fever does not exist in the Yukon. For fourteen years I have tried to find a typical case, but without success.

There are 350 children in this area under fourteen years of age. This is the number of children named in Santa's list at last year's Christmas tree. This figure does not include very small children or adolescents over fourteen years of age. If these groups are included, the population at an age susceptible to rheumatic fever is much larger than 350. Most of these children I delivered myself; many of them I circumcised, immunised against diphtheria, and operated on for tonsils and adenoids; a few I have watched slip into the oblivion that awaits all.

In such circumstances it is not likely that cases of acute rheumatic fever would be missed. To repeat, to my knowledge the Dawson and Klondyke districts of the Yukon have no case of acute rheumatic polyarthritis, rheumatic myocarditis, pericarditis, or endocarditis; nor has there been any case among the permanent residents. In contrast, general statistics indicate that about six cases should be found constantly in our population. Furthermore, one rheumatic "cardiac cripple" that came here from the outside improved remarkably in a few months and had no acute remissions. He is now working in a garage.

Chorea is not seen. Our northern children have the usual or higher incidence of acute tonsillitis, septic throats, quinsies, and upper respiratory infections. The streptococcus is just as big a nuisance here as in the larger centres. Tonsils are as large, septic, and alluring to the surgeon here as elsewhere. Crowding and poor housing are said to aggravate this disease. In the Yukon housing, on the average, is extremely poor, and usually the children of large families sleep and live in very small cabins. Large houses here are expensive to build and very expensive to heat.

It is also claimed that climatic extremes produce or influence the incidence of rheumatic fever. The Yukon has a very severe climate, with temperatures ranging from full summer heat to a dark dayless 70° below zero, and yet has no rheumatic fever. Since this disease ranks among the first three causes of death in childhood, any light thrown on its ætiology is important.

TOXÆMIAS OF PREGNANCY

In this Yukon district there have been some 400 babies born in the last fourteen years. I have done urine analyses and taken blood-pressure readings on each mother at least six times prenatally. In cases of twins, hydramnios, or those otherwise likely to be toxæmic, more frequent examinations were made. It is very rare to have any woman show albumin to the salicylsulphonic-acid test. The Indians never become toxæmic. Only one patient in my experience had eclampsia. She was not seen before labour, the convulsions atypically starting four days postpartum. This is the only serious toxæmic case in my memory or records. The rarer types of toxæmia, such as acute yellow atrophy of the liver, have never occurred. Moreover, premature births are very rare. Since this is the commonest cause of infant mortality, the latter is very low. Our babies here just don't seem to come too soon.

People in the Yukon consume a great deal of alcohol, but cirrhosis of the liver is very rare; I can recall only one case. To my mind, they also stand surgical shock much better than do their relatives outside. This is especially true of the Indians, in whom the gravest operations cause but slight shock.

NEPHRITIS

That large group of kidney diseases known as Bright's disease, or, better, glomerulonephritis in its three stages, along with its related nephrosis, is unknown in the Yukon. Albuminuria here means usually pyelonephritis or, if in an Indian, a tuberculous kidney. We do not see children with acute nephritis or adults with the usual wet and dry kinds of nephritis. Even the old people with hypertension, which is very common, almost invariably die of cerebral accidents or congestive heart-failure; almost never of uræmia.

Incidentally, we have an overabundance of elderly people in the Klondyke who came here in the days of '98. On the average, I am sure, they live a good decade past their allotted span, unworried about their kidneys and relatively free from those atheromatous patches that ultimately finish most of us.

DIET

What can explain the immunity of this isolated colony of people to these apparently unrelated diseases? I have wondered for years. What element in our lives can explain these facts? The only plausible explanation is diet.

During an average year the residents of Dawson and vicinity eat about 100 tons of imported meat and some 40,000 eggs. There is also available to them an unlimited quantity of wild meat—moose, caribou, rabbits, and fish. Consequently, the poorer the people financially, the more meat they eat relative to the expensive starchy simultaneously in Norway and America in 1899,[4] though the original observations are dated Sept. 2, 1896. The man was then 36 years old. On his face, trunk, and extremities he had numerous cutaneous nodules; some of them flat and others protruding; they were sharply limited, and brown or yellowish-red; some showed fine telangiectasia and slight scaling. There was a considerable amount of lymphadenitis. In the summer of 1940 this patient, then aged 80, was admitted to one of Professor Salvensen's beds in the hospital of Oslo University, suffering from a hypernephroma of the left kidney with metastases in the right kidney and the left lung. There were no demonstrable symptoms of Boeck's sarcoid, nor did necropsy reveal changes which might be so interpreted; but in the skin of the face, especially the forehead and temples, there were slight scar-like alterations with some telangiectasia, while on the tip of the nose there were some yellowish spots which disappeared on pressure with a glass. The swelling of the lymph-glands had completely subsided. Nevertheless the Kveim reaction was positive.

This test for sarcoidosis is not widely known in Britain. In 1941 Kveim[5] demonstrated that a heat-sterilised suspension of sarcoid tissue, taken from a proved case of Boeck's sarcoid, could provoke a slowly forming, indolent papule when injected intracutaneously into a patient with the same malady; the sarcoid tissue is best obtained from a lymphatic gland. The papule persists for several months and may break down to form an indolent ulcer. The test is said to be very reliable.

HEROIC SURGERY

In an account[6] of 100 operations for advanced abdominal cancer, Prof. Alexander Brunschwig, of Chicago University, records performances which will seem almost incredible to older surgeons and may startle even the younger men. His book has been written to recommend radical surgery for conditions generally deemed inoperable; but only a superb craftsman could have contemplated such heroic attacks as are described. For example:

> A patient of 39 had a carcinoma of the splenic flexure. To eradicate it, three-fifths of the stomach, the spleen, the splenic flexure and part of the transverse colon, and most of the body of the pancreas were removed. The patient was discharged with a colostomy on the sixty-second post-operative day; five months later his colostomy was closed. A year later an incisional hernia was repaired, and two and a half years after his operation he is still well.
>
> A patient of 46 with a polypoid carcinoma of the upper part of the stomach had the whole of this organ, the spleen, and the pancreas to the left of its neck, all excised in one piece. He lived for over five months. In another patient, aged 28, the whole of the stomach, a large piece of the left lobe of the liver, the body and tail of the pancreas, the spleen, the transverse colon with all the omentum, and a part of the anterior abdominal wall measuring 12 × 9 cm. were removed. The author believes this to be the most extensive resection on record for neoplastic disease. The patient lived for nearly eight weeks.

How were these great operations possible? Only through the most exact care in preoperative preparation. Blood-transfusions were given whenever the red-cell count was below 4,000,000 per c.mm.; dehydration was always corrected; and a daily urinary output of 1000–1500 ml. was insisted on. Where there had been vomiting, blood-chloride estimations showed whether chlorine was needed. Deficiencies of vitamin K and vitamin C were made good. Great stress was laid on the plasma-protein level: if this was less than 6 g. per 100 ml. the loss was made up by plasma transfusions. Castor oil (1–2 oz.) and 50% magnesium sulphate (2 oz.) we given on the third and second day before operating, get the alimentary canal empty. After operation t maintenance of fluid balance was held to be of gre importance, while nitrogen balance was maintained infusion of protein hydrolysates. Sulphonamides a penicillin were not regarded as of much value for t prevention of infection.

What was the result of this active operative treatme of advanced cancer patients? Of the 100 patien 34 died as the result of the operation; 17 lived, with palliation, up to five months and then died of th disease; 30 lived up to eighteen months after operati and then succumbed; 6 lived for an average of thirt three months; and 13 are living with an average surviv of forty months.

Clearly it is difficult to assess the usefulness of su undertakings. As the operations become greater a greater in extent there must come a stage beyond whi the patient, though surviving, is so handicapped that h life is a burden, but where are we to draw the line In some instances there is no question, because relief great; for example, where a massive growth is obstruc ing the pylorus, gastrectomy may give relief even thoug there are secondary growths in the liver. But whe massive parts of the body are removed, defects in functio not always measurable, must remain. How many these 100 patients were thankful that the operation w done we do not know. Admittedly it is necessary keep extending the limits of what is surgically possibl but even in successful cases the general enfeebleme caused by a large abdominal operation lasts for month It would have been instructive to have the postoperati happiness of these patients assessed by an unbias social worker.

POSTGRADUATE TRAINING IN EIRE

Though the new Health Act, lately passed aft three years' resistance, is now being challenged in th High Court by Deputy Dillon as being repugnant t the constitution of Eire, the department of health i going ahead with its development plans. The Medica Research Council grant has been doubled, a tuberculosi chemotherapy research unit has been set up, tuberculosi training courses have been organised, and teams ar shortly to be sent abroad for further training. In th past, though many million pounds from the Hospital Trust Fund have been spent on building and equipment little has gone to training men. Now the minister fo health proposes to establish a postgraduate centre fo medical officers of local authorities, which will be locate at St. Kevin's Hospital, a large poor-law infirmary in Dublin. He has also appointed a committee to examine the present system of undergraduate and postgraduate education, and to make recommendations on changes required in the curricula and organisation of medical education, on the consolidation or amendment of the Medical Practitioners Act, 1927, with special reference to the control of medical education, registration, discipline, and reciprocity, and on any further arrangements to be made for specialist research in medicine and allied sciences.

LONDON'S HEALTH SERVICES

Some of its duties under the National Health Service Act were considered by the London County Council last Tuesday. Personal health services are to be administered in nine divisions, each headed by a senior medical officer. These divisions are to be subdivided into 165 areas, each containing about 20,000 people and composed of two or more neighbourhood units. The ultimate aim is to provide for each area a comprehensive health centre, including general-practitioner service, which will be within about a mile of every user's home.

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[4] Boeck, C. P. M. *Norsk. Mag. Lægevidensk.* 1899, 14, 1321; *J. cutan. Dis.* 1899, 17, 543.

[5] Kveim, A. *Norsk. Mag. Lægevidensk.* 1941, 9, 169.

[6] Radical Surgery in Advanced Abdominal Cancer. By ALEXANDER BRUNSCHWIG, M.D., professor of surgery, University of Chicago. London: Cambridge University Press. 1947. Pp. 324. 42s.

Rheumatic fever, glomerulonephritis, nephrosis, and toxæmias of pregnancy can all be regarded as reactions protein-starved connective tissue to metabolites of ection.

Experience in the Yukon suggests that rheumatic r would cease to exist if every child ate an egg daily from babyhood, that toxæmias of pregnancy would be virtually eliminated if every pregnant woman took a pound of meat daily, and that some of the degenerative diseases of the kidney could be prevented by adequate protein intake throughout life.

WORLD FEDERATION OF ASSOCIATIONS OF CLINICAL PATHOLOGY

An international association of societies devoted to that branch of medicine known in this country and the United States as clinical pathology was brought into being at meetings held in Paris on Nov. 21 and 22 during the first international congress of the Société Française de Biologie Clinique. The conference had been called under the presidency of Prof. Michel Polonovski, of Paris; but at its opening Professor Polonovski, in courteous recognition of the pioneer work of the European Association of Clinical Pathologists, invited its president, Dr. S. C. Dyke, of Wolverhampton, to occupy the chair, and the remainder of the proceedings were conducted under the chairmanship of Dr. Dyke. Delegates and observers attended from Belgium, Czechoslovakia, Denmark, France, Great Britain, Greece, Italy, Peru, and the United States.

The term "clinical pathology," though long employed and well understood both in Great Britain and the United States, is not in general use in many Continental countries, while in others it carries meanings differing from that accepted in Britain and the United States. The conference, therefore decided to adopt for international usage the name "clinical biology," this being defined in the terms used by the European Association of Clinical Pathologists as consisting in "the application of pathology and all its related sciences to clinical medicine." The objects of the international association were defined as the establishment of permanent coöperation between the member national societies of clinical biology; and the coördination of their scientific and technical means of action and the furtherance of clinical biology in every aspect of its field by convening conferences, congresses, and meetings and by interchange of publications and even more especially of personnel.

The conference had before it texts of proposed statutes prepared both by the Société Française de Biologie Clinique and by the European Association of Clinical Pathologists. Although prepared independently, these showed a surprising degree of conformity, and in the course of two sessions the conference was able to draw up a provisional constitution. This was designed in general conformance to the rules established by UNESCO for its associated international bodies; it establishes the governing body of the International Federation as a council or commission of the delegates from the national member societies. This council acts through the executive committee elected by itself and consisting of six members. The English and French texts of the statutes will come up for ratification at a full meeting of the council, which, it is hoped, will be held in England in the course of the next summer gathering of the British Association of Clinical Pathologists.

The conference elected its officers as follows: president, Dr. Dyke; vice-president, Prof. Raoul Kourilski (France); secretaries, Dr. A. Durupt (France) and Dr. J. Ungar, (England); treasurer, Dr. W. H. McMenemey (England). The second office of vice-president was left vacant in the hope that it might be filled by a representative of the United States of America.

National societies devoted to clinical biology and wishing to become members of the international association are cordially invited to communicate with either of the secretaries, Dr. A. Durupt, 20, Rue de la Pompe, Paris, or Dr. J. Ungar, Glaxo Laboratories, Greenford, Middlesex.

A MODERN MATERNITY HOSPITAL

WHEN the old Jewish Maternity Hospital withdrew from its site in Whitechapel, during the war, it gave birth to two daughter hospitals, one at Hampton Court and the other at Stoke Newington. The Bearsted Memorial Hospital at Stoke Newington, named after the parents of the present Viscount Bearsted, who did much to establish it, was actually begun before the war; and though far from complete—it still lacks its upper stories and much of its projected ground plan—it is as fine an example of a maternity hospital as we have to show in this country just now. The new building, which was officially opened by Viscountess Bearsted on Dec. 17, has been in action since last August, and takes 24 mothers in the public wards and 6 in private rooms. Though specially designed to respect Jewish customs and dietary laws, it is open to mothers of all creeds; nor is any discrimination shown in appointing staff.

The main door opens into a warm light waiting-hall, provided with comfortable chairs and a couple of desks at which visitors write notes to patients if they cannot go in to see them. This hall gives the note of the whole hospital, which somehow manages to be airy and spacious, yet intimate.

IN THE WARDS

The wide corridor to the wards is interrupted by a low swing gate of black wood dividing the administrative side from the hospital proper. It has the effect of reminding people that they are entering regions where such things as infection and noise must be kept in mind.

Single-bed private wards open from it, each with its wash-basin, well-sprung bed, and broad Crittall windows which fold back to leave almost a whole wall open to the air—a pleasant thing in summer, for the garden lies outside, and a striped awning can be lowered above the window, to keep the room cool and intercept glare. The light is placed above the bed but to one side of it, so that it cannot shine directly in the patient's eyes; and she can either switch it full on, or dim it to the power of a night-light. If she needs anything, a bedside button sets a buzzer going and lights a red signal in the sister's office, and also switches on a signal light beside the bed which remains burning until the nurse coming to attend her switches it off. Signals of the same type are fitted in the bathrooms.

The main wards are all small—either 2 or 4 beds in each—and are as comfortably equipped as the private wards. All are delicately coloured, with softly tinted ceilings, easy to the eyes.

WORKROOMS

Besides a strong central light, each of the two labour wards has, depending from the ceiling towards the foot of the bed, a powerful bulb set at the end of a long telescopic arm, which remains steady in any position to which it is pushed. The bulb, in its conical shade, can be twisted about on the end of this arm until the light is directed as the doctor or midwife needs.

A ward is provided in which two mothers in the first stage of labour can keep each other company through the tedious early hours. When the upper stories are complete, and the hospital reaches its full complement of 100 beds, it will be possible to convert another small ward, at present being used as a private room, into a third labour ward.

The two sluice-rooms are fresh, light, and warm. Stainless steel bed-pans are placed, after use, straight into a mechanical cleanser, which washes them clean and sterilises them with steam. On removal they go into a rack composed of hot pipes, which keeps them at a suitable temperature. Bed-pans are numbered, each patient keeping her own throughout her stay in hospital; when she leaves her pan is sterilised thoroughly before being given out again.

THE NURSERIES

There are four nurseries: a large one, in which the babies in their cots are protected by a glass screen from gusts of air or organisms disseminated by those who enter hurriedly; another of medium size; a small one, for premature babies, which no-one may enter unmasked; and a small isolation nursery for babies isolated because they are suspected of developing an infection. Some of the cots are made in open wire-work, others are smooth-walled receptacles painted in light colours, in which the babies look like something just foods. The converse is true of the diet in the larger populated centres outside. In the Yukon the starches and sugary foods are expensive because of transport costs, whereas fresh meat is to be had by anyone with a bullet and a strong back. As so-called civilisation advances, human beings eat more and more of the fuel type of foods—i.e., carbohydrates and fats. To their detriment they ingest less and less of the all-important reparative protein foodstuffs.

One summer an Indian fell out of a tree, injuring his neck. I made a trip by aircraft to an isolated lake in the western Yukon to investigate. Upon arrival I learnt that the unfortunate man had died the day before. However, the trip gave me a chance to see a group of Indians who were the subject of an involuntary dietary experiment. The whole village complained bitterly that they were starving, having had no flour, tea, or other store food for some months. To my amazement the whole tribe was fat, alert, and generally in excellent physical shape. Even the babies and small children (some gnawing boiled fish-heads) were energetic, a good colour, mischievous, and acting as healthy children should. At the lakeside there were stacks of fresh whitefish netted in the nearby bay. These people had survived—yes, thrived—on an exclusive, if involuntary, fish diet for months. They eat not only the muscle tissue but also the livers, heads, spleens, and whatever else a fish has.

Practically no northern Indian likes agriculture. Occasionally a man will, if persuaded, plant a few potatoes, but they much prefer to hunt and eat meat. Most Indians regard working in the soil as degrading and undignified.

—AND DISEASE

During my whole time in the Yukon I have seen only two cases of cancer in the Indians, both of them in women married to white men living in town and eating our diet. Is it possible that the glands and entrails of fish and animals provide an immune factor ?

It has been shown that the quality of meat depends to a large extent on the food of the animal producing the meat. The same is true of eggs; the hen produces an egg rich or poor nutritionally, according to her diet. Our Yukon protein intake is largely of natural food. The animals eat the native mosses, grasses, and lichens, and not the chopped farinaceous matter of a depleted soil, as is the case with domestic animals. Maybe this natural diet produces a better grade of prophylactic protein. Possibly, also, a superior egg comes from a hen that eats plenty of beetles. It is said that migrating ducks and geese go north because of a craving for some substance found in northern lichens.

Man's gut, I believe, is essentially and basically carnivorous. Our ancestors, like the present-day Indians, did not eat highly processed farinaceous food. Our entodermic tube, with its processing liver and other accessory glands, is set up to receive far more protein than the average present-day human is feeding it. To repeat, we eat too much of the "fuel" foods and not enough of the "building-material" foods.

Rheumatic Fever and Nephritis

Both rheumatic fever and glomerulonephritis are said to be due to, or associated with, the ever-present streptococcus, harboured in septic teeth and tonsils and elsewhere. Yet in both diseases no streptococci are found at the site of the lesions, which are therefore regarded as reactions to diffuse toxins, possibly acting allergically.

Consider now the similarity in this diffuse reaction. Both diseases affect connective tissues essentially, and both cause a proliferative and exudative reaction. In glomerulonephritis the primary lesion is a swelling and proliferation of the endothelium of the glomerular tuft vessels, leading to obliteration of the circulation. The Aschoff body of rheumatic fever is also a group of swollen and proliferating cells of the self-same reticulo-endothelial system; essentially the same kind of cellular reaction in the kidney and the heart. In glomeru nephritis the swollen tufts cut off the circulation to glomerulus, and this is followed by secondary hyal and tubular degeneration. In rheumatic fever sim degeneration is succeeded by useless scar tissue an ruined heart. The end-result of glomerulonephritis often the same burnt-out mass—a granular contrac kidney.

The exudative factor in rheumatic fever is well kno typically causing the large swollen joints and nodu In glomerulonephritis the second stage is characteri by the "large white kidney." Is not the œdema nephritis simply exudation in the extreme ? This œde could be due to a similar degeneration of the capill endothelial cells or their cement substance, allow fluid to pass to the tissues. A similar failure in per ability in the kidney glomerular cells could expl albuminuria.

Shock itself may be partly due to increased en thelial permeability. Does not a plasma transfus amount to a protein rejuvenation ? The pure osm *advantage of the protein molecules in the circulat* is not the whole explanation of such a transfusi otherwise acacia solutions of the same osmotic read would be as effective as plasma in shock. I suggest t blood-protein transfusions, besides helping mechanica by attracting electrolytes and fluids to the circu tion, are also chemical aids in repairing the inju capillary cells. This may be the reason why prote rich Yukoners do not readily suffer surgical shock.

Arterial Degeneration

The subintimal thickening, endothelial proliferati degeneration, fibrosis, and ultimate ischæmia of athe sclerosis are also suspiciously like the pathologi conditions I have just mentioned. To hazard a pur speculative thought perhaps the dietary habits of most civilised communities have a lot to do with th prematurely narrowed tubing and all its dire consequen

Incidentally, most of the progress in modern medic is being made in the acute bacterial diseases. Could not spare a little more time for the less spectacula but really more important, degenerative disease Personally, I am more concerned about the insidio progress of my coronary plaques than anything else medicine.

I fully realise that many of the pathological poin made above are subject to question. However, aft consideration, it seems to me likely that persiste dietary protein deficiency leads to a uniform pathologic lesion in the reticulo-endothelial system with hyper plasia, degeneration, and ultimately substitution b scar tissue. It may well be that these tissues, adequatel protected by protein intake, are immune to the constantl recurring minimal doses of toxins, whether from strepto cocci, pregnancy, alcohol, or other cause. Unprotecte and undernourished tissues, conversely, react typicall to these stimulants and develop the clinical disease mentioned. The microscopical and clinical pictures o rheumatic fever and nephritis may at times sugges inflammation; but some of the deficiency diseases— e.g., beriberi—were also regarded as inflammatory befor their true nature was known.

Be all this as it may, the Yukon diet is very rich in natural proteins, and this I offer as the explanation for the absence of several important diseases.

CONCLUSION

In an area of the Yukon, lying in the subarctic region, the inhabitants do not suffer from rheumatic fever or glomerulonephritis, while toxæmias of pregnancy are very rare.

These people take a high-protein diet, including much meat.

ship agreements, it is also impossible to estimate at the appointed day the shares due to individual partners. This being so, it is impossible to carry out the requirement of the Act that interest should be paid annually to individual practitioners.

A practitioner may be required (*a*) to buy a partner's public practice the capital value of which he cannot realise, the income from which he cannot receive, and compensation for which is not available to him: or (*b*) to buy a partner's private practice which he cannot sell and in respect of which no compensation is payable from the monies provided under the Act.

The assumption that it will be possible to estimate the shares of individual practices (as distinct from individual practitioners) is probably unfounded; for the Act requires, in theory, that the whole of the £66 million, or the appropriate proportion thereof, shall be paid out, and in practice there will be an undistributable residue. The Government cannot keep its promise in regard to the relief of hardship, and at the same time put into operation the Act in its present form.

If the Ministry's interpretation is correct, unfairness amounting in some cases to expropriation will result, and practitioners desiring to remain outside the service may in self-protection be forced into it. On the other hand, if this interpretation is wrong (as Sir Cyril Radcliffe, K.C., and Mr. J. H. Stamp believe) a practitioner who fulfils his obligation to buy or sell a share will be liable to a fine or imprisonment or both. A final ruling on this matter can be given only by the House of Lords, and meanwhile no practitioner can be sure of his position. It is unjust to leave a demonstrably ambiguous Act unamended, and the financial situation of practitioners uncertain, until a case has been fought out in the courts. Doctors who do not join the service by the appointed day do not qualify for compensation, and for this reason alone the position should be precisely defined at least six months before that day.

It is in the best interests of the public and the profession that general practitioners should retain the ownership of the goodwill of their practices. This ownership provides an important incentive, encourages good and keen work, provides a basis for coöperation between practitioners and a bond between doctors and their patients. Although emphasis is laid in this statement on the unworkability of the Act in this respect, the issue of ownership of goodwill is regarded by the medical profession as fundamental to its freedom.

Partners and Assistants

In partnerships formed after the appointed day and involving a practice in the public service it will be illegal for the partners to distribute the emoluments except in the proportion in which they are earned: a sale of goodwill is deemed to have taken place where "services are performed by any partner for a consideration substantially less than those services might reasonably have been expected to be worth having regard to the circumstances at the time when the agreement was made." Since it is hard to assess the "worth" of the services of either a senior or a junior partner, and their respective value is liable to change, the general effect will be to discourage partnerships. It is ironical that an Act which aims at the development of group practice should do this.

Similarly, a practitioner who pays an assistant substantially less than his services "might reasonably have been expected to be worth" and who afterwards admits the assistant to partnership commits an offence. In this way the Act discourages practitioners from admitting assistants to partnerships, and hence discourages the newly qualified doctor from doing what is highly desirable he should do—namely, serve as an assistant before he becomes a principal. More and more practices will be left with no-one in charge when a principal dies or retires.

It may be argued that the system of registration of agreements with the Medical Practices Committee will protect the profession from the above dangers. But nothing is known about the attitude which this committee may adopt. And however much the committee may desire to do nothing to endanger partnerships and assistantships, or to endanger practitioners, it cannot act except in conformity with the statute.

Remuneration

The committee hold that, except in special circumstances, the remuneration of general practitioners should be by capitation payment in proportion to the number of persons on a doctor's list, and that this principle, which they regard as fundamental, should be embodied in the Act. They are opposed to the payment generally of a salary, basic or other.

The remuneration of specialists for hospital work should be on the basis of annual payments. Specialists should be free to decide whether they will undertake domiciliary work, and those who do so should be paid according to items of service rendered.

Midwifery

By imposing a qualification in addition to the statutory qualification the Minister has taken power to restrict the right to participate in the midwifery services. This is unnecessary and undesirable.

Nursing-homes, Hospitals, and Private Patients

It is undesirable, too, that the Minister should be empowered to establish a monopoly in hospitals. State-ownership of nursing-homes would tend to deprive the profession of facilities for independent practice, continuance of which is necessary to the maintenance of a high standard of medical service. Private nursing-homes, whether carried on for profit or not, should not be acquired under the Act.

The Minister's discretion should be replaced by an obligation to permit specialists in the service to treat private patients in private beds at their own or any other hospital. To set a maximum on fees chargeable to patients who pay the full cost of private accommodation would be wholly inappropriate. In at least a proportion of private beds arrangements between the specialist and the patient should not be subject to control by regulation.

Administrative Bodies

After the initial appointments, local executive councils, boards of governors of teaching hospitals, and hospital management committees should elect their own chairman.

Local health authorities should be required to coöpt to health committees practitioners representative of the local profession.

Right of Appeal

There should be a right of appeal to the High Court against a decision to remove a practitioner's name from the list(s) of any or all executive councils.

General Comment

In concluding their statement (of which the above is only a brief summary) the committee say that the Act involves an excessive concentration of power in the hands of the Minister, and as it now stands is in many respects unacceptable to the medical profession. It is full of legal perplexities and anomalies which could only be resolved, if at all, after prolonged litigation accompanied by widespread uncertainty among the profession and the public. Many of its provisions are fraught with the risk of grave hardship to patients and with serious injustice to doctors and their dependants. Even with the utmost good will on the part of the medical profession its wording is in places so obscure that to bring it into force as it stands will create chaotic conditions.

delivered by an expensive florist. Cots of the second type are preferred by the nurses because they protect the child from draughts, are easy to clean, and, unlike the wire cots, have no tiny projections which catch at clothes and shawls.

The babies' baths, in the nurseries, are specially made without taps; a faucet, set in a recess at the back of the bath, is controlled by a pedal near the floor which the nurse operates with her foot. The water it releases into the bath is at a suitable temperature, controlled by a thermostat. The baths, set at a convenient height for the nurse, have tables at their side on which the babies can be laid while they are dressed; and each baby keeps its soap and flannel in a box at the foot of its cot.

THE THEATRE

At one end of the block is a spacious and well-lighted theatre, one wall and part of the roof being of glass. The light over the table is provided by a series of fluorescent tubes, which give a brilliant almost shadowless light. Emergency lamps, running off a battery, are set in the same frame and come on automatically if the main lighting fails. All electric switches are mercury controlled, which rules out danger from sparks.

A small changing-room for the operating gynæcologist and his assistant is fitted with a shower, set at a height which sprays the shoulders and spares the hair.

KITCHENS

The ward kitchens are divided down the middle, all equipment (gas-stoves, refrigerators, cookers, and sinks) being duplicated in the two halves. This makes it possible to respect the Jewish dietary law requiring meat and milk to be prepared separately. Bottles are cleaned and sterilised in a small room designed for the purpose, the sink being fitted with a bottle-brush which spins vigorously when a switch is turned.

The main hospital kitchens are in an adjoining block. They are amply fitted to serve the proposed 100 beds of the complete hospital, though the staff will have to be augmented, of course, when that time comes.

The bedrooms of nurses and domestic staff are a welcome sample of democracy in practice. Domestic workers and pupil midwives—there are 14 in training at the hospital—have identical types of room, with cream walls, a first-class bed, a neat dressing-table and wardrobe unit in light wood, and a good-sized recess to hold shoes and coats. Their windows, like those elsewhere in the hospital, are curtained in canvas printed in good designs; and they are well warmed by radiators. A cheerful dining-room has small green-topped tables.

Eight sisters serve on the staff, all doubly qualified as State-registered nurses and midwives; one is reserved entirely for the care of premature and sick babies. They have chosen to live in a converted Edwardian house in the grounds of the hospital, which gives them a sense of being in a home of their own. The rooms are as various as those in a private house, though each has its gas-fire, well-sprung bed, easy chair, wardrobe, dressing-table, and small graceful desk. Tea is served in the common-room, which though pleasant inevitably lacks the character of rooms about which personal belongings are distributed. The preference of these sisters for the old house seems to bear out the experience of the Marie Curie Hospital[1] that nurses prefer variety in their quarters to uniformity, however perfect the uniform level.

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[1] *Lancet*, Nov. 15, p. 742.

"... If it takes six years at the university to qualify in medicine, and then at least three years more after qualifying to get a special diploma (and it will soon take five years after qualifying to become a medical specialist) when is a man going to do any original work? Because really original work is done by people under thirty. . . . The *young men of today* are increasingly aware of the dilemma, that they cannot be both physician and scientist. The young man of today who wants to do active original scientific work has got to turn his back on diplomas and professorships of clinical medicine. And he is turning his back, so that any university today would tell you that it is becoming increasingly difficult to fill clinical chairs with first-class whole-time teachers."—Prof. L. J. WITTS, *Listener*, Dec. 11, p. 1009.

Reconstruction

NATIONAL HEALTH SERVICE

STATEMENTS BY NEGOTIATING COMMITTE AND MINISTER

LAST February a reconstituted Negotiating Committe was appointed to discuss the National Health Service Act with the Minister of Health. The members were:

British Medical Association.—Dr. H. Guy Dain (chairman of the committee), Dr. J. B. Miller, Mr. A. L. Abel, Dr. J. C Arthur, Dr. J. A. Brown, Dr. O. C. Carter, Dr. R. W. Cockshut Dr. W. E. Dornan, Dr. F. Gray, Dr. E. A. Gregg, Lord Horder, Dr. J. A. L. Vaughan Jones, Dr. W. Jope, Dr. J. F. Lambie, Mr. R. L. Newell, Dr. J. A. Pridham, Dr. S. Wand, Dr. S. A. Winstanley.

Royal College of Physicians.—Lord Moran, Dr. H. E. A. Boldero, Prof. Henry Cohen.

Royal College of Surgeons.—Sir Alfred Webb-Johnson, Mr. Zachary Cope, Prof. E. F. Finch.

Royal College of Obstetricians and Gynæcologists.—Mr. William Gilliatt, Mr. A. A. Gemmell.

Royal Scottish Medical Corporations.—Prof. Charles McNeil, Sir Henry Wade, Dr. J. H. Macdonald.

Society of Medical Officers of Health.—Dr. G. F. Buchan, Dr. R. H. H. Jolly.

Medical Women's Federation.—Dr. Mary Esslemont.

Society of Apothecaries.—Dr. H. Seaward Morley.

Association of Honorary Staffs of the Major (non-undergraduate teaching) Voluntary Hospitals of England and Wales.—Mr. H. J. McCurrich.

This week the British Medical Association has sent to every member of the profession a statement in which the committee crystallise their objections to the Act, together with a statement made by the Minister in reply.

Committee's Objections

Distribution of Practitioners

The Minister's arguments for abolishing the ownership of goodwill in public general practice are based on the need for better distribution of doctors. But when, under the Act, the same medical payment will be available for every member of the community, wherever he lives and whatever his status, no area will remain under-doctored through inability to purchase medical service. Any deficiency of doctors in particular localities can be remedied by making the terms of service in those localities more attractive.

The Act's procedure is so cumbersome that three or four months may pass before a practice vacancy is filled, during which time the patients may have attached themselves to the locum tenens or to a neighbouring practitioner. The necessary inquiry into the circumstances of every area places an intolerable strain on the Medical Practices Committee, and this committee's decision not to fill a vacancy may oblige patients to join the list of a doctor they have previously rejected.

Doctors deciding to enter the service should be free to choose their area of practice.

Sale and Purchase of Practices

In the committee's opinion the discussions have justified their original view that "abolition of the custom of buying and selling practices has created more problems than it solves." Almost every existing partnership is governed by an agreement; and, according to the Ministry's interpretation of the Act, all these agreements will remain legally valid after the Act comes into force. If so—

> An individual practitioner may be required to pay out a sum of money to purchase a share, the compensation value of which is less than the amount he has paid.
>
> As it is impossible to estimate in terms of money the various rights, obligations, and options in typical partner-

and provision is in view. Each unit liable to ta is already being given opportunity to advance arguments for its exclusion. In general a nursing-home would have prima-facie grounds for exclusion: and homes run for profit are not transferable at all. The acquisition of a number of small private nursing-homes would be an uneconomic and unsatisfactory way of developing the service.

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The aim will be to set 4000 as the maximum number of patients for a doctor under the scheme, but there is no finality in this. Any doctor can also retain private practice.

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In addition, a superannuation scheme is to be started, the doctor contributing 6% of the payment he receives in the new service (less a percentage for "practice expenses") and the Government 8%. The benefits will include a pension and a lump sum on retirement, a death benefit, and a widow's pension.

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Doctors are, for the first time, brought on a substantial scale into every main field of administration of the new scheme—regional hospital boards, boards of governors of teaching hospitals, and executive councils. It is a new experiment in bringing the profession itself into the direct administration. In addition there is to be a Central Health Services Council, with a majority of doctors (to advise the Minister on the whole scheme), and a special Statutory Advisory Committee of the Medical Profession. Both can advise without being asked and the Minister has to publish the Council's report (save only where the public interest prohibits).

The Object

The object of the new Act is a simple one. It is to help, by public funds, to ensure that anyone—the highest and the lowest—should be confident of getting all the best that a great profession can give. If the profession rally to it, the greatest health service in the world can come into being. There is no reason whatever why the personal relationship of doctor and patient—and the professional independence of the doctor—should be affected by a switch-over from private fees to public funds.

A scheme of this magnitude is bound to need correcting, amending, as it is found wanting. But, in its conception, it is something of incalculable social value to the great mass of the population, and the medical profession will be the first to want—as they have wanted—something of this kind. For his part, the Minister is concerned mainly to get this great national scheme launched, and to plan on wider, better lines, with the profession directly coöperating in the management of the new service. He asks the profession to help him in launching it next year and in constantly improving it as it goes along. It is a big thing, and he is confident that the profession will join with him, as constructive and often properly critical partners, in getting it under way.

Replies by the Minister

In his detailed answer to the committee the Minister says that he sees no sufficient reason for asking Parliament to amend the Act before the new service has been tested in operation.

Distribution of Practitioners

Especially when doctors are scarce, it cannot be assumed that payment in respect of all (or almost all) the people will result in an equal distribution of doctors in relation to population. The new service reserves the right only to say in what areas it has no need for additional participants or replacements. This is the minimum interference with distribution of a public service that could be justified. Without it doctors would have a right to demand publicly remunerated work where they like.

The procedure for obtaining consent to practise will not be as cumbersome as the Negotiating Committee suggest. The Medical Practices Committee, keeping in regular touch with local executive councils, will know the areas where there is no need for new public practice or replacement—and these will be few, for many years to come, until the number of doctors has increased. Apart from such areas consent can usually be given automatically, unless there are two or more claimants for one practice. And, even so, the period of settlement should normally be nearer one month than four.

Sale and Purchase of Practices

The Minister, on all the legal advice he has obtained, believes that partnership agreements will remain valid after the appointed day. If the courts prove his interpretation wrong he will ask Parliament to correct the Act in this sense. In his opinion existing powers or obligations between partners to buy or sell shares of a practice can be fulfilled; regulations can be made which will dispose of all the major difficulties. If on the other hand his advice is wrong, it is always possible for partners to vary the terms of their partnership and so remove anomalies which cannot be covered by any general provision. Likewise, partners who anticipate difficulty over the future purchase of shares under the partnership agreement could agree among themselves that the price to be paid for such shares shall be the same as, or not exceed, the compensation assessed in respect of those shares. It appears most equitable to pay the interest to the owner of the asset for the time being.

A partner within the service, required to buy the share of a partner not in the service, will receive compensation for the share so bought, on the basis of the value at the appointed day. The effect of this will be payment of compensation for which there is no provision in the aggregate amount of compensation. On the other hand, when a partner not participating in the service buys the share of a partner who is in it, compensation in respect of that share will no longer be payable to the partner in the service, since he will have suffered no loss. Here there will be non-payment of compensation for which there is provision in the aggregate. For the time being the Minister proposes to assume that the excess and the saving in these two instances will balance one another. The balances can hardly be exact and will need later adjustment.

If the total amount provided for compensation proves insufficient because all general practitioners join the service on the appointed day, the Minister will ask Parliament to increase the global sum appropriately.

Partners and Assistants

The main object of new partnerships formed after the appointed day will be greater convenience and better facilities for practice. The remuneration of each partner must be assessed on the general basis of his value to the partnership, and can take account not only of his earnings but of his knowledge, experience, and standing. There seems to be no reason why this basis of partnership should discourage partnerships in future, or why the buying and selling of shares should be regarded as the essence of a partnership in medical practice.

As for assistants, an offence will be committed only if the assistant is paid so obviously less than he is worth as to amount to a sale of goodwill. In case of doubt a certificate from the Medical Practices Committee gives a complete safeguard. The Minister agrees with the committee about the desirability of an initial period of assistantship, but cannot think that the difficulties they anticipate are likely to arise.

Remuneration

To translate the recommendations of the Spens Committee into actual terms of remuneration for general practitioners the Minister proposes to establish a central fund equal to a capitation fee of 18*s*. multiplied by 95% of the population. (This 95% will be reconsidered after two years, having regard to the number of people found to be using the service.) On this fund there will be a first charge for (*a*) mileage, fees for temporary residents, emergencies, and anæsthetics, and (*b*) a fixed annual payment of £300 to every practitioner who accepts a reasonable number of patients. The rest of the fund will be distributed to each executive council on the basis of a capitation payment multiplied by the *number of people on the doctor's lists plus one-third of* the number not on the lists. This will then be distributed among the doctors of the area in the form of a capitation fee for each person on his list.

In addition, a sum equal to 1% of the central fund (about £400,000) will be attached to the central fund to enable extra "inducement" payments to be made to doctors practising in peculiarly difficult (e.g., sparsely populated or unpopular) areas. On these proposals:

The estimated civilian population of Great Britain at June 30, 1948, is 47,750,000.

Therefore 95% of this number is 45,362.000.

A payment at the rate of 18*s*. per head of this number would produce a central fund of £40,826,250.

Assuming 17,900 principals take part in the service the deductions to be made from this amount would be:

(*a*) Mileage payments, say	£1,000,000
(*b*) 17,900 fixed annual payments of £300	£5,370,000
	£6,370,000

Leaving a net amount to be distributed of £34,456,250.

If the full 95% of the population were actually on doctors' lists the payment per head (additional to the £300 fixed sum) would still be about 15*s*. 2*d*. The gross income (inclusive of receipts from private practice, obstetric service, mileage, &c.) would be:

1000 public patients ..	£300 + £758 = £1058
2000 ,, ,, ..	£300 + £1516 = £1816
3000 ,, ,, ..	£300 + £2274 = £2574
4000 ,, ,, ..	£300 + £3032 = £3332

There would also be a pool of £408,262 available for "inducement" payments.

Remuneration of specialists will be considered with the profession when the report of the Spens Committee on Specialists is received. The Minister considers that specialists should, as widely as practicable (though not universally), accept as part of their duties domiciliary work within defined limits.

Midwifery

Within the service, general practitioners who express a desire to practise midwifery and answer calls from midwives will be asked the extent and nature of their obstetrical practice during the preceding three years. Their particulars will be placed before a local professional committee which will compile (and periodically review) the local list.

Nursing-homes, Hospitals, and Private Patients

The Minister is under obligation to provide an adequate hospital service, and he must clearly have transferred to him all existing hospitals essential for the provision of the service now, with powers to acquire land and premises in future. But no absolute monopoly of ital provision is in view. Each unit liable to fer is already being given opportunity to advance reasons for its exclusion. In general a nursing-home would have prima-facie grounds for exclusion: and those run for profit are not transferable at all. The acquisition of a number of small private nursing-homes would be an uneconomic and unsatisfactory way of developing the service.

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In England Now

A Running Commentary by Peripatetic Correspondents

THE English medical congress is a notably sedate event at which quiet conversations between friends are interrupted from time to time by a formal address whose content is as familiar to listeners as to the speaker. Elsewhere they manage these things better. For example, an advance bulletin heralding a congress in the New Year and in the New World promises that "the social program will be intense." Now in Britain the only concession to sociability is a congress dinner (30s., excluding wines) and, with luck, a reception by the mayor. Not so at next month's meeting. "Among the events is the . . . Fiesta, in which the participants of both sexes will be attired in typical regional costumes; they should therefore not forget to include this costume in their baggage." This plainly sets a sticky problem for the distinguished British representative. If only he were Austrian, or Dutch, or Danish, it would be easy. Perhaps by claiming a grandmother north of the Highland line he could appear in some non-committal tartan without fear of reprisal. If not he will, I suppose, be driven back to the battered bowler and frayed umbrella which seems to have become the *native costume of middle-class males in our region.*

* * *

An old friend, who asks me to dinner when I am well and promptly puts me into one of his hospital beds when I fall ill, is shortly to retire, having reached the age limit for a professor of medicine. He has to deliver a valedictory address to his students, and his subject is to be: "What to Say to the Moribund." Some doctors, he says, have a rule-of-thumb solution for this most delicate of problems: not a word, not a gesture to indicate the approach of death. Such doctors will have nothing to do with the mysteries beyond the veil. The professor himself has as many solutions as he has moribund patients, with this one rule applied to all—to do as he would be done by. One of his patients was an old cancer-phobe doctor with a tumour in the lower abdomen. "Is it that, Professor?" he asked. "Yes, I am afraid it is," came the answer, and the word cancer was never mentioned. It is curious, the professor notes, how seldom hospital patients themselves broach the subject of impending death. Is it that the relation of hospital doctor to hospital patient is seldom tête-à-tête and leisurely?

Looking back, I can remember only one occasion, 40 years ago, when I blurted-out a death sentence. It was murder with a bludgeon. The patient was a middle-aged chemist recently admitted to a private sanatorium whose one and only doctor was about to take a holiday. The doctor said to me as I took over: "So-and-so is a 'gonner.' It is your duty to tell him so." There was still plenty of fight in him when I began. When I had finished a minute later he was down and out. A knock-out blow in the ring could hardly have been more instantaneously effective.

Once I was the recipient instead of the donor of a death sentence. The exceedingly able doctor in charge of me felt obliged to tell me my days were numbered. He did so with infinite tact and well-graduated circumlocution. I smiled to myself, for the point to which he guided me so skilfully was one I had reached long before on my own account. Now he is dead and I am alive and kicking. All of which suggests that silence is golden.

* * *

Patients always say they have never closed an eye all night; their nurses always swear that they have put in the regulation eight hours. The psychiatrist adjudicates according to—well, perhaps according to the laws of chance more than anything else, with some attention to the dictum that if the patient says he has not slept well then at least he has not slept well enough. A night in a tilted armchair in a transatlantic plane is instructive. All night, it seems, one is not sleeping; one hears the engines all the time; one even looks at one's watch like the patients who report the hourly striking of the clock—and suddenly and inexplicably it is Gander, and one has certainly not been *awake* for eight or nine hours. It seems that an interrupted sleep or a light sleep, either of which allows some perception of the surroundings, gives the impression of sleeplessness.

Letters to the Editor

GASTRIC CANCER

SIR,—A whole corpus of statistical legend has gradually grown up around the subject of gastric cancer. There is little or no evidence in support and strong evidence against, but, as the history of medicine shows, facts can be almost powerless against the imaginative appeal of the attractive story. Mr. Shorter (Dec. 6) gives all the main myths with an excellent bibliography in a single paragraph. He tells us that though the total incidence of all forms of cancer is much the same in different communities, gastric cancer has important variations. "The racial incidence varies from 20% of all cancers in Great Britain to about 40% in America"; the preponderance of males is much greater in America: "the highest incidence" is "between the ages of 40 and 60"; gastric cancer is "much commoner in the poor than in the rich."

It is impossible to impugn so many statements in a single letter, but the following table is one of many which could be constructed from official figures to show how similar the incidence of gastric cancer is in comparable populations; and if Mr. Shorter cares to browse more carefully into available death returns, he will see how unwise he has been to rely on the authors whom he cites. The 1939 English and 1940 U.S.A. figures have been chosen as the latest available information undisturbed by war from the particular countries Mr. Shorter has mentioned.

Gastric cancer: male mortality per 100,000

Age-group	*England and Wales* (1939)	*U.S.A.* (1940)
25–35	2·1	2
35–45	10·7	11
45–55	42·8	43
55–65	108	111
65–75	217	199
75–	297	210

These figures demonstrate how readily huge differences in the apparent incidence of gastric cancer can arise if statistics are handled light-heartedly. The incidence over the age of 65 (where diagnosis and death certification is most unreliable) is high compared with the incidence in the younger age-groups where full investigation and operation are probable. Unless care is taken to allow for the exact age and sex distribution of the populations compared, and to consider the effect of varying investigation and autopsy facilities in the older age-groups, the undoubted similarities will be obscured by the dubious differences. Exact figures also show how rarely gastric cancer is the cause of indigestion and how impractical it is to push investigation to the point of diagnostic laparotomy.

London, W.1. DENYS JENNINGS.

GLINICAL IMPRESSIONS OF MALARIA AND LIVER DAMAGE

SIR,—The paper by Professor Maegraith, Dr. Andrews, and Dr. Gall in your issue of Nov. 29 encourages me to describe a group of cases I saw in Siam while a prisoner-of-war.

Two of us were medical officers to a party of 400 men working on the Mergin road from May to August, 1945. Of these, 100 died; and about half of these died in an unusual manner. Their illness began with a continuous fever of about 102°F. After five days they began to hiccup and became deeply jaundiced. After another four days they went into coma. This was not the irritable coma with hypertonia of cerebral malaria but a deep coma with stertorous breathing suggestive of hepatic failure; after every few respirations they would hiccup. After three days in coma they died. At the onset there was complete anorexia. Vomiting was present but was not severe. There was no hæmaturia or tendency to general hæmorrhage. The urine was scanty and coloured by bile pigment—not hæmoglobin. There was some enlargement of the liver and spleen, but of no great degree. At first we thought this was a leptospiral infection, but later some men were evacuated to the hospital camp at Nakon Paton and died in this manner. We heard that the blood slide from all of them showed *Plasmodium falciparum*. It is my feeling that these cases were due a hepatotoxic strain of *P. falciparum*. They did not semble the textbook description of bilious remittent ver, which I did not encounter.

Another camp in Siam, called Hindato, had a higher cidence of cerebral malaria than anywhere else. I ed to wonder whether the local strain of *P. falciparum* s perhaps of an encephalopathic type. We treated ese cases with home-made intravenous quinine. Just der half of them died. Those who recovered invariably d a large bed-sore. Blackwater fever, on the other nd. was sporadic in incidence—which suggested to e that it was due to a variation in reaction by the tient, not by the parasite. We had cases in men ho had never taken quinine. We treated them where ssible with mepacrine tablets crushed up in boiled ater and given intravenously. One man recovered, ough treated with quinine, as quickly as those given epacrine. Only about 1 in 4 of the patients with blackater fever died—usually of superimposed cerebral laria.

We had an occasional case of dysenteric malaria, and y impression was that it was due to the interaction of o diseases. I saw no case of a choleraic. algid. cardiac, purpuric type. I saw 3 cases resembling acute hæmotic anæmia with air-hunger, and a lemon-yellow skin d conjunctivæ, without hæmoglobinuria. Cases presentg with features of an acute abdominal condition re probably due to salt-deficiency cramps, and usually ter an hour the abdominal rigidity had worn off.

London, S.W.3. F. E. DE W. CAYLEY.

GLANDULAR ENLARGEMENT OF UNCERTAIN ORIGIN

SIR,—This report on a case seen in general practice, which an early diagnosis of glandular fever had later be reviewed against an alternative diagnosis of ypical rubella, is prompted by Dr. Royd Jones's ticle (Dec. 6).

The patient, a school-teacher, was an unmarried woman, ged 41. First seen on May 20, she complained of slight alaise for one day, accompanied by a generalised faint pink acular rash. Temp. 99°F, pulse-rate 86 per min. The use of her indisposition was considered to be her tonsils, hich were both covered with exudate. The tonsillar glands ere enlarged and tender. The throat was not sore, however, ither then or on any of the subsequent 12 days on which e tonsillar exudate remained. She felt reasonably well hroughout her illness, except for a certain amount of ckache and malaise on the first 4 days. She was put on ulphamezathine, 2 g. four-hourly.

2nd day.—Increased exudate on tonsils; tonsillar glands arger. Glands in posterior triangle, postauricular and ccipital glands enlarged and tender. Nasopharynx healthy. ars normal; no scalp sepsis. Spleen not palpable Temp. nd pulse-rate normal, and remained so for the rest of illness. ulphamezathine was stopped after 12 g. had been given, eing obviously ineffective.

4th day.—Enlarged tender glands both axillæ and groins. light conjunctival injection. Very marked irritating cough ithout obvious cause: thought to be due to enlarged mediastinal glands. Rash faded. Throat-swab—no diphtheria acilli, Vincent's organisms, or hæmolytic streptococci. Paul-Bunnell test negative White blood-cells 6000 per c.mm. (polymorphs 58%, lymphocytes 28%, monocytes 11%, eosinophils 2%, basophils 1%; about one-third of the lymphocytes were abnormal in type).

5th day.—Spleen palpable, remained so for 5 days. Otherwise no change.

9th day.—Still abundant exudate on tonsils. Glands unchanged. Further throat-swab revealed no pathogenic organisms. Given penicillin lozenges to suck hourly.

12th day.—Throat much cleaner and glands in neck beginning to subside Axillary and inguinal glands unchanged. Repeat differential white-cell count (different laboratory): polymorphs 37%, small lymphocytes 27%, large lymphocytes 12%, monocytes 7%, eosinophils 4%, Türck cells 1%, atypical lymphocytes 2%.

18th day.—Throat clear. Glands in posterior triangle of neck, tonsillar and left axillary glands just palpable.

25th day.—No palpable glands. Patient recovered.

From the 3rd day onwards this seemed to me clinically most likely to be a case of the anginose type of glandular fever. But the negative Paul-Bunnell test rather shook my confidence in the diagnosis, and as an alternative I favoured the possibility of atypical rubella, of which there were several cases in the immediate vicinity. There was, however, also a proved case of glandular fever with a positive Paul-Bunnell test in the neighbourhood at the same time.

I recollect seeing another case, clinically identical with glandular fever, in which there was a history of prolonged contact with a proved case of glandular fever, and in which a negative Paul-Bunnell test left one hard-pressed for a diagnosis.

Great Dunmow, Essex. PETER A. WALFORD.

ORIGIN OF CEREBRAL SURGERY

SIR,—The case mentioned by Major-General Holt (Nov. 1) was described by my late friend, Walter E. Dandy, in Lewis's "Practice of Surgery" (vol. XII, p. 13):

> "During the discussion of Godlee's paper Ferrier reported a case of brain tumor operated upon by Lister some time before Godlee's case. The patient had hemiplegia of the left side, the right eyeball was more prominent than the left and headache was in the right frontal region, the patient being semiconscious at the time. Lister trephined over the right frontal region and the brain protruded so markedly through the defect that exploration was impossible. He introduced his finger into the cortex, ruptured a hydrocephalic ventricle but could feel no tumor. The patient improved during the next few days owing to the evacuation of fluid, but coma again developed and death occurred eight days later. The wound had healed so perfectly that Lister was confident that surgery of the brain was assured. At necropsy it was found that the tip of Lister's finger had missed the tumor by only half an inch. Although unsuccessful by a narrow margin, this case may also be regarded as the beginning of intracranial surgery, but so far as I can learn it has never received recognition."

HEINZ KÖBCKE
Editor, *Deutsche medizinische Wochenschrift*.
Tübingen.

TREATMENT OF STRANGULATED FEMORAL HERNIA

SIR,—An important clinical syndrome to which insufficient reference is made in surgical textbooks is the strangulated femoral hernia of several days' duration. In these cases the gangrenous portion of bowel has sloughed, and the process has not infrequently extended to abscess formation. The classical clinical picture is modified by this late complication in that all the signs of inflammatory reaction have developed in and around the inguinal swelling. These signs, in addition to the length of history, the presence of intestinal obstruction, and the general condition of the patient, make the diagnosis of the complication strongly probable.

In such a case the orthodox surgical approach is as likely to kill as to cure, since the grave risk of a fatal form of peritonitis is almost unavoidable. There is also the considerable factor of a major operation involving resection in a debilitated and toxic patient. I have for many years been increasingly convinced that an alternative surgical procedure is life-saving and that the end-results are equally satisfactory.

After replacing fluid and salt loss and aspirating the proximal gut, the abdomen is opened by a right or left subumbilical paramedian incision. A lateral anastomosis is then performed by the aseptic method between the distended in-going and the collapsed out-coming segment of the ileum. The inguinal swelling is left untouched. Several days later a fluctuant abscess has formed which is incised and drained. The pus has a fæculent odour and there are usually sloughs which are gently removed at the same time.

No fæcal fistula or persistent sinus has resulted from the incision, and no further operation has been carried out on any case treated in this way. Adequate repair is probably achieved by plugging of the femoral canal with scar tissue. I believe that this method of surgical management in the late strangulated femoral hernia involving intestinal obstruction should be more widely known.

Whipps Cross Hospital,
London, E.11.
D. LANG STEVENSON.

STREAKY BLOOD FILMS

SIR,—The observations of Boveri, Waterfield, and Newman, recorded in your issue of Dec. 6, appear to be related to some unexplained observations I made on the bloods of Africans suffering from gambian trypanosomiasis.

In these bloods the plasma albumin-globulin ratio is usually reversed. There is intense rouleaux formation and the blood-sedimentation rate (B.S.R.) is much increased. I do not know if the plasma-fibrinogen is usually altered. If the B.S.R. is performed with whole citrated blood and repeated after remixing one hour later the two results are almost identical. If, however, defibrinated blood is used with or without citrate, the first B.S.R. reading is only slightly less than that of whole blood, but on remixing at the end of one hour both sedimentation and rouleaux formation have entirely disappeared. This occurs at blood temperature and at 0°C.

One part of a 10% solution of suramin to 4 parts of blood is an excellent anticoagulant, and it also prevents rouleaux formation and sedimentation. These properties might be of practical use in hæmatology.

Dorchester. C. HOLLINS.

PROLONGING THE EFFECT OF INJECTED SUBSTANCES

SIR,—Sir Alexander Fleming, F.R.S., discussing the properties of penicillin at the International Conference of Physicians, is reported in your issue of Sept. 13 to have said: "Lately the main objection to the oil-beeswax mixtures—that they solidify on cooling—has been overcome; but prolonged action can equally well be obtained by injecting very large doses of a watery solution."

At the Hamburg meeting of the German pharmacologists on Aug. 23 I showed, on the basis of experiments with R. Kindler, that the effect of morphine injected subcutaneously into dogs (1 mg. per kg. body-weight) could be greatly increased in duration by increasing the dilution of the morphine solution. The implications of this observation for general pharmacology are discussed in an article which is to appear in the *Zeitschrift für Naturforschung.* Sir Alexander Fleming's statement reflects the bearing on clinical medicine of this finding.

Institute of Pharmacology, KLAUS SOEHRING.
University of Hamburg.

INTENSIVE TREATMENT OF KALA-AZAR WITH SODIUM ANTIMONYL TARTRATE

SIR,—I read with considerable interest the article by Dr. Adams and Dr. Seaton (Oct. 18), and noted that the authors were most careful not to make extravagant claims for this treatment. Nevertheless, I have subsequently heard several comments on this paper which suggest that it may have conveyed a wrong impression, and, as there are few today who have had much experience with the antimonyl tartrates in the treatment of kala-azar, some cautionary remarks would not, I feel, be out of place.

I used sodium antimonyl tartrate from 1917 until 1923, almost exclusively, in the treatment of oriental sore and kala-azar. In 1923 I obtained large samples of a variety of pentavalent antimony compounds for trial in kala-azar, and, finding that even the least effective of these gave better results than sodium (or potassium) antimonyl tartrate, we abandoned the latter drug for use among inpatients; but, as we always had between fifty and a hundred outpatients under treatment, we had to continue to use the antimonyl tartrates among these, for several years.

Before the introduction of the treatment by the antimonyl tartrates, kala-azar was a fatal disease; possibly between 5% and 10% of patients recovered spontaneously while under treatment, but there was little evidence that any special treatment was responsible for these recoveries. Therefore, a drug that produced a 75% cure-rate was naturally received with enthusiasm, and the disadvantages and dangers associated with the treatment were accepted as *relatively* unimportant. Actually, they were considerable, and frequently compelled us to modify the prescribed course of injections. The most troublesome by-effects were violent coughing, vomiting, and joint pains. In addition to this there was always a high mortality among patients under treatment. In a series of 139 hospital patients treated by sodium antimonyl tartrate, which I reported in 1924, 14·4% died. This was a lower death-rate than that reported by Knowles in 1920. Pneumonia was a common cause of death. When the pentavalent compounds came into use deaths during treatment became rare and pneumonia was practically unknown.

A variety of strengths of sodium antimonyl tartrate were used, but as no differences in the effects of the various strengths could be detected, a 2% solution became the standard strength. We never attempted to give a concentrated course on the lines adopted by Adams and Seaton, but it seems unlikely that this concentration would diminish the unfavourable by-effects of this drug.

The two advantages claimed for this course are rapidity and cheapness. The latter must be granted, but, if experiments are to be made with concentrating the course, would it not be better to use one of the benign pentavalent drugs such as 'Neostibosan' or sodium stibogluconate? The former has been used in daily (divided) doses of 1·5 g. in the treatment of filariasis.

When the results achieved by Adams and Seaton are critically analysed, they amount to the fact that, of 6 patients, 3 were followed for only a short time and may or may not have been cured; on 1 the treatment had no effect; 1 relapsed but was apparently cured by a second course; and 1 was apparently cured by a single course. It is also of interest that 1 developed pneumonia. The only conclusion that can be drawn from the results in this small series is that it is possible to cure kala-azar with a two-day course of sodium antimonyl tartrate.

I have cured patients with two injections of neostibosan given on consecutive days, but I would not recommend that course.

Finally, I do not think that any extension of the series would be justifiable.

London, W.1. L. EVERARD NAPIER.

Public Health

Future of Public-assistance Institutions

THE National Health Service Act provided for the transfer to the Minister of Health (and for administration by regional hospital boards) of those parts of public-assistance institutions used for hospital purposes, and for the apportionment of premises used partly for hospital and partly for other purposes. Since dual ownership and control might give rise to difficulties provision is being made under the National Assistance Bill for each public-assistance institution to be treated as a single unit, the future ownership and management being determined by its predominant user. There will thus be no apportionment of premises. Responsibility for the care of the sick in institutions remaining with a local authority will, however, rest with the regional board; while the care of the non-sick in institutions vesting in the Minister of Health will rest with the local authority.

In a circular (172/47) the Minister urges local authorities to determine, by negotiation with regional hospital boards, which institutions should be vested in the Minister.

Poliomyelitis

Notifications, which totalled 103 in the previous week, numbered 70 in the week ended Dec. 6. This is the first time since the week ended July 5 that notifications have been below the peak figure for 1938—85 notifications in the week ended Oct. 22. The fall from 103 to 70 maintains the more rapid decline which has been noticeable since the week ended Nov. 15; and if this rate continues notifications should be reaching the normal winter level of 4–5 cases a week by the middle or end of January.

Infectious Disease in England and Wales

WEEK ENDED DEC. 6

Notifications.—Smallpox, 0; scarlet fever, 2027; whooping-cough, 1488; diphtheria, 205; paratyphoid, , typhoid, 0; measles (excluding rubella), 2799; pneumonia (primary or influenzal), 530; cerebrospinal fever, 46; poliomyelitis, 70; polioencephalitis, 6; encephalitis lethargica, 0; dysentery, 93; puerperal pyrexia, 112; ophthalmia neonatorum, 45. No case of *cholera, plague, or typhus was notified during the week.*

Deaths—In 126 great towns there were no deaths from enteric fever or scarlet fever, 1 (0) from measles, 4 (0) from whooping-cough, 3 (1) from diphtheria, 59 (2) from diarrhœa and enteritis under two years, and 19 (3) from influenza. The figures in parentheses are those for London itself

The number of stillbirths notified during the week was 210 (corresponding to a rate of 26 per thousand total births), including 24 in London.

Parliament

FROM THE PRESS GALLERY

Medical Practitioners and Pharmacists Bill

AT the committee stage of this Bill in the House of Commons on Dec 9 Mr. JOHN EDWARDS, parliamentary secretary to the Ministry of Health, moved a series of amendments to clause 3 to include alien doctors, who, although they had not served in His Majesty's Forces, had given valuable service in a civilian medical capacity overseas The Bill as amended was read the third time and passed.

QUESTION TIME

Grants to Industrial Health Research

Mr F J. ERROLL asked the Lord President of the Council what was the total amount of Government grants given in the last four years to the Industrial Health Research Board, the number of reports issued during the same period and what was the future policy for the board —Mr. H MORRISON replied The expenditure of the Medical Research Council on that part of their programme in which they are advised by the board amounted to £161,520 over the last four financial years. During the same period 12 reports on this work were published officially, and 46 other reports as contributions to scientific journals. The policy is to continue the expansion which has already taken place on a considerable scale since the war

Answerable for the Regional Hospital Boards

Colonel M. STODDART SCOTT *asked the Minister of Health if* the Government's decision with regard to Ministers' replies to Parliamentary inquiries about nationalised industries also referred to nationalised hospitals and the specialist and other services administered by regional hospital boards —Mr. A. BEVAN replied. No The Health Ministers will be answerable for these services and therefore for their administration by the local or regional bodies set up for the purpose But it is to be hoped that the proper responsibilities of those bodies will not be diminished by too many inquiries on detailed day to-day matters unless some point of general importance is involved

Analgesia for Mothers

Mr R W SORENSEN asked the Minister to what extent progress was being made in providing analgesia for women in confinement —Mr BEVAN replied The number of cases where it was provided by domiciliary midwives increased from 7262 in 1945 to 20,507 in 1946 Also the number of midwives trained to give it has doubled in the current year I am not yet satisfied with the progress It is substantial but there is still a very large number unable to avail themselves of it

Production of Audiometers

Mr. EDWARD EVANS asked the Minister whether he had arranged for the purchase of a sufficient number of pure tone audiometers for testing purposes in the scheme for the suitable allocation of hearing aids under the National Health Insurance Act —Mr BEVAN replied I am arranging for the production of a new type of pure tone audiometer which can be used after a short and simple training This will be given as may be necessary to the staff of hospitals providing the service

Obituary

ROBERT ALEXANDER FLEMING

M.A., M.D. EDIN., LL.D., F.R.C.P.E.

Dr. R. A. Fleming, the oldest fellow of the Royal College of Physicians of Edinburgh, died on Dec. 6. The son of a Dundee merchant, he was born in 1862, and from Craigmount School he entered the University of Edinburgh where he graduated M.A. in 1884 and M.B. with first-class honours four years later. In 1896 he was awarded a gold medal for his M.D. thesis.

As was the custom at that time, he was pathologist to Edinburgh Royal Infirmary for several years before he was appointed to the staff. He also lectured on the practice of medicine, and he was an examiner for Edinburgh and Aberdeen Universities. As a territorial he served in the war of 1914–18 in the 2nd Scottish General Hospital, and later, with the rank of major, was in charge of the medical division of the 42nd General Hospital at Salonika. He was a member of that select body, the King's Bodyguard for Scotland, the Royal Company of Archers, which he also served as surgeon. He became a fellow of the Royal College of Physicians of Edinburgh in 1899, and in 1928 he was elected president. In the same year the university conferred on him the degree of LL.D. He was also a fellow of the Royal Society of Edinburgh.

But perhaps the duties which gave him most pleasure and interest were his appointment as physician to the two Royal Edinburgh Hospitals for Incurables, which he visited at least once each week, always making a point of speaking to the patients, and his post as medical adviser to the Prison Department for Scotland. In visiting the prisons he showed a deep concern for the welfare and reformation of the prisoners, and for his Morison lecture of 1934 he chose as subject the Mental Element in Crimes and Criminals. Kindness and consideration for others were characteristic of the man, and he earned the affection of all with whom he came in contact. Fond of fishing and shooting, he spent much of his holidays at his shooting-lodge in Perthshire, where he went a few months ago in the hope that in country surroundings his health might improve; and there he died.

Dr Fleming lately celebrated his golden wedding to Eleanor Mary, a daughter of the late Canon W. L Holland, rector at Cornhill-on-Tweed. She survives him with three sons and a daughter.

THE LATE DR. BOLTON

Prof G. Payling Wright writes: In many ways Charles Bolton was fortunate in the unconventionality of his medical training. Long before he began the formal scientific discipline, he had acquired much medical knowledge and skill in observation through his apprenticeship to a general practitioner. Having this practical experience for his background, he was suddenly thrown into the great London medical school which saw the renaissance of physiology in this country With the problems and difficulties of practical clinical medicine he was already familiar; it was hardly surprising, therefore, that his finding in the sciences of physiology and pathology, the solutions to many of his former perplexities, should instil in him a deep urge to follow methodically in the footsteps of the active group of investigators whose steady flow of discoveries had already disclosed so much and held out even higher hopes for the future

The large number of Bolton's contributions to medicine can only be fully appreciated by any one who has gone carefully through the list of his published writings.

While it is difficult to discriminate in value between the three main phases into which his researches fell—the complications of diphtheria, the genesis of peptic ulcers, and the pathology of œdema—it is likely that the last was the most important contribution that he made In his study of this problem he was fortunate in having his friend Starling's researches into lymph formation to guide him. But Bolton had a strongly *independent nature*, and while he fully appreciated the importance of the advances made by Cohnheim and Starling, he was unable to accept in their entirety the applicability of their conclusions to the clinical problem of œdema. For example, in writing of the mechanism by which experimental cardiac embarrassment leads to the formation of œdema, he stated that "the only possible conclusion to which Cohnheim could possibly have come from his experiments was that the venous pressure was high and maintained its height, and this conclusion was wrong only because his method of experiment is not strictly comparable to uncompensated heart disease." With Bolton, the animal experiment was never more than a finger-post; the quest was invariably followed to the bedside of a sick patient. Cohnheim's experiments were *not comparable*, Bolton believed, because they were acute and not chronic in design; so he set himself the task of producing chronic circulatory disorders, and his beautiful experiments on pericardial constriction and partial venous occlusion were the results. From these he concluded that a permanently raised venous pressure was not essential for œdema formation, but that this disorder is "primarily due to impairment or other alterations in the capillary wall"—a view since supported by many later investigators.

Collaborating with Bolton in his investigations was a stimulating experience, for in the laboratory his natural forthrightness suffered none of the inhibitions inseparable from the consulting-room and ward. But however busy he might be with his clinical work, he punctiliously set aside certain afternoons each week when nothing would draw him away from his laboratory. It was this careful arrangement of his time, throughout most of his professional life, that made it possible for him to undertake so many outside activities successfully, yet to maintain an almost unbroken series of original contributions for nearly forty years. He was versatile, too, in his technical skill—his command of experimental methods can be seen in his careful study of the pharmacological actions of an African arrow poison which he made at the request of Ray Lankester. He had unusual skill in animal surgery—the deftness of his technique contrasting strangely with his large and seemingly ungainly fingers. But in spite of his exceptional facility in such operative procedures, he always subordinated his methods to the research in view, and turned to chemical, immunological, and other techniques as the occasion required.

Bolton was a man of most kindly nature, and the open frankness of his character tended to evoke the best from all who came closely into contact with him. Away from the ward and laboratory, his main interests lay in the open air. He spent many of his holidays fishing, for he was a keen angler. His boyhood in Yorkshire, too, had left him with a deep interest in natural history and the wild life of animals, and as with so many medical men this interest had reinforced his natural gift for observation. Perhaps no higher tribute could be paid his qualities than that he had the robustness of frame, intellect, and character that is typical of the people of the countryside from which he sprang.

Births, Marriages, and Deaths

BIRTHS

Aronson.—On Dec. 6, in London, the wife of Dr. Robert Aronson—a son.

Freeman.—On Dec. 8, in London, the wife of Dr. V. Freeman—a son

Harrington.—On Dec. 7, at Church Crookham, Hants, the wife of Dr. A. W. Harrington—a daughter.

Higgitt.—On Dec. 2, in London, the wife of Dr. A. C. Higgitt—a son.

Lennie.—On Dec. 9, at Bath, the wife of Dr. A. B. Lennie—a daughter.

Street.—On Dec. 3, the wife of Dr. W. J. Street—a son.

MARRIAGES

Lane Roberts—Ford.—On Nov. 29, at Abingdon, Berks, Peter Anthony Lane Roberts, B.M., to Irina Ford.

Russell—Eyre.—On Dec. 6, at Carlton Colville, Michael H. Russell, M.B., to Pamela Eyre.

Whitehouse—Barker.—On Dec. 6, in London, John Whitehouse, M.R.C.S., R.A.F.V.R., to Anne Barker.

DEATHS

Adam.—On Dec. 10, in London, John Ewing Adam, M.D. Glasg., F.R.C.S.E., D.P.H., aged 78.

Hegarty.—On Dec. 8, in London, Patrick Nicholas Hegarty, L.R.C.P.I.

Marriott.—On Dec. 10, in London, William Marriott, M.R.C.S.

Masson.—On Dec. 7, in London, Hamish Falconer Masson, M.A., M.B. Edin., F.R.C.S.E., aged 45.

Perrott.—On Dec. 10, at Ilford, Essex, George Francis Donaldson Perrott, M.A. Camb., M.R.C.S.

Smith.—On Dec. 6, at Chipping Norton, Oxon, Thomas St. Clair Smith, B.A., M.B. Camb., aged 71.

Stone.—On Dec. 9, at Dorking, William Gream Stone, M.A., D.M. Oxfd, F.R.C.S., aged 81.

Notes and News

FIRST MAKER OF CHLOROFORM

The centenary of the discovery of chloroform anæsthesia by James Young Simpson was fitly celebrated by the University of Edinburgh a few weeks ago. Another pioneer who deserves to participate in the credit accorded to the memory of Simpson has been remembered in a little book[1] which has just appeared.

Ether was known for three centuries before it was used as an anæsthetic, and the substance chloroform antedated the anæsthetic chloroform by seventeen years. Almost simultaneously, and quite independently, chloroform was prepared by Liebig in Germany, Soubeiran in France, and Guthrie in America, in the year 1831. A priority of several months over the other two chemists is usually accorded to Dr. Samuel Guthrie, of Sacket's Harbour on Lake Ontario.

Guthrie's grandfather, James Guthrie, a Scot and a descendant of the martyr covenanter of that name, landed at Boston, and had a son and a grandson, each of whom practised medicine in Massachusetts. The grandson did not confine his attention to medicine. In the early days of his practice he set up a gunpowder mill, and there he invented the percussion cap for firearms, which soon replaced the old-fashioned and clumsy method of priming. Not content with one factory, Samuel Guthrie also conducted a distillery, and early in 1831 he mixed three pounds of chloride of lime with two gallons of whisky, and then boiled and distilled it, thus obtaining chloroform, although it was not called chloroform until several years later. Taken internally, this new liquid "appeared to be singularly grateful both to the palate and stomach, producing promptly a lively flow of animal spirits, and consequent loquacity, and leaving, after its operation, little of that depression consequent to the use of ardent spirits. For drinking, it required an equal bulk of water." Such was the report contributed by Guthrie to the *American Journal of Science and Arts*, 1831–32, and to it was appended an editorial note by Professor Silliman, expressing the hope that further experiment would show the new substance to be of value in medicine as a remedy, and not merely as a stimulant. "He would be no benefactor to his species," continued the editor, "who should add a new attraction to intoxicating spirit."

Nevertheless the liquid became known as "Guthrie's sweet whiskey"; though the discoverer declined to go to New York, where he could have made a fortune by exploiting the new-found intoxicant. He is said to have noticed that the fumes had a soporific effect upon the cats in his wood-yard, but this observation was not followed to its logical conclusion by any experiment and thus chloroform continued to be used internally for its stimulant effect in asthma and other ills, until Simpson revealed its anæsthetic properties in 1847.

Guthrie died in 1848, at the age of 66, in the home of his daughter Cynthia. He was long remembered for his kindness and generosity, and in 1888 an inscription setting forth his discoveries was placed upon a huge boulder in Washington Park, Chicago, a tribute from the Chicago Medical Society. His home, his firearms, his still, his factory, and his memorial boulder are among the illustrations of this book, but unfortunately there is no portrait of Guthrie himself: apparently his daguerreotype was never taken.

THORACOLUMBAR SPLANCHNICECTOMY

At a meeting of the Liverpool Medical Institution on Nov. 27, Mr. F. E. Stock said that none of the various incisions described for the operation of thoracolumbar sympathectomy had given complete satisfaction; for while exposure of the *lumbar sympathetic chain* was satisfactory, the view of the dorsal sympathetic chain was very poor. Fey had described an incision for the approach to the upper pole of the kidney which was made far more anteriorly than the standard kidney incisions; and after using this incision several times it was apparent that the extension of it would give a very satisfactory exposure of the lower dorsal sympathetic chain.

The incision commences just behind the posterior axillary line and passes downwards to a point just in front of the anterior superior spine. For convenience it can be made in two stages, but this is not essential. The posterior half of the incision is deepened on to the rib and the periosteum incised. The periosteum is then displaced with an elevator from the upper half of the rib and upper border. Unless the rib is to be removed (which is unnecessary) the periosteum should not be stripped any farther from the back and lower edges. On depressing the rib, fibres of the diaphragm are seen passing upwards and forwards from the front 2–3 cm., and these are divided with a knife. The anterior part of the wound is then deepened by separating the fibres of external oblique which run in the line of the wound, and dividing the fibres of internal oblique and transversus abdominis. The rib and posterior muscles are gently retracted, the kidney in its fascial capsule is displaced forwards, and the great splanchnic nerve is immediately seen piercing the crus of the diaphragm. The next step is the division of the diaphragm, the free edge of which can be seen at this stage crossing the upper part of the wound. A finger can be inserted above the diaphragm and the pleura separated from it by gentle pressure. The diaphragm is then divided with scissors approximately 1 cm. from its origin as far back as the crus where it is pierced by the splanchnic nerve. The thoracic part of the operation then commences, the pleura being displaced from the posterior chest wall by blunt dissection, as far as possible in an extrafascial plane. This extrafascial plane can be found easily by commencing dissection at the point where the great splanchnic nerve pierces the diaphragm, but it is not always easy to remain in the plane and on several occasions the pleura has been opened. The wound is closed by re-suturing the diaphragm and closing in layers. An encircling suture is not placed around the eleventh rib as this was found to produce a pressure neuritis of the eleventh nerve.

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[1] Dr. Samuel Guthrie, Discoverer of Chloroform. By J. R. Pawling, M.D., F.A.C.P. New York: Brewster Press. 1947. Pp. 12 $3.50.

INSTITUTE OF SOCIAL PSYCHIATRY

About fifty psychiatrists and psychiatric social workers attended a meeting of this new institute held on Nov. 15, to exchange views and experiences in running therapeutic social clubs. Dr. Noel Harris, who was in the chair, said that, from his experience, many patients had benefited from the work of these clubs. Dr. J. Bierer outlined the basic principles of social psychotherapy, and Dr. M. B. Brody asked members taking part in the discussion to deal with the following points: should social therapy be combined with group therapy; should the clubs be self-supporting—or should they be supported by hospitals or other agencies; should discharged patients from mental hospitals and patients attending outpatient departments attend the same club; should one mix people with different diagnoses with people of different intelligence and social standard; should elections often be held, and should the patients run clubs completely independently.

The following reported on the work of their clubs: Dr. Somerville (West Ham Hospital), Dr. de Maré (St. George's), Dr. Lindsay (Middlesex Colony), Dr. Blair (St. Mary's and St. Bernard's), Miss Millar (Glasgow), Dr. Fysh (Roffey Park), Dr. Sandison (Warlingham), Dr. Scott (East Ham Hospital), Miss Butcher (Phœnix Club, Kingsway), Dr. Smith (Southend Hospital), Dr. Aaron, Dr. Bevan Jones, and Miss Thompson (Runwell Hospital).

The discussion will be summarised at a further meeting to be held at Seymour Hall, Seymour Place, London, W.1, on Wednesday, Jan. 14, at 2 P.M., when the speakers will include Dr. E. B. Strauss, Dr. Bierer, Dr Donald Blair, Dr Harris, Dr. Doris Odlum, Dr. Maxwell Jones, and Dr. Brody. Further details may be had from the Social Therapy Centre, 7, Fellows Road, N.W.3.

"THE STORY OF A SCOTTISH VOLUNTARY HOSPITAL"

"The Gentlemen dined together, drank many loyal and patriotic Toasts; and passed the Evening with cordial and rational festivity." This glimpse of opening day at the Northern Infirmary, Inverness, published in the press in Edinburgh and London 133 years ago, is typical of the intimate details which Dr. T C Mackenzie has woven into a fascinating narrative.[1] Careful research has yielded a wealth of material, interesting not only to the medical historian but also to sociologist and economist alike. In 1807 "½ year's wages to Matron" amounted to £5, while the gardener received £7 10s A generation which so readily takes for granted the special hospital services to deal with mental diseases, infectious diseases, and tuberculosis receives a salutary reminder of the courageous efforts of pioneers who grappled with these problems long before local authorities and Ministries could be roused to a sense of responsibility. Reference is made to the increasingly important part played by the infirmary in the work of the Highlands and Islands (Medical Service) Board. This is a subject of special interest to readers on both sides of the Border, for there can be no doubt that the development of "H. and I." has received special attention from the architects of the National Health Service.

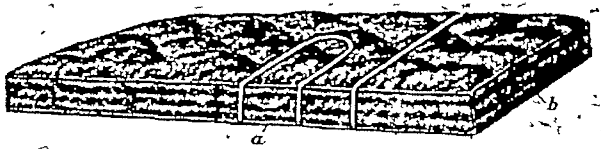
MEDICAL WAR RELIEF FUND

During the past year this fund has made forty-nine awards, to the value of about £11,000; and the total of all awards since the inauguration of the fund is nearly £62,000. As in the previous year, most of the applications came from ex-Service medical officers who needed temporary assistance; but the fund has continued to provide for widows and children of doctors who lost their lives in the war, and a substantial sum was voted to defray the cost of the journey to Switzerland of three parties of children of doctors killed or incapacitated in the war. Dr. C. L Batteson has succeeded Dr. J. W. Bone as treasurer. As already announced (*Lancet*, Nov. 15, p. 743), further contributions are not being sought.

COMMODE BEDSTEAD

Messrs. Siddall and Hilton, of Sowerby Bridge, Yorkshire, write describing a bedstead designed to make easier the use of the bedpan.

This bedstead has a head and back rest, adjustable by means of a handle at the foot end. In the centre of the mesh is an opening strengthened with 1¼ × ¼ in. flat iron, under which a commode can be placed, or on which a bedpan can rest.



Mattress showing (*a*) loose piece which draws out, and (*b*) hinged piece.

The mattress is hinged to fit the adjustable head and back rest. The portion of the mattress over the centre piece is separate and can be drawn out by means of the loop attached (see figure).

The bedstead could be designed to fit the type of commode or bedpan in use in any hospital, and could also be adapted as a cot bedstead.

ACCIDENTS IN THE HOME

At the congress of the Royal Society for the Prevention of Accidents, in Brighton last October, Dr. V. Freeman spoke on Accident Prevention in Relation to Preventive Medicine. His address has now been reproduced as a pamphlet, which is obtainable, price 2*s.* 6*d.*, from the society, 52, Grosvenor Gardens, London, S W.1.

University of Cambridge

On Dec. 6 the degrees of M.B., B.CHIR. were conferred in absence on G. A. Bracewell. During November the title of the degrees of M.B., B.CHIR. was conferred on L. A. Farquharson, J. K. Goodacre, G. F. Jacob, I. Kane, P. D. Kilner, R. M. Licence.

The Raymond Horton-Smith prize has been awarded to Dr. M. G. P. Stoker for his thesis on a laboratory investigation of the rickettsial diseases of India.

University of Leeds

Mr. C. R. Morris, headmaster of King Edward's School, Birmingham, has been appointed vice-chancellor of the university in succession to Mr. Mouat Jones, who retires at the end of this session.

Royal College of Physicians of Edinburgh

At a meeting of the college held on Dec. 4, Dr. W. D. D. Small was elected president, and Dr. R. Cranston Low, Dr. L. S. P. Davidson, Dr. J. D. S. Cameron, Dr. H. L. Wallace, Dr. I. G. W. Hill, and Sir David Henderson were elected councillors for the ensuing year. Sir David Henderson was nominated vice-president.

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[1] Inverness: *Northern Chronicle* Office. 1947. Pp. 284. 8*s.* 6*d.*

Royal College of Surgeons of England

At a meeting of the council of the college held on Dec. 11, with Sir Alfred Webb-Johnson, the president, in the chair, the following were elected to the fellowship in dental surgery:

H. Chapman, L. C. Attkins, W. B. Grandison, Bowdler Henry, H. H. Stones, R. Weaver, C. W. Roberts, H. G. Watkin, A. G. Allen, J. F. Pilbeam, Eleanor M. Knowles, G. H. Leatherman, G. L. Roberts, R. Cocker, P. J. Stoy, B. W. Fickling, E. L. Sheridan.

Diplomas of fellowship were granted to the following:

W. A. D. Drummond, D. D. Cranna, J. R. St. G. Stead, H. A. Pearce, N. E. James, B. S. S. Acharya, Isaac Jacobson, C. M. Squire, A. D. Bateman, R. W. Gunderson, J. N. M. Parry, G. H. A. Simmons, W. W. Wilson, N. L. Crabtree, J. C. A. Innes, A. J. S. Bell Tawse, R. C. Fuller, W. McC. Scott, H. D. S. Vellacott, R. P. M. Miles, B. H. Price, B. C. Rowlands, H. P. Guerrier, D. N. Fuller, H. O. Jones, B. W. Wells, R. C. Connolly, M. H. Wostenholm, G. A. Barclay, J. F. North, R. P. Warren, J. F. R. Bentley, J. F. N. Ward-McQuaid, W. E. S. Bain, J. R. Thompson, S. M. Chris, S. R. Mawson, P. P. Rickham, John Fry, F. I. Tovey, Ibrahim Higazi, F. V. Stonham, C. D. Clark, M. T. Greig, L. N. Bartholomeusz, J. R. Grimoldby, Jeremiah Burke, K. B. Burnside, N. C. Hughes, A. C. R. Sharp, R. E. Gibbins, K. N. McNamara, H. M. J. Windsor, K. R. Archer, J. A. Key, R. F. Lowe, E. M. Nanson, D. P. Sapsford, P. R. H. Slade, A. W. Sutherland, R. C. Willis, Sita Achaya, J. R. Addison, David Aiken, T. J. Butler, J. P. Fleming, D. McD. Kenny, K. N. Morris, Bishnupada Mukopadhaya, Jean M. Sandel, Subrata Banerjee, A. A. Brown, R. P. Jepson, Martin Laird, T. F. Miller, Ivan Barnat, Allan Hulme, L. W. Cox, K. N. Dastur, A. W. Fowler, Ian Macnab, J. B. Parikh, A. E. Carter, F. G. Westgate.

Diplomas of membership were granted to R. G. Donaldson (Westminster), B. C. Luker (St. Thomas's), and G. G. Parsons (St. Thomas's), and diplomas in child health, jointly with the Royal College of Physicians, to M. B. Gamat and A. D. M. Jackson.

Royal College of Surgeons in Ireland

On Dec. 12 the fellowship was conferred on Dr. John Bunting.

The Scottish National Blood Transfusion Association

Prof. D. F. Cappell has been appointed chairman of the technical committee of the association in succession to the late Sir John Fraser.

British Postgraduate Medical Federation

The federation has awarded postgraduate travelling fellowships for 1947 to Dr. S. C. Gold, (dermatology, Switzerland and U.S.A.), Dr. A. Hargreaves (dermatology, Switzerland and U.S.A.), Mr. R. Shackman (surgery, U.S.A.), and Dr. D. B. Taylor (pharmacology, U.S.A.)

A Medical Film Unit

John Curthoys Productions have formed a medical film unit under the direction of Dr. Brian Stanford. A programme of short films and filmstrips dealing with medical subjects of interest to industrial workers, nurses, and others, has been drawn up. It is also hoped to produce a series of documentaries. The unit is willing to put its equipment and staff at the disposal of hospitals on a non-profit-making basis, when the material is required for medical instruction or research purposes.

Medical Short-service Commissions for Women

Short-service commissions are being offered to women in the medical and dental branches of the Air Force.

The commissions will be for four years' active list and four years' reserve service, with a gratuity of £600 for medical officers and £500 for dental officers payable after satisfactorily completing service on the active list. The successful applicants will be granted Air Force rank, and their rates of pay, promotion, and conditions of service will be the same as for male medical and dental officers. The upper age-limit for medical candidates is normally 30, but those who are not 32 on the date of ap
There is no age-limit for applicants to
tion forms may be had from the
Services, Air Ministry, Awdry House,

Award to Ministries

On behalf of the Ministries of Health and Food, Sir Wilson Jameson, chief medical officer of the Ministry of Health, received in October a Lasker award from the American Public Health Association. The award, which takes the form of a statuette of the "Winged Victory of Samothrace," is on view at the Ministry of Health. This is the first time that the award has been given to a foreign country; and the citation, commending "the unprecedented programme of food distribution in Great Britain, with resulting improvement in the health of the people," names in particular Lord Woolton, Sir Jack Drummond, F.R.S., Sir Wilson Jameson, and Sir John Boyd Orr, F.R.S.

Tuberculosis Association

Dr. F. R. G. Heaf has been elected president of this association.

St. John's Hospital, London

An appointment system for all patients will begin at this hospital for diseases of the skin on Jan. 1.

Women Dental Assistants

Guy's Hospital dental school has arranged a six-month course to train a limited number of women as dental surgery assistants. Applicants must produce certificates of proficiency in first-aid and home nursing and in secretarial work.

Grants for Old People's Homes

Since it was established in August, the National Corporation for the Care of Old People has made grants of over £133,000 towards the cost of homes and other welfare schemes for old people. Of this sum, £64,000 has come from the Lord Mayor's National Air Raid Distress Fund.

Penicillin Shortage in the United States

The United States, says B.U.P., is suffering a shortage of penicillin, which is described by Dr. Henry Welch, of the penicillin division of the Food and Drug Administration, as uncomfortable rather than serious. The shortage is ascribed to wider application, to use in larger doses, to employment in diseases of cattle, and to exports of the drug.

Ophthalmological Society of the United Kingdom

The annual congress of the society will be held at 1, Wimpole Street, London, W.1, on April 8, 9, and 10, 1948, when Dr. Macdonald Critchley, Prof. Henry Cohen, and Mr. J. H. Doggart will open a discussion on Subjective Disorders of Vision. Prof. Marc Amsler, of Zurich, will deliver the Bowman lecture. *Further information may be had from the hon. secretary of the society, 45, Lincoln's-Inn Fields, W.C.2.*

North-East Metropolitan Region

The Representative Psychiatric Committee of the North-East Metropolitan Area which was set up last June consists of elected representatives of the medical staffs of the mental hospitals, mental-deficiency institutions, and psychiatric departments of the teaching and non-teaching general hospitals in the area. Its terms of reference are: "to consider and to concern itself with every aspect of the psychiatric services in the region," and its chairman is Dr. Henry Wilson.

Grants for Distinguished Visitors

The British Council has a small fund from which a few grants can be made to permit the attendance of foreign scientists at national or international conferences or meetings held in the United Kingdom. The grants cover subsistence or part-subsistence in the United Kingdom during the conference, and fares are not included. Applications for grants for 1948–49, which must be made by the conveners of the conference, should be sent by Jan. 31 to the administrator of the science group of the council, 3 Hanover Street, London, W.1.

Canadian Red Cross Memorial Hospital, Taplow

Mr. Ralph Marnham, director of the department of surgery, presided over an At Home for local doctors held at this hospital on Dec. 6. *Sir Francis Fraser spoke on* Postgraduate Medical Education at a Hospital Centre, and the wards and departments of the hospital were opened to visitors. Dr. E. G. L. Bywaters, director of the special unit for juvenile rheumatism, Dr. G. D. Hadley, director of the department of medicine, Dr. L. E. Glynn, director of the department of pathology, and other members of the medical and surgical staff of the hospital were present.

Diary of the Week

DEC. 21 TO 27

Tuesday, 23rd

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, W.C.2.
5 P.M. Dr. I. Muende: Pathological demonstrations.

Appointments

BEETHAM, K. W., M.C., M.B. Edin., D.M.R.T.: radiotherapist, Hull Royal Infirmary.

BRETT, ENID, L.R.C.P.E.: M.O., Nigeria, Colonial Service.

*FAGG, C. G., M.B. Lond., M.R.C.P., D.C.H.: house-physician, The Hospital for Sick Children, Great Ormond Street, London.

* Amended notice.

Plast.
&
Recng.

VISCERAL PAIN*

HENRY COHEN
M.D. Lpool, F.R.C.P
OF MEDICINE IN THE UNIVERSITY OF LIVERPOOL

dinal paradoxes of visceral pain spring from established facts: first, that whilst pain is onest symptom of visceral disease, organs e stomach or heart when subjected to gross tting, crushing, or burning—appear to be ; secondly, that pain arising from visceral y be located at a distance from the affected in the left arm in heart disease or the testis isease. Attempts to elucidate the enigma of in have led to investigations which fall into s: (1) the nature of the adequate stimulus; e site of its action; (3) the distribution of pain nerve-endings in the viscera; (4) the peripheral and central nervous pathways which lead from viscus to sensorium; and (5) the "mechanisms," both physical and psychological, involved in the *reference* or *localisation* of pain.

In my Lettsomian lectures for 1944 (Cohen 1948) I have reviewed the data on these five aspects of visceral pain, traced the history of current hypotheses, and critically assessed their shortcomings. My more limited purpose here is to discuss how the intensity and localisation of visceral pain are affected by modifying the sensation of skin and deep somatic tissues.

The earliest observations in this field were recorded by Lemaire (1926). In four patients he relieved the pain of gastric ulcer and other intra-abdominal lesions by local anæsthetisation of the abdominal wall. His observations were confirmed and extended by Weiss and Davis (1928), Morley (1931), Theobald (1941), and others. These results, in the main strikingly uniform, leave no doubt that pain arising from viscera can be abolished, diminished, or differently located when the nerves of those somatic segments corresponding to the visceral nerve-supply are anæsthetised.

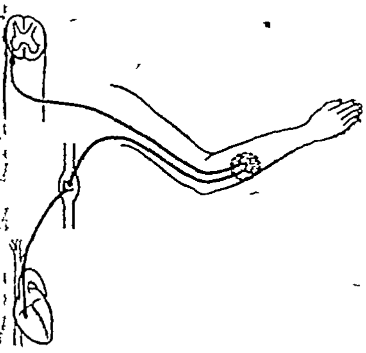

Fig. 1—Penfield's (1925) explanation of reference of anginal pain.

To explain the effects of local anæsthesia and the somatic reference of visceral pain, Penfield (1925) and Davis and Pollock (1932) have suggested that the impulses arising from a viscus cause pain by inducing peripheral changes (vascular or metabolic) which stimulate the sensory nerve-endings in the skin and deeper tissues, and that pain is then transmitted by the usual pathways (fig. 1). That this hypothesis is untenable is suggested by cases published by Wallace Jones and myself (1943). Both patients had had the left arm amputated and suffered from a phantom (figs. 2 and 3). Both, when they later developed angina, located their pain to the phantom. Such reference clearly excludes stimulation of a peripheral nerve-ending, by any mechanism, from playing a significant rôle in the genesis of visceral pain. Moreover, in both these patients anæsthetisation of the brachial plexus, care being taken to ensure that the sympathetic ganglia were unaffected, led to abolition of the arm component of angina in mild attacks, *and its lessening and later appearance in severe attacks* (fig. 4). The second patient had a "pin-head" neuroma at the site marked x (fig. 3), pressure on which caused anginal pain. Anæsthetisation of the neuroma abolished the arm component of the angina on mild effort. The evidence is now overwhelming that interruption of nerve paths between the periphery and the central nervous system in those somatic segments which are homologous with those of the diseased viscus abolishes or diminishes the pain or modifies the time of its appearance.

EFFECTS OF INCREASED SENSITIVITY

But the contrary influence of *increased* sensitivity of somatic tissues on visceral pain also has to be considered. *It is* within the experience of all clinicians that constriction of the left arm with a sphygmomanometer band may excite an anginal attack, but the possibility of the cause lying in reflex coronary vasoconstriction cannot here be excluded with certainty. Stronger evidence is afforded by many cases, of which the following is *typical.*

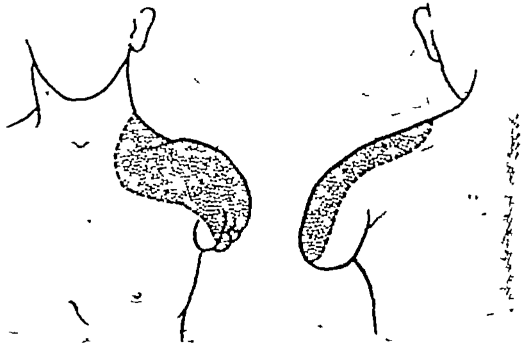

Fig. 2—Area of anæsthesia produced by left brachial-plexus block in patient whose left arm had been amputated.

> A patient with three years' history of effort angina referred his pain to the substernal region. He fractured his left elbow, which when fixed in plaster was free from *spontaneous* pain; but for several weeks after the injury walking brought on pain in the damaged elbow, followed by substernal oppression and a sensation of constriction of the chest.

These clinical observations led to a trial of the effects of experimentally induced hyperæsthesia in superficial and deep somatic tissues on visceral pain. Four patients with effort angina were blistered over an area of 4 sq. in. with a vesicant plaster on the inner side of the right elbow or the right mammary region, where they had not previously experienced pain (fig. 5*a*). When their angina was excited by exertion, all complained early of intensification of pain in the blistered area. In three of these patients 2 ml. of 5% saline was injected into the back muscles 2 in. to the right of the 5th dorsal spine (*fig. 5b*); this gave rise to a diffuse deep-seated pain

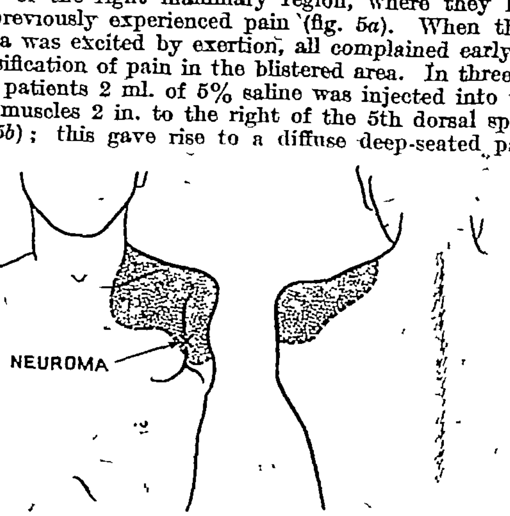

Fig. 3—Position of neuroma in patient whose left arm had been amputated.

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* A paper read at the International Conference of Physicians, London, on Sept. 12, 1947.

with vague boundaries. Two hours later, when the pain so induced had passed, exertion caused its reappearance, though no pain had in previous anginal attacks been felt in this area. The patients chosen for these clinical experiments were intelligent and coöperative, and I exclude unconscious suggestion on my part from playing any part in the results.

DISCUSSION

It is evident that the blocking of peripheral pathways diminishes, whereas the sensitisation of somatic tissues increases, the ease with which pain of visceral origin is excited. What is the implication of these findings on the postulated mechanism for visceral pain? Clearly the older theories, and the more recent suggestions of facilitation by convergence (Ruch 1947), must be abandoned. Two hypotheses remain to be considered: (1) that visceral stimuli may lower the central threshold to peripheral stimuli (as in the classical Ross-Mackenzie hypothesis), or peripheral stimuli may lower the central threshold to visceral impulses; and (2) that the peripheral stimuli augment those from the viscera. Both Theobald (1941) and Jones (1943) have suggested that a principle of summation of stimuli may be involved in visceral pain, but neither has faced the inevitable corollary which I suggest must be postulated if we are to present a consistent hypothesis. This is that from the endings of all pain nerves, visceral and somatic, there arises normally a constant regular stream of subliminal impulses which pass to the central nervous system. It is true that no neurophysiologist has produced evidence supporting this inference, but none has as yet applied himself to the problem. Sarah Tower (1943) has, however, observed spontaneous and rhythmic discharges in pain fibres and terminals, of 1–8 a second, sometimes for hours. If this be accepted as normal, many hitherto irreconcilable observations on visceral pain can be reasonably explained. Normally these impulses are subliminal; they do not cause pain unless disease lowers the threshold. This raises the question of whether there is an organic peripheral component of the pains which the hypersensitive neurotic feels "all over the body." Pain impulses from a viscus which are augmented in intensity will pass the threshold only if, whether alone or supplemented by those impulses normally arising from homosegmental somatic structures, they exceed the threshold value. This may be expressed symbolically thus:

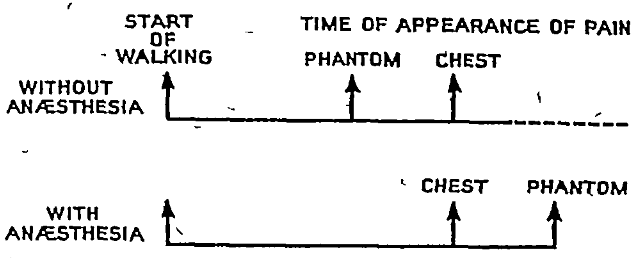

Fig. 4—Relative times of appearance of pain in chest and phantom limb before and after brachial-plexus block.

Let K=threshold for pain, A=normal stream of impulses from somatic tissues, and B=normal stream of impulses from homosegmental viscera.

Then A+B is normally less than K; but K may be exceeded if (1) A is increased, as in pressure on neuroma of amputation scar; (2) B is increased, as in cardiac ischæmia; or (3) A and B are increased, as in the concurrence of cardiac ischæmia and subdeltoid bursitis.

Almost constantly pain of visceral origin is referred to an area which shares with the viscus a common segmental innervation. This homologous segmental reference of visceral pain, first suggested by Martyn (1864) and profitably used by Head (1893) in mapping out the segmental nerve-supply to the viscera, was beautifully demonstrated by Lewis and Kellgren (1939), who emphasised the artificiality of the supposed distinction between visceral and somatic pain. Since the metamere is the phylogenetic unit of the organism, and since the arrangement of pain fibres in cord, brain-stem, and thalamus is segmental, it is highly probable that pain impulses arising from the same segment will reach a functionally related area of the sensorium, and, when *integrated with the cortical pattern of the body image* by neural mechanisms at present largely unknown, will *be localised selectively in that segment*. There is now considerable evidence showing that with repeated stimulation such localisation becomes more precise (Wolf and Wolff 1943), thus suggesting that there is an inborn faculty for a vague segmental localisation of deep and visceral pain (else why the fairly constant localisation of referred pain in angina and biliary colic?) which is amenable to learning by experience.

The explanation of the effects of local anæsthesia and hyperæsthesia is, on the hypothesis here presented, clear. If, on the one hand, the normal impulses streaming up the *somatic-pain nerves contribute significantly to* the sum of pain impulses necessary to pass the threshold, nerve block will abolish the pain; if, on the other hand, the impulses arising from the viscus are above threshold value, the block may diminish the intensity of the pain or alter its maximal site or course of development, but will not abolish it.

This hypothesis has the additional merit of explaining the more frequent failure of subcutaneous nerve block to lessen visceral pain, as contrasted with segmental nerve block. "Without hypothesis," wrote Charles Darwin, "there can be no useful observation." The hypothesis here presented will be supported or discarded when evidence is forthcoming from the neurophysiologist on the validity of the assumption that normally there is a constant centripetal stream of subliminal impulses from the nerve-endings for pain in all tissues. On him *rests the burden of proof*.

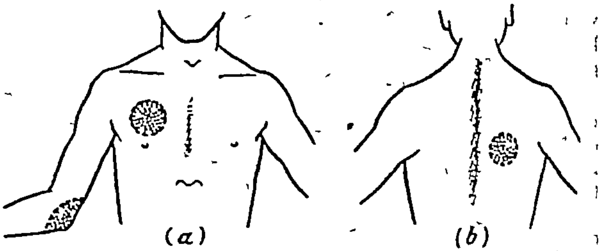

Fig. 5—Areas of experimental hyperæsthesia: (a) by blistering; (b) by injection of hypertonic saline.

SUMMARY

Referred pain of visceral origin can be abolished or diminished, *or its location* may be changed by anæsthesia of homosegmental areas.

It can also be produced, increased, or moved by hyperæsthesia of homosegmental areas.

The explanation of these two *facts* seems to be that there is a constant stream of subliminal impulses from visceral and somatic nerve-endings to the central nervous system.

Normally the sum of such visceral and somatic impulses is subliminal. The threshold value is exceeded, and pain is caused, only by the abnormal increase of either one or both of these two kinds of impulse.

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(Continued at foot of opposite page)

A COMPREHENSIVE STUDENT-HEALTH SERVICE

A. H. MACKLIN
O.B.E., M.C., M.D. Manc.
PHYSICIAN TO THE STUDENT-HEALTH SERVICE, UNIVERSITY OF ABERDEEN

THERE should, in my view, be a full student-health service in every university. Complete health examinations on entry and in subsequent years are not enough; the service should include care of the student when he is sick or needs medical attention of any sort, and, based on these two, a careful inquiry into the factors which affect mental and physical health in this particular age and occupational group.

The students are likely to be more interested in, and to make fuller use of, a service which looks after their troubles and illnesses and, to their way of thinking, has a practical value than one which they may rightly or wrongly suspect of using them as subjects of a statistical inquiry. Without such a service it is difficult to see where accurate information about morbidity, necessary for the assessment of the health and sickness of any group, is to come from.

It is when students are sick and seeking help in trouble that one gets the best insight into their background. In some cases it is the only time when one will get to know anything at all of the more intimate affairs which can have such an important bearing on their mental and physical make-up. I have found that replies to stereotyped questionaries, particularly written ones, are often inaccurate and misleading. A glaring example of this is the replies made to the question: "What games do you play and what form of exercise do you take?" A student will fill in rugby, tennis, rowing, hiking, swimming, squash, badminton, cricket, country dancing, and hill climbing, when what he means is that he has done each of these things once and, since coming to the university, has taken practically no physical exercise at all.

If the student cannot be relied on to answer such simple questions as these accurately, still less valuable will be his replies to more intimate inquiries. In the ordinary way of examination it is very hard to get "inside" a student or to find out much of what constitutes his social and environmental background. This may apply more to the northern Scotsman with whom I have had to deal, but with any group of students it is important to ensure that information given on what are often delicate matters is truly representative before reducing it to figures. As a means to obtaining really valuable information, the doctor-patient relationship should be developed rather than the impersonal stereotyped questionnaire.

It is very important that the physician in charge of the student service should have an absorbing interest in and liking for his work. A long series of routine examinations is apt to become very tiring, and indeed boring, to the detriment of the standard of work. It will prove much more interesting if the day is enlivened with the care and treatment of sick students, and the health examination will mean a great deal more if it is to be the basis of possible further personal care. The physician should be able to feel that he is in a position to carry out, from start to finish, the very highest standard of medical work. This surely is a sine qua non of a university service, and it will not be achieved if the service is broken or disjointed, or the physician's interest is subjected to the strains of a too limited routine.

THE ABERDEEN SCHEME

Aberdeen University and the Aberdeen Royal Infirmary came together to make the student-health service a combined undertaking. The physician in charge is expected to deal with the nurses and residents of the hospital in the same comprehensive way as he does with university students. To regularise the position the holder of the appointment has been appointed to the staff as assistant physician in charge of the nurses' health service and has charge of a flat of small wards totalling 20 beds. The flat was designed primarily for the use of sick nurses, but students, both male and female, can be admitted if there is room. The appointment is useful in that it enables the physician to retain the care of students and nurses requiring hospital treatment or investigation, and puts him in closer touch with other members of the hospital staff, on whom he can call as required, than would otherwise be the case.

The retention of the personal care of the student throughout the whole period of his illness constitutes an important element of the service. To hand him over to some other person or to an institution when the need for contact is greatest would surely infringe the principle, so strongly emphasised in social medicine, of dealing with the individual and the group, in health and in sickness, as a whole being and a whole group.

The accommodation in the University buildings consisted at first of two rooms, but this is now being increased to four:

(1) Consulting and examination room.
(2) Treatment room and laboratory.
(3) Office.
(4) Reception and waiting room.

This must be regarded as a minimal requirement.

The day's routine is generally as follows:

I go at 9 A.M. to the Royal Infirmary to see the nurses and do a round of bed cases. I also see what one might call "outpatients." The time taken varies, but is usually between 1 and 1½ hours.

No health examinations are done at this time; they are done by appointment as soon as possible after the arrival of each batch of nurses. These examinations are carried out in the nurses' home where their own teaching is done, and which, consequently, is fairly well equipped for the purpose.

From the Infirmary I go to the University buildings about two miles away, where I first of all see "outpatients," and then pay any necessary outdoor visits to students in their lodgings. I often return to their lodgings in the evenings to deal with the cases more thoroughly, and find that the necessary intimate relationship is better achieved at this than at any other time.

Routine health examinations of university students are also done by appointment. This is rather an important point. Each student is invited to make an appointment. This avoids interference with lectures and gives the student no excuse for not attending.

The health examination is fairly comprehensive, including a history of previous illness, family history, amount and kind of exercise, interests and hobbies, standard of lodgings as regards accommodation, food, suitability for work, price, &c.; a dark-room examination of ear, nose, mouth, throat, and fundus oculi; tests of visual acuity and colour-vision; clinical assessment of nutrition, posture, and development; hæmoglobin examination; radiography of chest, and examination of urine; and a general examination. An electrocardiograph will be utilised when a machine is available. Particular attention is paid to such things as dental caries, infected tonsils, chronic nasal catarrh and sinusitis, errors of

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PROFESSOR COHEN: REFERENCES—*continued*

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refraction and muscle balance, postural defects, skin eruptions, hæmorrhoids, varicose veins, defects of locomotion, and moderate degrees of anæmia, conditions which are apt to be neglected or to have their treatment postponed, but which if tackled early can prevent later trouble. Special care is directed to ingrowing toenails, flat-foot, hammer-toes, and other deformities, and to trophic conditions, chilblains, and erythrocyanosis. The nurse inquires particularly regarding menstrual disorders; and, by arrangement with the professor of gynæcology, all such cases are referred to his department for thorough investigation by a woman doctor.

All defects found which require further specialist examination and treatment are referred to the special departments of the Royal Infirmary. The honorary staff are extremely helpful, the specialists concerned affording students reasonable priority and sending useful reports on their cases. Radiography is done at the Royal Infirmary at certain fixed times daily.

Arrangements for dental treatment are not yet comprehensive. Particular cases, such as dental cysts and impacted teeth, are referred to the dental surgeon on the staff of the Royal Infirmary; for ordinary treatment they go to local dental practitioners. Psychological cases are referred to the mental-health department of the Royal Infirmary. Cases of underdevelopment and postural defects are referred to the director of physical training. All findings, together with specialists' reports, are recorded on a punch-system record-card and filed under appropriate headings for easy reference.

PHYSICAL EXERCISE

I have been astonished at the number of students who take no outdoor exercise at all. The percentage of those who do not take enough exercise is very high, about 80% of those examined, and of this group a considerable number appear to have no sort of hobby or interest outside their work as students. This is surely a serious matter. It is not the physician's concern to take part in producing athletic champions, but he should be concerned to see that those who are not able to secure a place in the first and second teams should be able to enjoy periodically a vigorous healthy game or other exercise.

It is generally agreed that young people in this age-group should have plenty of opportunity for letting off steam in exercise of one kind or another. Those who do not like games can seek other forms of recreation, but it should be in the open air. This applies particularly to students whose work is essentially indoors and sedentary, sitting in class-rooms, looking down microscopes, standing round a bed or in the operating-theatre. I feel that many of the student's troubles would disappear if his life were better balanced and he took more physical exercise. No university health service is complete which does not deal with this important aspect of student health. My own contact with the athletic union is not so close as it should be, but I hope to come to some arrangement whereby I can achieve a measure of "direction" towards the playing-fields or the open country for those students who at present lack the opportunity.

ORGANISATION

The University of Aberdeen has been generous about equipment, but the question of supply has been difficult and my rooms are not yet completely equipped. Accommodation and equipment should be adequate if the health service is to attain the high standard consistent with a university service; no physician can put out his best work if he is handicapped in this respect.

As regards the cost of treatment, a student admitted to the Royal Infirmary or attending a special department is dealt with in exactly the same way as other patients. The University has laid down that it "will only accept minor financial responsibility in connexion with the treatment of students." This leaves a good deal to the interpretation, and I have taken it that the University will cover the cost of what I use in the treatment room, but that the student must pay for any drugs and dressings he may require for use in his home or lodgings. There are several funds at the disposal of the University authorities designed to help necessitous students in sickness, but they can be called on only for serious cases and do not cover the sundry small sums required in the ordinary way. Such things as sulphonamides and most of the useful remedies and dressings can make quite a bite into a student's weekly pocket-money, but it is surprising how rarely it is necessary to prescribe drugs; and, as regards dressings, students who are coming to the University every day can easily call in at the treatment room, where the nurse will do their dressings for them. Under the Health Act all sickness costs will be met.

The staff at the University centre consists at present of myself and a nurse-secretary. If the work increases it may be necessary to have a nurse and a secretary. The flat at the Royal Infirmary is in charge of a permanent nursing sister, and the nurses are found and changed in the ordinary way by the Infirmary authorities.

To what extent can this staff and the arrangements which I have outlined meet the need for the yearly routine health examination of all students in the University, in addition to their care in sickness? In other words, are they sufficient for a comprehensive service? The problem is largely mathematical and depends to some extent on the number of students coming for examination.

It takes a minimum of 40 min. to examine a student properly. Allowing for the time necessary to visit the Infirmary in the morning, often again in the evening, and for occasional return visits to see members of the staff, &c., to deal with sick students and visit them in their lodgings, and for sundry distractions incidental to the service, I can examine, on an average, 6 cases a day, or about 30 a week.

There are three full terms of about 9 weeks ..	810
In the Christmas and Easter vacations it would be possible to examine a further 100 students resident locally	100
About 150 medical students come up for vacation terms in their last 2 years of study	150
	1060

This is probably the maximum of examinations which could be carried out by one whole-time physician, and to do this he would require an efficient nurse or an assistant capable of doing some accurate technical work such as examination of urine, Hb estimations, electrocardiography, &c., and a secretary. With any larger number than this there would be no alternative to increasing the staff. The numbers dealt with could, however, be more than doubled if two full-time physicians were employed, since there would not be the same distraction and break in the work. Examinations subsequent to the first do not occupy so much time, and half-hourly appointments could be made. Two physicians, with additional accommodation, could manage 2500 examinations yearly.

In Aberdeen University there are, in the present year, 1822 matriculated students; hence one physician could not carry out the work of a full medical service on the basis of a yearly examination of all students. Should examinations be limited to first-year and third-year students in all faculties, and fifth-year and final-year medical students, the number to be examined next year would be about 1050. I consider that one physician could do this and look after sick students also, but the numbers in the third and subsequent years are likely to increase after next year.

At present health examinations are compulsory only for medical students, who have to be examined three times during their course, and voluntary for all others.

The number of non-medical students likely to volunteer cannot yet be estimated, since in this broken year I have only been able to approach those in their first year; of these 28% requested examination and were examined. Taking 30% as a likely response for all non-medical students, the number of examinations, on a yearly basis, would be about 1050 on this year's figures, with, in addition, 75–100 nurses.

The examination of the nurses can be carried out more quickly than that of the students, because the examinations are done in the nurses' home, where they are paraded and prepared—i.e., they are brought in one after another in dressing-gowns. The sister tutors also are able to help considerably with measurements of height and weight, examination of urine, &c.

There is a striking difference between the university student and the student nurse. The nurse is more carefree and less worried. She is governed completely from the time she enters hospital, her day's work and her hours of recreation are planned, her quarters and meals provided, she wears a particular kind of clothing, and she subjugates herself entirely to hospital discipline. She has little privacy, even in illness; she reports sick through the matron, is conducted to the doctor by a sister, and full information of her condition goes back to matron and to her family. Her studies are carefully supervised. She receives a wage sufficient for her immediate needs. In fact, her behaviour generally is ordered and she has relatively little to worry about.

The university student is much more intense, more inclined to introspection and worry. His course of study is planned, but it is a much more exacting affair than the nurse's. He is very much more on his own (indeed I have found that the student can be a very lonely person) and has nothing provided in the way the nurse has. He receives no salary and is often hard put to it to make ends meet.

Because of the difference between these groups I am a little doubtful at the moment of the value of incorporating the care of student nurses in a university student-health service, but must reserve opinion pending further experience, or pending a change in the training of nurses.

COMMENTS

The preventive value of the service is beyond question. It is obviously of the first importance that students of all faculties should be able to continue their studies unbroken by sickness. It is also very important that, if sick, they should be made sufficiently well to sit examinations at the proper time. One fascinating element of the work lies in the frequent efforts to effect a cure against time. Life at a university ought to be, and I think usually is, for the student a happy and healthy time. On the other hand, the conditions which students make for themselves can be very depressing both mentally and physically. The fog-banks ahead in the form of examinations, the feeling that one is not keeping pace with the teaching, the abandonment of physical exercise to devote more time to work, the effort to put in more hours of reading continuing into the "wee sma' hours," the subsequent heaviness on waking and the scramble to get to the first lectures in time, the consequent irregularity of bowel movement, bad landladies, uncomfortable "digs," poor food, and often financial stringency, all these and other factors are common in a student's life and do not make for fitness.

Clear sound advice, especially insistence on the need for engaging in sport or taking exercise in some suitable form, and its value as a means of mental relaxation, on the value of the weekend and of the vacation, the correction of headaches and eye strain and of other small but important defects, the assurance that certain sexual disturbances are of small significance, and in many cases just letting the student unburden himself—all these can do a great deal to assist him to come fresh to his final examinations and fit to face whatever the world has in store for him thereafter.

My main criticism of the service is that it will be incomplete until health examination is made compulsory not only for medical students but also for students of all faculties. Though to many people the idea of compulsion is distasteful, I am strongly in favour of making a complete medical examination compulsory for all students. In this free country compulsion enters so largely into our lives that I cannot believe there would be any difficulty about it; nor is there any evidence that students themselves would resent it. So far as medical students are concerned, they all come along in a cheerful frame of mind, and I have not met one who showed resentment at having to be examined. The reason why more students do not present themselves voluntarily is that they "cannot be bothered"—the common evasion of these often casual young people.

Another reason which tends to make the service incomplete, and one which must affect the statistical analysis, is that in Aberdeen (and I suppose the same applies to most universities other than Oxford and Cambridge) many students live with their parents in the town and, when ill, consult their own family doctor. In fact the terms of employment of the physician are that he will attend "those students whose homes are not in Aberdeen" and are living in lodgings. Some students, however, who have family doctors in Aberdeen consult the University service for treatment. I take the opportunity of examining all who come, from whatever source, very thoroughly. Minor ailments are dealt with on the spot; with regard to anything more serious, I make a point of getting in touch with the practitioners concerned, some of whom ask me to deal with the case; others treat the student and keep me informed, but in a few cases I lose touch completely. As an example, a case of early pulmonary tuberculosis detected on routine examination was referred to his own doctor, who elected to deal with him, and I have not been able to get an accurate report on his progress. On the whole, however, the practitioners in Aberdeen are friendly and coöperative, and some of them who are consulted direct refer cases to me or tell me about them. The situation constitutes a potential source of leakage, and I see no way to overcome it other than by seeking to maintain friendly relations with all concerned. The University chaplain and the supervisor of women students sometimes hear of sick students when I do not, and are helpful in putting me in touch with cases.

Though a student-health service has been in operation in Aberdeen for some time, the present full-time service is in its infancy, and experience so far may not be a complete guide. The fact that the service has not been well known to students, difficulties in obtaining equipment, and other things have affected the work, and the experience of at least another full academic year will probably be required before one can speak in exact terms of what can be done.

CONCLUSIONS

The student-health service should, so far as possible, be complete.

The provision of medical care—i.e., involving the full doctor-patient relationship—affords the best means of getting complete and accurate records of the social and environmental background and of individual histories.

There should be a sanatorium or special accommodation in hospital for students, and it is desirable that the physician in charge of the service should have charge of this.

A full-time physician in charge of a full service can carry out 1000 examinations per year.

The examination should be compulsory for students of all faculties.

COMPULSORY PHYSICAL EDUCATION FOR UNIVERSITY STUDENTS

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If its more specified purposes are set aside, university education may be considered as the ordered pursuit of advanced knowledge and techniques, with a bias towards contemporary social purpose. The subject of this paper is simply the physical aspect of this pursuit so far as it affects the undergraduate.

It will help first to consider briefly the whole field of physical education and compare it with the parallel stages of an intellectual discipline. Thus, the primary stage may be said to correspond with the acquisition of the techniques of reading, writing, and arithmetic. The child learns elementary bodily coördination in an environment governed by simple natural laws. Running, jumping, throwing, and climbing are the primitive skills at this stage, but one may add catching, floating in water, or bouncing, to illustrate the gradually increasing perplexity of the natural forces involved.

The secondary stage, which follows the acquisition of "physical literacy," is the stage of "tools and conventions." Just as, intellectually, the child uses the tools of mathematics and language to broaden its skill and assimilate previous human experience in relation to present needs, so physically he starts to use the tools which relate him to more complex natural forces, and to learn the conventions of contemporary games. For instance, he may use a bat, a swing, skates, skis, a springboard, or a sail to play off one physical force against another to serve his purpose, much as the budding craftsman learns how the momentum of a mallet and the cutting end of a chisel combine to produce the configuration of wood which he requires. And he must also learn the rules of games whereby he relates his skill to that of others, coöperating with or outwitting his fellows in turn.

By the time the university stage is reached, the student should have acquired both elementary skill and experience. The next stage is to be regarded as one of differentiation rather than growth. The student should know his or her capabilities and be able to specialise to some extent in those pursuits to which he or she is temperamentally or physically best suited. But at the same time a new characteristic tends to emerge—that of social maturity. Thus, while skill may be specialised, character is broadened. Instead of playing football when football is laid on for him, he plays, if he is keen, as a member of a club, and the running and fortunes of the club become partly his concern. The physical skill is thus related to social function. Courts must be booked, expeditions organised, the hard work of maintaining equipment and taking turns in the use of it bring valuable qualities to the fore in addition to the much vaunted team spirit. Moreover, purely social contacts mature from these associations and are complementary to those fostered simultaneously by kindred intellectual pursuits or communal living conditions. In the desire to arouse the interest of others and encourage their skill is discovered the germ of the teaching attitude.

This brief analysis, the divisions within which are very arbitrary, shows the lines on which an ideal university physical-education department might work. It should provide for the integration of physical activity with personality and society on as broad a basis as possible, without detriment to an ordered freedom consonant with the university attitude. It makes three basic demands: freshmen with elementary skill and secondary experience; ample and varied equipment; and "academic" standards of teaching and opportunity.

DEFECTS OF VOLUNTARY SYSTEM

At this point we come to the three major difficulties inherent in this utopian project, for in practice we find many freshmen with no experience and some even with no elementary skill. We find also equipment that is ample in only a few narrow fields and entirely lacking in others; while the teaching, where there is any, can seldom by any stretch of the imagination be considered as of academic standard.

These three difficulties relate ultimately to one another; the poor quality of teaching with few facilities in the schools allows the physical illiterates to reach the university, which in turn has no standards of its own. That this vicious circle is overlooked must be attributed in large measure to the voluntary system which fosters the emergence of the ready-skilled few and stifles the moderate potential of the many.

This voluntary system is voluntary only in name, for the student is—at least in some older universities—virtually compelled to contribute a considerable subscription to the sports funds, which are all spent on the pursuits of rowing, cricket, and football. If by inclination or time-table these are not feasible in his case, he is destined to fend for himself in the open market of an overcrowded and ill-provided town. Let us accept that this is a bad old tradition. But the tradition of the younger universities is no better, for here the idea seems to have been that anything the student did, or did not do, out of academic hours was no concern of the university. These various traditions at present combine in depriving something approaching 90% of all university students of adequate physical opportunity.

WIDER CHOICE WITH COMPULSION

If we are to overcome inertia in this matter and catch up with the times, a complete change of attitude will be necessary. Education for the body as well as the mind must become a concern of the universities, and my own view, supported by experience, favours the introduction of compulsory physical activities for all first-year students. I have changed my mind in this matter in the last two years, and I hope to persuade those who disagree to change theirs, for I have seen what has already been accomplished by this means by my colleague A. D. Munrow, director of physical education at Birmingham University, to whom I owe many of the views here advocated. It is his experience that the compulsion falls far more heavily on the university authorities than on the student. He has, for instance, had to be provided with increased facilities, a threefold increase in his original staff, and adequate time from the curriculum hours for physical activity. He is, I need hardly say, possessed of considerable vision and powers of inspiration, and has collected first-rate assistants, but he found that the old system gave him no opportunity to realise his ideas. The choice provided is large and the system is popular; it interferes in no way with the usual games and sports run by student organisations whose regular players can contract out of the compulsory periods if they wish.

The alternatives include camping, rock-climbing, folk-dancing, and gymnastics; and, during the past hard winter, skis were obtained from Government surplus stores, and cross-country expeditions were organised. The social value of physical education, thus broadly conceived, is one of its major assets.

The native resentment to compulsion is, after all, something of a bogy. We compel students to attend their courses, once chosen; and we often compel residence in halls or colleges, and conformity with a host of regulations for the sake of equable community living. Why should we not also compel a health-promoting régime for the same reason? If compulsion is so bad for the body, is it not worse for the mind?

Compulsory physical education is not likely to be adopted immediately by all universities; it is in an experimental stage and merely represents one view of future developments. For one thing, there is at present no adequate staff available of the required quality. Physical education has suffered badly from dogmatism; rigid systems have been built up on unproved hypotheses, and often applied in unsuitable conditions. Much of my time is given to contradicting the false theory that permeates the textbooks. The products of physical-training colleges are too often narrow-minded; and though some of these colleges have doubtless done valuable pioneering work, they seem to cling to systems of drill and gymnastics, founded on mythical principles, with unswerving tenacity. We need a much more liberal and scientific attitude in this matter.

It is to be hoped that other British universities will accept physical education as a subject worthy of a place beside purely intellectual subjects in a general degree course, and thereby encourage some of those gifted young men and women who combine physical and intellectual skill to take up a career that provides a field for both. For, surely, physical education is both a means and an end in itself, like any other branch of education; its merits, alike for the individual and society, must equally be taken for granted and not tied to any particular physiological hypothesis. The objective of both bodily and mental training is the better education of the "whole man." Of two equally erudite professors, the one who plays squash or can dance a foursome reel is the better product.

Let us therefore see that our universities set about providing for a much wider range of physical skills: not only field and court games but all-the-year-round swimming and diving; dance, both traditional and contemporary; not only athletics and gymnastics but also skating, ski-ing, gliding, and sailing; not only S.T.C. camps but expeditions for adventure, mountaineering, and canoeing. These are all worth-while activities whose virtues are not in question among those who pursue them or those who have given time and thought to their encouragement. Can we doctors honestly say that we know any better?

HEALTH EXAMINATIONS OF STUDENTS

PILOT SURVEY IN OXFORD

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THE purpose of this communication is to relate experience of a pilot survey of student health carried out during the first two terms in 1947 at Oxford, and to examine in the light of this experience what degree of success student-health examinations may expect, and what the limitations of this method are in practice.

The scheme which operates at Magdalen and Somerville is designed to provide health examinations and a health advisory service for the undergraduates of these colleges and to carry out a long-term study of their health. The physician in charge does not undertake treatment, except in so far as explanation and reassurance may be necessary. The specialist services at Oxford have been of great help from the beginning. Good ancillary services are available at most universities, but it should be emphasised that for each student in need of treatment in term time at least an equal number have minor anxieties or need advice on general lines. There are consequently many opportunities of usefulness to be found by a medical adviser who is independent in the student's mind of parental, tutorial, or disciplinary relationship and can be consulted at any time without additional cost.

During Hilary and Trinity terms this year 155 students were examined on a voluntary basis, 77 from Magdalen and 78 from Somerville. This represents 60% of first-year men and 66% of first-year women to whom the invitation to join was sent. Rather more were seen in Hilary than Trinity term, when pleasanter outside diversions abound, and the response among first-year students was rather higher than among those in their second year.

The ideal time for the first approach appears to be just before arrival in the first year, before the students are bombarded with political and other circulars. Though this early approach was made impossible by starting in January, the response may be regarded as encouraging; unfortunately it is insufficient to yield a representative survey of the two colleges, and it is doubtful whether this is possible on a voluntary basis.

Experience elsewhere has led to the recommendation of compulsory medical examination. Medical examination should not constitute an extra condition of entry to university life; nor should it ever appear to influence a student's progress at the university adversely. On the contrary, it offers benefits, such as the early recognition of serious and remediable illness and the correction of minor defects which can interfere with work and enjoyment. A fair number of undergraduates have volunteered the view that health examination should be compulsory, and if the opposition to this is greater in senior than in junior common-rooms it is believed to arise in part from a fear of making neurotic students. Experience in the fighting services does not confirm this conjecture, and the work of the M.O. in support of morale is well recognised. It is no part of the design of the scheme to pander to moral weakness, or to recommend as a rule deep delving of a psycho-analytical type, except in the rare instances in which such specialist help may prove necessary. Far more often opportunity is found to relieve anxiety at an early stage.

Another fear is that further filching of the personal liberties of the individual may be attempted, an ugly enough symptom which is thought to be extending today. Health examination at the university is surely no more of an infringement of this liberty than are the recognised services of the school doctor, of whose work it is a logical extension, and it is even less of an infringement than in the case of the medical services of the fighting forces, where medical examination at entry may prove a dispiriting bar to opportunity.

Further, in the student-health scheme no outside loyalty need exist which might influence the relationship between student and doctor. When fully established in university life it seems more probable that the doctor may find that he has to resist pressure by college or university administration to open the medical back-door in the case of students failing to profit or for other reasons undesirable.

The great advantages of compulsion are (1) the assurance that so far as possible all handicaps are discovered and dealt with; and (2) the information which becomes available concerning the health and sickness experience of students would be representative. For study purposes and for the planning of health apparatus in general a fair sample then replaces one in which other non-random methods of selection have occurred.

FINDINGS OF PILOT SURVEY

For those still in doubt of the need for student-health supervision, perhaps the findings in this pilot survey at Oxford may provide convincing evidence. They record many minor and remediable disabilities and not a few serious illnesses among 155 students, in spite of the belief that as a group they should represent one of the healthiest sections of the community. Altogether of 155 students, 23 (15%) were deemed to need treatment before the end of term; in another 61 (39%) it could be postponed till the vacation.

Among the more important abnormalities discovered by the survey of 155 students were:

(1) One case of open pulmonary tuberculosis, and another with pleural effusion and tuberculous foci. Notification of the first led to discovery of a younger brother with active infection. From a public-health point of view isolation of infective cases is clearly desirable, and yet at present a medical officer of health may have knowledge of such cases in a university population but lack the liberty to inform college authorities.

(2) Systolic murmur because of which activities had been limited ten years previously. Reassurance led to full restoration.

(3) Attacks of abdominal pain requiring investigation. Follow-up examination of amœbic dysentery and sprue.

(4) Iron-deficiency anæmia (two cases, Hb 55%, Hb 76%).

(5) Polyarthritis secondary to nasal polypi and sinus infection. Osteochondritis of lumbar spine with symptoms. Internal derangement of the knee. Recurrent dislocation of the shoulder.

(6) Transient inferior rectus palsy, with diplopia.

(7) Twenty cases of minor anxiety open to relief by explanation and reassurance.

The accompanying table of classified findings indicates which abnormalities are most common. Dental care on the whole was good, but the number of students recognised to be in need of dental treatment might well have been higher had probe and minor examinations been carried out by a dental surgeon. About three-quarters of those with errors of refraction had already been diagnosed, but annual re-examination may bring to light some progress in these defects. A family history of migraine, asthma, or eczema was present in 28%.

AIMS OF STUDENT-HEALTH EXAMINATION

Apart from assessments which lead to the removal of physical handicaps, the aims of the health examination must be concerned in some degree with the assessment of personality and those social conditions which control a student's life. If suitable records are devised, especially if certain evidence relating to background and upbringing is included, it will become possible in time to determine the influence of factors such as social origin, family history, previous illness and constitutional tendency, "only childism" (more than 1 in 5 of recent entries at Oxford have been only children), economic status, type of schooling, nature of lodging, opportunity for physical exercise and hours spent in daily travel, and to plot the bearing of such factors on health and successful use of university opportunity. Such records should also provide evidence from which advice on community problems of diet, lodgings, work, and recreation may be given, and furnish indications about the most profitable aspects of physical or mental hygiene to treat in lectures. There is, however, one important aspect in the making of such records which should not be neglected. It is desirable to shape, with the assistance of the statistician and expert records officer, a form which might become general in all universities, providing certain basic information of a factual kind in a manner readily susceptible of analysis. The use of such a card in no way precludes ad-hoc investigations of local choice. It would allow of valuable comparisons between universities and furnish material for the establishment of useful standards.

CLASSIFIED FINDINGS IN 155 STUDENTS

Condition	No. of male students	No. of female students	Total
Eye:			
Myopia	27	24	51 (*33*%)
Astigmatism	10	10	20 (*13*%)
Hypermetropia	3	5	8 (*5*%)
Strabismus	3	3	6 (*4*%)
Other eye conditions ..	2	4	6 (*4*%)
No. of students ..	43	42	..
Skin	25	24	49 (*32*%)
Spinal (scoliosis, kyphosis, lordosis)	21	22	43 (*25*%)
Surgical	22	14	36 (*23*%)
Ear, nose, and throat ..	14	9	23 (*15*%)
Gastro-intestinal	10	9	19 (*12*%)
Minor anxieties	9	11	20 (*13*%)
Systolic murmur	6	6	12 (*8*%)
Condition requiring general advice	2	6	8 (*5*%)
Sundry other medical conditions	18	20	38 (*24*%)
Dysmenorrhœa:			
Mild	..	16	16 (*21*%)
Moderate	..	6	6 (*8*%)
Chilblains	5	9	14 (*9*%)
Dental condition requiring treatment	6	7	13 (*9*%)
No. of abnormalities ..	183	205	388
No. of students	77	78	155
Average number of abnormalities per student ..	2·4	2·6	2·5

LIMITATIONS OF THE METHOD OF ROUTINE HEALTH EXAMINATION

Time is the most important factor. One hour was devoted to the interview and examination, including hæmoglobin estimation; of this it is as well to keep 10 minutes at the end for discussion of the findings and those important last-minute questions which a patient asks when his confidence is fully established. Chest radiograms are taken for convenience on a separate occasion. If taken beforehand and reported as normal they serve as a useful method of opening the interview. A maximum of 20 patients a week can be seen as a regular procedure, and the number of 1-hour examinations in a year is limited to a maximum of 450 where there are three 8-week terms. This means that if 1 hour were to be devoted to each annual re-examination, and the average stay at the university is 3 years, the annual entry which could be handled by one physician would be about 150. Where university terms are longer than 8 weeks, up to 250 might be a reasonable annual quota.

Now, if it is desired that the doctor supervise more than this number, a point will be reached at which this type of health examination, which is more suitable for research purposes, should go by the board and be replaced by another less time-consuming. One suggestion is that the more important headings could be extracted and embodied in a shortened form suitable for a half-hour interview. It is reasonable to suggest that most of the more important abnormalities would have been detected at a half-hour interview, provided that concentration was kept on their discovery. A number of headings such as addresses, schools, and experience in the Forces may be completed by a secretary-receptionist. Much time is saved if the student is provided with headings of previous history to complete at leisure beforehand, and this too often serves to crystallise in his mind some problem on which he wants advice.

What criticism may be offered of this briefer type of interview? It would hurry the proceedings and make the discovery of an abnormality prejudice the time-table. Thus it would not permit to the same degree the patient, accurate, and complete recording of data without which analysis and correlation would be valueless, though there should be no difficulty in recording such essential measurements as height and weight. With regard to the number of patients who could be seen, it certainly would not double this, though it would allow some increase. Despite these criticisms, if the half-hour consultation leads to the removal of the defects which can be remedied it will have served its main purpose.

If it is impossible to devote half an hour to each student, it might be better to limit the health service to routine chest radiography and facilities for consultation for those who complain or have some special problem they wish to discuss.

An alternative method for dealing with large numbers might be the setting up of a university medical board with an ophthalmologist and aural and dental surgeons in attendance. This immediately raises problems of expense, accommodation, and administration, together with the risk of some loss in the personal relationship between physician and student. Medical work in these circumstances for a long period is also apt to lose its hold over the doctor's interest.

As a last note, it should be emphasised that the life blood of routine health examination, especially when practised as a whole-time job, *flows only so long as the* channels of interest in the individual are open; should these be choked by an undue burden of routine, the value of health examinations must quickly decline. Where, on the other hand, time is available for interest to develop in the individual student, it grows greatly and the work as a whole seems more than worth while.

My thanks are due to Sir Henry Tizard, late president of Magdalen College, and to Dr. Janet Vaughan, principal of Somerville College, who helped to make this pilot survey possible. I am particularly grateful to Prof. J. A. Ryle for the benefit of his direction and criticism.

FAMILIAL IDIOPATHIC METHÆMOGLOBINÆMIA

FIVE CASES IN ONE FAMILY

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VERY few instances of idiopathic methæmoglobinæmia occurring as a familial disease have so far been reported. Deeny et al. (1943) described the condition in two brothers and found that the disease could be successfully treated with large doses of ascorbic acid, as had been found independently by Lian et al. (1939). Barcroft et al. (1945) made a detailed study of Deeny's cases during treatment and reviewed the literature of the disease up to 1940. Since then there have been reports of isolated cases treated successfully with ascorbic acid (King et al. 1944) and with methylene-blue and ascorbic acid (Sievers and Ryon 1945).

The cases reported here come from a family of nine brothers and sisters, five of whom are affected, a number larger than has been definitely authenticated in any family previously described. The effects of treatment are recorded, together with the results of biochemical investigations which throw light on the underlying metabolic abnormality responsible for the condition. The observations on this family may also provide material for genetic studies.

The family is set out in fig. 1. No. 6 came under observation first when he attended the outpatient department of a general hospital for a minor injury. He was referred to us because of his cyanosis, and we found that his blood contained a considerable amount of methæmoglobin. He was treated with ascorbic acid 300 mg. daily. The changes in his blood-methæmoglobin level during treatment are shown in fig. 2. He did not appear to be greatly concerned about his unusual colour and did not continue treatment. When we saw him four years later he had relapsed completely, having taken no ascorbic acid for at least eight months. We could not secure any satisfactory family history from him and at the time regarded him as an isolated case.

In 1946 his identical twin brother, no. 7, attended hospital for an injury to his hand and was similarly referred to us because of his cyanosis. We found methæmoglobin in his blood, and he told us that several other members of his family were abnormal in colour. They were so little concerned about their appearance that we could not persuade them to come to hospital for investigation and treatment.

We were anxious, in view of the rarity of the disease, to obtain all the information we could about the whole family. We therefore decided to visit them. They lived on a small farm in a remote and mountainous part of Ireland; and, since it is necessary in measuring methæmoglobin to carry out the determinations as soon as possible after taking the blood samples, we set out in a car fitted up as a mobile laboratory. The equipment included a Spekker photo-electric absorptiometer and a Beck-Hartridge reversion spectroscope, both modified to work from the car accumulator. The family were most coöperative, and we obtained blood samples from all the living members of the family except one whom we could not reach.

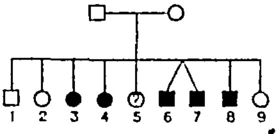

Fig. 1 — Familial idiopathic methæmoglobinæmia: affected males shown by black squares; affected females by black circles; nos. of members of the family correspond to those in the table.

ANALYSIS OF BLOOD PIGMENTS

Venous samples were taken from the arm and put into tubes containing potassium and ammonium oxalate mixture. They were kept ice-cold until analysed for methæmoglobin about two hours later. The blood samples were examined in the reversion spectroscope. Those from the cyanosed members of the family all showed an absorption band in the red, the mid-point of the band being at 633–634 mμ indicating the presence of methæmoglobin. The band was clearly visible in a dilution of 1 in 40 when viewed in a thickness of 2 cm.

Methæmoglobin was determined photo-electrically by a method based on that of Evelyn and Malloy (1938), which depends on the increase in transmission of red light when methæmoglobin is removed by addition of cyanide. Blood 0·6 ml. is added to 16 ml. of distilled water; and, after it has stood for 10 min., 8 ml. of $M/10$ phosphate buffer (pH 6·9) is added. It is preferable to centrifuge the mixture strongly for 20 min. at this stage. We have found it a great advantage, when measuring small amounts of methæmoglobin, to use a differential method of reading in the absorptiometer. The solution is put into two similar 1-cm. glass cells, which are read one against the other. The cyanide is then added to one and the reading repeated. From the change in absorption, the methæmoglobin is found from a calibration curve prepared in the same way from blood containing various known amounts of methæmoglobin.

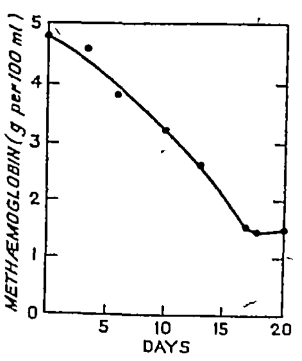

Fig. 2 — Changes in blood-methæmoglobin level in no. 6 during treatment with ascorbic acid 300 mg. a day.

Total blood pigments were determined by the alkaline-hæmatin method using the artificial standard of Gibson and Harrison (1945).

The accompanying table shows the blood-methæmoglobin levels of all members of the family except no. 1, who was away from home but was stated independently by three members of his family to be normal and never before the end of term; in another 61 (39%) it could be postponed till the vacation.

Among the more important abnormalities discovered by the survey of 155 students were:

(1) One case of open pulmonary tuberculosis, and another with pleural effusion and tuberculous foci. Notification of the first led to discovery of a younger brother with active infection. From a public-health point of view isolation of infective cases is clearly desirable, and yet at present a medical officer of health may have knowledge of such cases in a university population but lack the liberty to inform college authorities.

(2) Systolic murmur because of which activities had been limited ten years previously. Reassurance led to full restoration.

(3) Attacks of abdominal pain requiring investigation. Follow-up examination of amœbic dysentery and sprue.

(4) Iron-deficiency anæmia (two cases, Hb 55%, Hb 76%).

(5) Polyarthritis secondary to nasal polypi and sinus infection. Osteochondritis of lumbar spine with symptoms. Internal derangement of the knee. Recurrent dislocation of the shoulder.

(6) Transient inferior rectus palsy, with diplopia.

(7) Twenty cases of minor anxiety open to relief by explanation and reassurance.

The accompanying table of classified findings indicates which abnormalities are most common. Dental care on the whole was good, but the number of students recognised to be in need of dental treatment might well have been higher had probe and minor examinations been carried out by a dental surgeon. About three-quarters of those with errors of refraction had already been diagnosed, but annual re-examination may bring to light some progress in these defects. A family history of migraine, asthma, or eczema was present in 28%.

AIMS OF STUDENT-HEALTH EXAMINATION

Apart from assessments which lead to the removal of physical handicaps, the aims of the health examination must be concerned in some degree with the assessment of personality and those social conditions which control a student's life. If suitable records are devised, especially if certain evidence relating to background and upbringing is included, it will become possible in time to determine the influence of factors such as social origin, family history, previous illness and constitutional tendency, "only childism" (more than 1 in 5 of recent entries at Oxford have been only children), economic status, type of schooling, nature of lodging, opportunity for physical exercise and hours spent in daily travel, and to plot the bearing of such factors on health and successful use of university opportunity. Such records should also provide evidence from which advice on community problems of diet, lodgings, work, and recreation may be given, and furnish indications about the most profitable aspects of physical or mental hygiene to treat in lectures. There is, however, one important aspect in the making of such records which should not be neglected. It is desirable to shape, with the assistance of the statistician and expert records officer, a form which might become general in all universities, providing certain basic information of a factual kind in a manner readily susceptible of analysis. The use of such a card in no way precludes ad-hoc investigations of local choice. It would allow of valuable comparisons between universities and furnish material for the establishment of useful standards.

CLASSIFIED FINDINGS IN 155 STUDENTS

Condition	No. of male students	No. of female students	Total
Eye:			
Myopia	27	24	51 (33%)
Astigmatism	10	10	20 (13%)
Hypermetropia	3	5	8 (5%)
Strabismus	3	3	6 (4%)
Other eye conditions ..	2	4	6 (4%)
No. of students ..	43	42	..
Skin	25	24	49 (32%)
Spinal (scoliosis, kyphosis, lordosis)	21	22	43 (28%)
Surgical	22	14	36 (23%)
Ear, nose, and throat ..	14	9	23 (15%)
Gastro-intestinal	10	9	19 (12%)
Minor anxieties	9	11	20 (13%)
Systolic murmur	6	6	12 (8%)
Condition requiring general advice	2	6	8 (5%)
Sundry other medical conditions	18	20	38 (24%)
Dysmenorrhœa:			
Mild	..	16	16 (21%)
Moderate	..	6	6 (8%)
Chilblains	5	9	14 (9%)
Dental condition requiring treatment	6	7	13 (9%)
No. of abnormalities ..	183	205	388
No. of students	77	78	155
Average number of abnormalities per student ..	2·4	2·6	2·5

LIMITATIONS OF THE METHOD OF ROUTINE HEALTH EXAMINATION

Time is the most important factor. One hour was devoted to the interview and examination, including hæmoglobin estimation; of this it is as well to keep 10 minutes at the end for discussion of the findings and those important last-minute questions which a patient asks when his confidence is fully established. Chest radiograms are taken for convenience on a separate occasion. If taken beforehand and reported as normal they serve as a useful method of opening the interview. A maximum of 20 patients a week can be seen as a regular procedure, and the number of 1-hour examinations in a year is limited to a maximum of 450 where there are three 8-week terms. This means that if 1 hour were to be devoted to each annual re-examination, and the average stay at the university is 3 years, the annual entry which could be handled by one physician would be about 150. Where university terms are longer than 8 weeks, up to 250 might be a reasonable annual quota.

Now, if it is desired that the doctor supervise more than this number, a point will be reached at which this type of health examination, which is more suitable for research purposes, should go by the board and be replaced by another less time-consuming. One suggestion is that the more important headings could be extracted and embodied in a shortened form suitable for a half-hour interview. It is reasonable to suggest that most of the more important abnormalities would have been detected at a half-hour interview, provided that concentration was kept on their discovery. A number of headings such as addresses, schools, and experience in the Forces may be completed by a secretary-receptionist. Much time is saved if the student is provided with headings of previous history to complete at leisure beforehand, and this too often serves to crystallise in his mind some problem on which he wants advice.

What criticism may be offered of this briefer type of interview? It would hurry the proceedings and make the discovery of an abnormality prejudice the time-table. Thus it would not permit to the same degree the patient, accurate, and complete recording of data without which analysis and correlation would be valueless, though there should be no difficulty in recording such essential measurements as height and weight. With regard to the number of patients who could be seen, it certainly would not double this, though it would allow some of methæmoglobin in the blood. There would then be two kinds of corpuscles in the circulation, one containing normal (ferrous) hæmoglobin molecules, and one containing 100% methæmoglobin (ferric). In these circumstances there would be no opportunity for the two types of pigment to interact, and the oxygen-dissociation curve would be expected to be normal in position. In fact, however, as shown in fig. 3, the curve is shifted away from normal to the left. This hypothesis of the production of two types of corpuscle is thus evidently wrong. It seems much more likely that in idiopathic methæmoglobinæmia the abnormal pigment is distributed evenly throughout the red cells of the body rather than segregated in individual cells. According to the theory of Darling and Roughton (1942), there will then be an exchange of electrons between ferrous and ferric atoms, leading to pigment molecules each containing both ferrous and ferric atoms. Such molecules, they believe, have a stronger affinity for oxygen than has ordinary ferrous hæmoglobin. The shift in the curve in our experiments would thus be explained.

We believe that the abnormal amount of methæmoglobin is not due to any bone-marrow defect but to a disturbance in the equilibrium hæmoglobin⇄methæmoglobin (including any intermediate compounds) which in normal blood is very far to the left. Work shortly to be published (Gibson) has led to the conclusion that the reduction of methæmoglobin in normal persons depends on the triose phosphoric and lactic enzymes of the erythrocytes. These enzymes function with cozymase and coenzyme factor I in bringing about methæmoglobin reduction. Examination of the erythrocytes taken from cases of idiopathic methæmoglobinæmia has shown that they are deficient in coenzyme factor I. The accumulation of large amounts of methæmoglobin in the blood is thought to be due to the inability of the enzyme systems to reduce it to hæmoglobin. As it is probable (Peters and Van Slyke 1931) that methæmoglobin is constantly being formed in the blood of normal persons, we may suppose that the equilibrium level of methæmoglobin will depend on the efficiency of the enzymes which remove it. When these enzyme systems are deficient, large amounts of methæmoglobin will be present in the blood.

The rapid removal of methæmoglobin from the blood after the administration of methylene-blue is probably due to the catalytic action of the dye, which causes methæmoglobin to be reduced by enzymes which are otherwise unable to bring about this reaction (Gibson unpublished). The action of ascorbic acid in altering the blood-methæmoglobin level seems to be due to a direct reaction between methæmoglobin and ascorbic acid (Gibson 1943). The reaction is comparatively slow. Even with the greatest concentration of ascorbic acid which it is possible to attain in the blood, the displacement of the equilibrium methæmoglobin ⇄ hæmoglobin in favour of hæmoglobin is not sufficiently great to lead to the complete disappearance of methæmoglobin from the blood. It has been found in practice that these cases of methæmoglobinæmia when treated with ascorbic acid tend to settle down at a level of about 1 g. of methæmoglobin per 100 ml. As indicated by the work of Sievers and Ryon (1945), this equilibrium value of blood methæmoglobin is similarly approached from the other side with ascorbic acid treatment after methylene-blue has been given.

As regards the treatment to be recommended, it has been shown by several workers (see Barcroft et al. 1945, King et al. 1944, Sievers and Ryon 1945) that the blood methæmoglobin of these patients can be kept at this low level with daily doses of ascorbic acid of about 0·3–0·4 g., and that under these conditions hardly any cyanosis can be detected. On the other hand, the action of a single dose of methylene-blue, even when taken by mouth, is much more rapid and complete, as shown in the table, but its action is only transitory. It seems preferable to recommend continuous treatment with ascorbic acid, a natural food constituent, rather than with methylene-blue, which might possibly have an unsuspected toxic action after prolonged dosage. We feel, however, that it may be desirable to supplement the action of ascorbic acid with an occasional dose of 0·3 g. of methylene-blue by mouth, particularly if, as the result of temporary failure to keep up the intake of ascorbic acid, the cyanosis shows signs of returning.

SUMMARY

Five cases of familial idiopathic methæmoglobinæmia in one family of nine brothers and sisters are described.

Treatment with methylene-blue and ascorbic acid by mouth was successful.

The oxygen-dissociation curve of blood from one of these patients showed a shift to the left.

The ætiology of the disease and the significance of the findings are discussed.

We wish to thank Dr. P. J. Courtney, whose coöperation did much to make the investigation possible, and Dr. S. I. Turkington, who generously placed the facilities of his ward at our disposal.

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RH FACTOR AND HÆMOLYTIC DISEASE OF THE NEWBORN IN JERUSALEM JEWS

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EVER since the discovery of the rôle played by the Rh factor in the pathogenesis of erythroblastosis fœtalis (Levine and Katzin 1940) it has been apparent that a correlation exists between the frequency of hæmolytic disease of the newborn and the distribution of the Rh antigen in the population. The incidence of Rh-negative persons is about 15% in the white races as compared with 0·6–4·5% in the coloured races (table I). There seems to be little doubt that in races with a small ratio of Rh-negative persons, such as Indians (Ranganathan et al. 1946) and Chinese (Levine and Wong 1943), erythroblastosis fœtalis is rare or altogether absent.

Little has been published on the incidence of the Rh factor in Jews, though Lubinski et al. (1945) found 8·57% of Rh-negative persons in Jewish women in Canada. In a previous study Gurevitch (1945) reported an incidence of 15% Rh-negative in a group of 400 blood examinations in Jewish persons in Palestine. It must be emphasised that his material was carefully selected, comprising cases of hæmolytic disease of the newborn and related conditions from the whole of Palestine. In fact, out of this limited material, 15 cases of Rh incompatibility, with anti-Rh antibodies in 8 of them, were found.

The fact that erythroblastosis fœtalis is rare among Palestinian Jews led us to expect a low incidence of Rh-negative persons among them. The fact that the to have been blue. His present employer confirmed that he is free from any signs of cyanosis.

The mother had died some years previously, aged 48, but was stated never to have been cyanosed. We also visited her brother, who showed no cyanosis. One of her daughters stated that her mother had been very fat and had died of a "liver complaint," having been jaundiced for seven months before her death; there was no evidence to suggest that her blood had ever contained any abnormal amount of methæmoglobin.

The father's blood was also perfectly normal, as was that of three of his children, the finding of 0·1 g. of methæmoglobin per 100 ml. in the blood of no. 9 being within normal limits (Gibson and Harrison 1945).

The remaining five brothers and sisters all showed methæmoglobin in their blood in abnormal amounts in accord with their abnormal appearance. None of them seemed to suffer any appreciable physical disability from the presence of the abnormal pigment, but they all said they "felt better" as a result of treatment.

As regards age of onset of the cyanosis, no satisfactory history was obtained from any of the people affected, who seemed very uncertain about how long they had been blue. The general consensus of opinion suggested that the cyanosis had first appeared in adolescence. None of them is married. It was stated that no other relations of the family had ever shown any cyanosis.

The father said that both his own and his wife's family had lived in the village for generations, and that he was related to his wife—"fourth cousins or something of the sort."

FINDINGS IN FAMILY AFFECTED BY IDIOPATHIC METHÆMOGLOBINÆMIA

No.	Age (years)	Colour of skin	Initial met-Hb (g./100 ml.)	Total pigments (g./100 ml.)	Met-Hb as % of total pigments	Met-Hb after treatment (g./100 ml.)
Father	67	Normal	0·0	14·6	0	..
1	32	"	..	..	..	..
2	31	"	0·0	15·6	0	..
3	28	Lavender	3·1	15·3	20	0·1
4	27	Grey-blue	1·9	15·9	12	0·3
5*	..	..	..	..	..	..
6	22	Slaty-blue	4·8	18·7	26	1·3
7	22	"	5·1	18·8	27	0·5
8	21	Grey-blue	1·9	17·4	11	0·1
9	18	Normal	0·1	12·7	1	..

* Died of pertussis at 7 months.

This evidence, together with such other information as is available in the literature (see Barcroft et al. 1945), makes it very probable that this form of methæmoglobinæmia is inherited as a recessive character. The proportion of sibs affected in the present family is much higher than would be predicted on average for a recessive factor, but wide departures from the theoretical proportion would be expected in individual families.

TREATMENT

No. 6 received ascorbic acid only, 300 mg. a day by mouth, with the result shown in fig. 2. No. 7 received ascorbic acid 1 g. daily for two days followed by intravenous methylene-blue 75 mg. This was followed by rapid improvement, a blood sample taken 1½ hours later showing only 0·5 g. of methæmoglobin per 100 ml. Nos. 3, 4, and 8 received ascorbic acid 1 g. and methylene-blue 300 mg. by mouth in capsules. (The samples for the final blood analysis of nos. 3, 4, and 8 given in the table were taken 24 hours after the administration of the methylene-blue.) The ascorbic-acid intake was maintained at 1 g. a day for four days, and then reduced to 300 mg. a day. Methylene-blue by mouth appeared to be as effective as giving the dye by injection, and cleared the blood of methæmoglobin within a few hours. The rapid change to normal of the skin colour was very striking.

SHIFT IN OXYGEN-DISSOCIATION CURVE

Hitzenberger (1932) found that in familial idiopathic methæmoglobinæmia the oxygen-dissociation curve of the blood was shifted to the left—i.e., the blood gave up oxygen less readily than is normal at a given oxygen pressure. Darling and Roughton (1942) have shown that this shift occurs in hæmoglobin solutions containing methæmoglobin produced artificially both in vivo and in vitro. (We are grateful to Prof. H. Barcroft for calling our attention to these papers.) Darling and Roughton interpret the shift as being due to the presence, in a hæmoglobin-methæmoglobin mixture, of molecules containing both ferrous and ferric atoms in various atomic proportions.

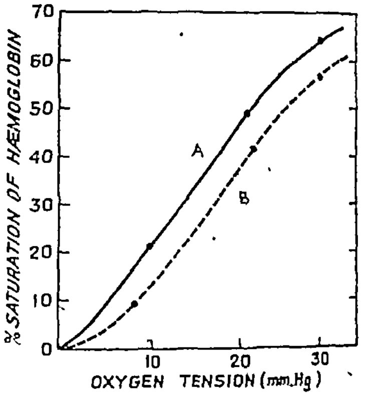

Fig. 3—Oxygen-dissociation curve of blood of no 7: A, with blood containing 4·2 g. of methæmoglobin per 100 ml.; B, with blood after removal of methæmoglobin by methylene-blue.

We determined the oxygen-dissociation curve in the blood of no. 7 by equilibrating the blood at 37°C with suitable mixtures of oxygen and nitrogen containing carbon dioxide at a pressure of 40 mm. Hg. Samples of the blood and of the gas mixtures were then withdrawn and analysed respectively in the Van Slyke-Neill apparatus and Haldane apparatus.

The shift in the dissociation curve was demonstrated in two ways:

(1) The dissociation curve of no. 7 was determined on the blood in the presence and absence of methæmoglobin. For this purpose a large sample of his blood was defibrinated by stirring with glass-wool and divided into two portions.

The methæmoglobin was removed from one portion by incubating at 37°C for an hour in the presence of 0·01 *M* glucose and 0·00005 *M* methylene-blue. (Control experiments showed that methylene-blue does not influence the dissociation curve of normal blood.) The same volume of glucose was added to the other portion but no methylene-blue.

The dissociation curves of both portions were then determined, with the results shown in fig. 3: the removal of the methæmoglobin produced a shift to the right in the position of the curve.

(2) The dissociation curve of the blood from no. 7 was compared directly with the oxygen-dissociation curve of a sample of normal blood. The results confirmed those obtained by removing methæmoglobin with methylene-blue, the curve for blood containing methæmoglobin being shifted to the left as compared with that of normal blood.

The shift in the dissociation curve and its change in shape from the S-shape characteristic of normal blood towards a hyperbolic form is of importance, since it would tend to make oxygen less readily available to the tissues. Thus, as Darling and Roughton (1942) point out, the substitution of the normal pigment by methæmoglobin would be expected to produce more severe effects than would a simple loss of the same amount of hæmoglobin.

DISCUSSION

The shift in the dissociation curve has a possible bearing on the interpretation of the mode of production of the abnormal pigments. One mechanism which might be postulated is that there is a defect in the bone-marrow leading to a production, by a part of it, of corpuscles containing only methæmoglobin, and that the proportion of abnormal bone-marrow determines the amount

MEMBRANOUS NATURE OF INTERSTITIAL CONNECTIVE TISSUE

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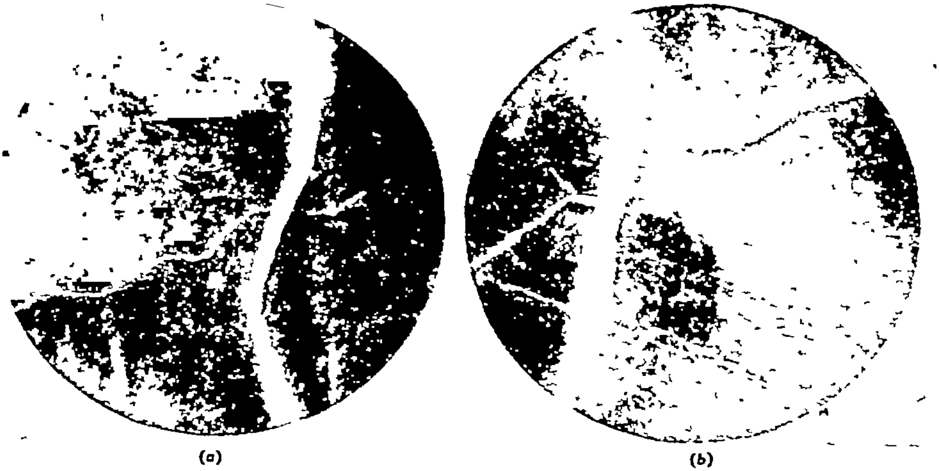
A PECULIARITY of interstitial connective tissue which has puzzled histologists for many years is the lack of correlation between its naked-eye and microscopical appearances.

To the naked eye this tissue appears in the form of membranes of various thicknesses. These membranes present considerable obstruction to the spread in the tissues of effusions of blood, inflammatory exudates, and malignant tumours and may therefore be considered to be relatively impermeable to particles of the size of red blood corpuscles. In contrast the microscopical picture of connective tissue, whether derived from stained sections or from the examination of fresh tissue, in no way suggests a membranous structure; connective tissue appears to be composed of a network of fibres with occasional spindle-shaped or stellate cells, the meshes of the net being considerably larger than the particles to which connective tissue is so obviously impermeable.

It was suggested by Flemming [1] that connective tissue is not composed merely of cells and fibres but that these structures are combined into membranes by some sort of cementing substance. More recently Laguesse [2] claimed that he had demonstrated an essentially lamellar arrangement in connective tissue. The observations described here tend to confirm this conception of the structure of connective tissue and thus to bring its microscopical into conformity with its naked-eye appearance.

From a recently killed rat, a thin lamella of connective tissue was excised, moistened with neutral distilled water, and spread out on a glass slide. The corners were drawn out with filter paper until they became dry and adherent, whereupon they were firmly fixed with a drop of melted paraffin wax; meanwhile the main part of the preparation was kept moist. When the corners had become firmly anchored, the preparation was treated with dilute acid at a pH of 3·6, after which a coverslip was applied, and the edges of it were sealed to the slide with paraffin wax.


(a)   (b)

Dark-ground picture of a piece of rat fascia mounted in distilled water: (a) at pH 7·0, showing two collagen bundles; (b) same field after treatment for several minutes at a pH of 3·7. Cobweb-like fibrils have appeared. They have been formed in a tautly stretched membrane of extreme thinness and therefore lie in the same optical plane. (× 600.)

When the thinnest parts of such a preparation were examined microscopically with dark-ground illumination, the spaces between the brilliantly refractile collagen bundles were filled by a moderately dense opacity. Careful examination of this opacity with the highest magnification revealed that it was composed partly of a faint amorphous haze, partly of refractile granules, and partly of exceedingly fine angularly branching fibrils. The smallest collagen and elastic fibrils were embedded in the general opacity like twigs on the surface of a frozen pond. It must be emphasised that even when these structures were freely suspended in the mounting fluid, and not attached to either the slide or the coverslip, they lay in the same optical plane. With the slightest alteration in focus they all disappeared together. A similar effect was produced when the coverslip was gently pressed. The impression given was that of an extremely thin and tautly stretched membrane. In places the tension of the membrane had altered the alignment of the collagen bundles to which it was attached. Elsewhere, where the membrane had become unduly stretched, it had broken up into a system of branching fibrils with attached granules (see figure), the intervening opaque haze having disappeared. Networks formed in this way still tended to lie in one plane and looked like a cobweb. In places where the tension had been even greater the networks broke down into separate fibrils which no longer lay in the optical plane of the remainder and, when the coverslip was pressed, could be made to move independently.

Similar delicate membranes and cobweb-like networks were also observed in preparations treated for several hours in 50–60% ethyl alcohol at neutrality. However produced they seemed to be permanent structures. They did not disappear when the tissue was again mounted in neutral distilled water, nor even after prolonged treatment with 0·001N NaOH; but they disintegrated rapidly in the presence of trypsin.

The range of pH in which the membranes and cobweb-like fibrils were formed was precise. Between pH 3·6 and 3·9 they formed within a few minutes; at pH 4·2 their formation was much slower and incomplete; and at pH 4·6 they did not appear at all.

After fixation these preparations gave negative reactions for fibrin both when stained by phosphotungstic acid hæmatoxylin and by Weigert's method. The appearance of the cobweb fibrils on dark-ground illumination also differed entirely, both in delicacy and mode of arrangement, from that of fibrin.

The irreversible formation of these membrane-like structures within a narrow range of pH strongly suggests that the phenomenon is due to the precipitation of a protein at its iso-electric point; moreover the facility with which the membranes were disintegrated by trypsin seems to indicate that protein plays an essential part in their composition.

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TABLE I—RH FINDINGS IN DIFFERENT RACES

Author	Race	No. of cases	Rh-positive	Rh-negative
Traut et al. (1945)	White	7620	6485 (*85·1*%)	1135 (*14·9*%)
Levine (1942) ..	Negro	264	252 (*95·5*%)	12 (*4·5*%)
Ranganathan et al. (1946)	Hindus	145	139 (*95·9*%)	6 (*4·1*%)
Landsteiner and Wiener (1941)	American Indians	120	119 (*99·2*%)	1 (*0·8*%)
Levine and Wong (1943)	Chinese	150	149 (*99·3*%)	1 (*0·7*%)
Miller and Taguchi (1945)	Japanese	180	.. *99·4*%	.. *0·6*%
Lubinski et al. (1945)	Jews	967	886 (*91·6*%)	81 (*8·4*%)
Gurevitch et al. (present series)	Jews (Jerusalem)	1913	1730 (*90·4*%)	183 (*9·6*%)

Jewish community in Jerusalem is composed of groups of different origin adds to the interest of this study.

INVESTIGATION AND RESULTS

The material included in the present investigation consists of 940 women attending the prenatal clinics of the Hadassah Medical Organisation, 372 women delivered in the obstetrical department of the Hadassah University Hospital, 214 cases taken at random from among hospital patients and personnel, and 387 women whose obstetric history suggested Rh incompatibility. The results of the investigation showed that 9·6% were Rh-negative. These figures are compared in table I with those found in other racial groups.

To determine the distribution of the Rh antigen among the various Jewish communal groups studied, we have divided our material according to the origin of the patients: (1) Ashkenazim, of European origin; (2) Sephardim, from Mediterranean countries (Egypt, Tunis, Morocco, Greece, Bulgaria, &c.); (3) Yemenites, originating from the Yemen; (4) Kurds and Persians, originating from Northern Iraq and Persia; and (5) combined minor groups of oriental origin (Georgians, Babylonians, Assyrians, and others). The results of these studies are summarised in table II.

From table II it is evident that two groups stand out as having a very small proportion of Rh-negative persons among them—the Yemenite and the Kurdistani-Persian Jews. These groups contrast with the other communal groups, which have a ratio of Rh-negative persons nearer to that found in the white continental races, and it is perhaps significant that these two groups are noted for their segregated way of life, and intermarriage is very rare among them. Their very low proportion of Rh-negative persons is associated with an apparent absence of erythroblastosis fœtalis—out of 310 deliveries of Yemenite Jewesses and 1739 deliveries of Kurdistani-Persian Jewesses in the obstetrical department of this hospital during the last six years there has not been one case of erythroblastosis fœtalis.

TABLE II—RH FINDINGS IN DIFFERENT GROUPS OF JEWS

Group	No. of cases	Rh-positive	Rh-negative
Ashkenazim	1035	921 (*89·0*%)	114 (*11·0*%)
Sephardim	262	231 (*88·2*%)	31 (*11·8*%)
Yemenites..	44	43 (*97·7*%)	1 (*2·3*%)
Kurds and Persians ..	203	200 (*98·5*%)	3 (*1·5*%)
Combined minor groups..	369	335 (*90·8*%)	34 (*9·2*%)

It should be pointed out that our material comprises two clinically distinct groups: the one taken at random—i.e., not selected—and the other selected because the obstetric history suggested Rh incompatibility. The suggestive obstetric history was one in which, after one or more normal deliveries, there were stillbirths, premature deliveries, abortions, &c. Table III shows that the incidence of Rh-negative persons in these two clinically distinct groups among the Ashkenazi Jews was practically the same. This seems to indicate that the incidence of Rh-negative persons plays no important rôle in the general obstetric pathology (stillbirth, abortion, antenatal death, &c.), but it does not lessen the importance of Rh antigen as a decisive factor in hæmolytic disease of the newborn.

DISCUSSION

As pointed out above, hæmolytic disease of the newborn is relatively rare in Palestine. Out of 12,645 deliveries in the obstetrical department of the Rothschild Hadassah University Hospital, there have been 5 cases of erythroblastosis fœtalis and 1 case of congenital anæmia during the past eight years. If we are to assume, on the basis of our findings in 2000 cases, that the ratio of Rh-negative persons in our obstetrical material is about 10%, it means that the total number of Rh-negative women delivered in our department was about 1264. It follows that only 1 of every 210 Rh-negative women has given birth to a child with hæmolytic disease of the newborn.

TABLE III—RH FINDINGS IN ASHKENAZI JEWS

Group	No. of cases	Rh-positive	Rh-negative
Selected ..	483	429 (*88·8*%)	54 (*11·2*%)
Not selected ..	552	492 (*89·1*%)	60 (*10·9*%)

It has already been observed that the ratio of hæmolytic disease of the newborn to Rh-negative mothers is about 1 : 50 (Wiener 1945). Wiener (1946) has suggested that this is due to a constitutional factor, which he has designated "K" and which confers the ability to produce antibodies in response to an incompatible antigen. If Wiener's view is correct, it seems that, besides a relatively low incidence of Rh-negative persons among our material, there is also a reduced incidence of the constitutional factor K.

SUMMARY

Among 1913 Jews of different origin the incidence of Rh-negative persons was found to be 9·6%.

These included 203 Kurdistani-Persian Jews and 44 Yemenite Jews, in whom the incidence of Rh-negative persons was 1·5% and 2·3%.

Among 12,645 deliveries in eight years there were only 6 cases of hæmolytic disease of the newborn, an incidence of 1 in 210 deliveries. Among 2049 deliveries in Kurdistani-Persian and Yemenite Jewesses in six years there was not a single example of hæmolytic disease of the newborn.

The relation between the low incidence of Rh-negative persons and the rarity of hæmolytic disease of the newborn among them is discussed.

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except that three months later he still experiences some discomfort in the right side of the pharynx.

Varicella in Contacts.—On Jan. 2, 1946, patient's daughter, aged 13 years, and two days later her brother, aged 4 years, exhibited typical varicella rashes.

The development of varicella by the patient's two children living at home, 14 and 16 days after the father's eruption, strongly supports the diagnosis of zoster. The case is therefore presented as one of zoster of the right glossopharyngeal nerve with probable involvement of the right vagus nerve.

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Preliminary Communication

DETECTION OF LATENT GENITAL TUBERCULOSIS BY CULTURE OF MENSTRUAL DISCHARGE

LATENT female genital tuberculosis is commoner than has been hitherto suspected, as shown by endometrial biopsies in cases of primary sterility in women without any clinical symptoms pointing to either general or genital tuberculosis.

Berblinger[1] found only 7·8% of genital tuberculosis in 320 necropsies on women who died of pulmonary tuberculosis. Lackner et al.[2] found the same percentage in necropsies on tuberculous women. The fact, however, that they found tuberculous endometritis in only 1·6% of 125 women with active pulmonary tuberculosis who were submitted to endometrial biopsy is very significant.

This is in contrast with the results obtained by Schockaert and Ferin[3] in Belgium, Sutherland[4] in England, and Rabau et al.[5] in Palestine, who found tuberculous endometritis in an average of 5% of women with primary sterility.

A still higher incidence of tuberculous endometritis was found by me[6] in sterile women in whom salpingography showed a tubal occlusion.

Hitherto endometrial biopsy has been considered the most reliable criterion of genital tuberculosis in a woman; but it can give a positive result only when tuberculosis has already reached not merely the endometrium but also the particular portion of it removed for scrutiny. Further, the manipulation with instruments of women suspected of genital tuberculosis is not devoid of danger. In 5 of our patients with tuberculous endometritis curetting was followed by severe pelvic peritonitis.

Nor have the various specific and aspecific tests contributed much to the diagnosis of latent genital tuberculosis. The erythrocyte-sedimentation rate was normal in all cases of tuberculous endometritis. The intradermal tuberculin reaction (Mantoux) was in most cases positive; but this does not prove much in adults and certainly does not indicate the structures involved. For the same reason we have abstained from using the complement-fixation test.

Theoretical and practical considerations led us to try to isolate the *Mycobacterium tuberculosis* in the menstrual discharge by means of specific culture media.

TECHNIQUE

The menstrual discharge is a mixture of blood, mucus, and parts of the endometrium. The blood is found in the vagina partly in a non-coagulated condition. We removed as much material as possible from the fornix and the os with a vaginal speculum and transferred it to a sterile test-tube containing 1 ml. of our anticoagulant solution, using Petragnani's specific culture medium. The women were told to report the first or second day of the menses. We consider it imperative to repeat the test at least thrice in the same patient, because often we obtained positive results only after one or two negative tests. Only positive tests are to be considered; negative results do not exclude genital tuberculosis.

MATERIAL AND RESULTS

The menstrual discharges of 80 women with primary sterility were examined. Among them were 10 women in whom endometrial tuberculosis had been found before this test, and in 2 others genital tuberculosis was clinically suspected. Of 140 tests made in these 80 women, in 9 cultures colonies of *M. tuberculosis* were found, whereas 19 others showed non-pathogenic acid-fast bacilli.* In 3 cases of cultures containing *M. tuberculosis* the results were confirmed by animal tests. By the same methods the menstrual blood of 30 healthy women who previously had given birth to at least one child was examined as a control, and in only 1 case did non-pathogenic acid-fast bacilli grow. The 9 positive cultures came from 6 women whose histories follow:

Case 1.—A woman of 34 with eight years' primary sterility. Five years ago we had found that she had tuberculous endometritis. Manual examination of genitalia negative. Mantoux positive. Radiography of lungs normal. For the last three years she had had tuberculosis of the kidneys.

Menstrual blood on culture gave *M. tuberculosis* in 4 tests made in 4 consecutive menses, whereas cultures from peripheral blood were negative. Animal tests were positive.

Case 2.—A woman of 28 with five years' sterile marriage. Result of endometrial biopsy suggested tuberculous endometritis. Bimanual examination of genitalia negative. Erythrocyte-sedimentation rate normal. Lungs normal.

Cultures of menstrual discharge gave negative results twice, but the third time gave *M. tuberculosis.* Animal tests positive.

Case 3.—A woman of 32. Bimanual examination revealed a tumour the size of an average apple in the region of the right adnexa, probably inflammatory in origin. Cultures gave at first a negative result; the second test, however, was positive.

Case 4.—A woman with three years' primary sterility. Endometrial biopsy showed no sign of tuberculosis. Cultures of menstrual discharge were positive for tubercle bacilli. Culture of peripheral blood negative.

Cases 5 *and* 6.—Two women with primary sterility of one or two years' duration. No genital or other tuberculosis suspected. Cultures of their menstrual discharges grew *M. tuberculosis.*

All the bacteriological tests were made in the central laboratories of the Kupath Cholim, Tel Aviv.

DISCUSSION

The possibility of cultivating *M. tuberculosis* from menstrual discharge on specific culture media is of great practical importance. It is not difficult to distinguish morphologically *M. tuberculosis* from non-pathogenic acid-fast bacilli. Even the macroscopical appearances

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* Non-pathogenicity was determined by the cultural characteristics, and in 6 cases by guineapig inoculation.

GLOSSOPHARYNGEAL ZOSTER

FOLLOWED BY VARICELLA IN TWO CONTACTS

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A CASE of zoster in the distribution of the glossopharyngeal nerve is reported here. Wilson (1940) reports a similar case and states that very little seems to be known of zoster in this distribution. Hunt (1910), however, cites a case reported by Chauveau in 1901 in which the vesicles were limited to the zone supplied by this nerve, and he lists, under the heading "herpes pharyngis," eighteen published cases of which at least five appear to refer to zoster, one (Lermoyez and Barozzi 1897) being bilateral. All of these cases may not have been glossopharyngeal in origin, for ipsilateral vesicles on the hard and soft palates may appear in geniculate zoster, owing, it is thought, to involvement of the greater superficial petrosal nerve (Wakeley and Mulvany 1939). The only reference I can find in the *Quarterly Cumulative Index Medicus* since 1920 to glossopharyngeal zoster, unassociated with facial paralysis, is a case reported by Gounelle and Warter (1934). Glossopharyngeal zoster in combination with geniculate zoster, characterised by facial paralysis besides the vesicular eruption, is described by Hunt (1910), McKenzie (1915, quoted by O'Neill 1945), Neve (1919), Dennis (1925, quoted by Watson 1941), Jacques (1931), Nattkemper (1932), Rabbiner (1938), Baldenweck and Degorce (1939), Watson (1941), and Negus and Crabtree (1943).

When the vagus nerve is involved, besides laryngeal vesicles, persistent nausea and vomiting are conspicuous features; in Watson's (1941) case they persisted five weeks. These symptoms were also prominent and persistent in the present case, but there were no laryngeal symptoms.

The ganglia connected with the following cranial nerves —viz., the 5th (semilunar ganglion), 7th and 8th (genicular ganglion), 9th (superior and petrous ganglia), and 10th (jugular ganglion and ganglion nodosum)— are developed from the neural crest and are thus homologous with the spinal posterior root ganglia. It therefore seems probable that the superior and petrous ganglia are primarily involved in glossopharyngeal zoster, and in the present case the jugular ganglion and the ganglion nodosum may also have been involved.

Doubt has been cast on the rôle of the genicular ganglion in the Ramsay Hunt syndrome of geniculate zoster. Denny-Brown et al. (1944) have reviewed the scanty histological reports and contend that characteristic lesions have not been demonstrated in the genicular ganglion. Though it must be admitted that lesions round the ear in conjunction with facial paralysis may result from various combinations of zoster of cranial nerves and from involvement of the second and third cervical ganglia (zoster occipitocollaris), the histological evidence is so scanty that it seems to me that O'Neill (1945) tends unnecessarily to belittle the probable rôle of the genicular ganglion. Nevertheless, since zoster may spread beyond the confines of the ganglia and sensory neurones and involve spinal motor tracts (Taterka and O'Sullivan 1943) and may even cause encephalitis (Schiff and Brain 1930), and since aberrant vesicles and generalised vesicular rashes may develop, it is impossible to demarcate with certainty the sensory zone or motor connexions of a single ganglion from a solitary attack of zoster.

The eruption in glossopharyngeal zoster is seen as an ipsilateral involvement of the pharynx, tonsillar fossa, faucial pillars, and soft palate. Hunt (1910) considered that the posterior portion of the tympanum might also be involved, and this was described by Chauveau in 1901. I did not investigate this point carefully, but the lack of pain in the ear, after the eruption developed, suggests that the tympanum was not affected, and Wilson (1940) and Neve (1919) state that the tympanum was unaffected in their cases.

CASE-RECORD

A British male post-office official in Kenya, aged 47, had had varicella, with his sisters, at the age of 10 years.

The only other features of note in his previous history were recurrent troubles with the left parotid gland from 1933, culminating, in November, 1944, in the drainage, through the parotid duct, of a cystocele of the left parotid gland.

On Dec. 14, 1945, he began to have pain in the throat and, to a less extent, in the right ear for five days. During the first four days he continued at work.

On the sixth day I was called to visit him and found the temperature 100°F. There was a little cerumen in the right external auditory meatus and, so far as could be seen, only slight congestion of the tympanum.

In the pharynx there were several ovoid ulcers, about 0·8 cm. × 0·2 cm., on the posterior pharyngeal wall to the right of the midline.

A direct smear from a throat swab did not reveal any pathogens, and on culture only *Neisseria catarrhalis* and pneumococci were grown. Patient was given benzylsulphanilamide ('Proseptasine') 1 g. four-hourly. Next day the condition was unchanged, and another throat swab gave identical results.

Next day (Dec. 21), the throat being still more painful and the patient vomiting, he was admitted to the European Hospital, Nairobi, under my care. Temperature 100°F, pulse-rate 88. Besides the ulcers on the posterior pharyngeal wall, there was now a cluster of superficial ulcers of various shapes on the right half of the soft palate, each ulcer being surrounded by a linear erythematous zone.

These ulcers were arranged in groups, the most anterior reaching nearly to the junction between the soft and hard palates. Except one rather large oval ulcer, whose long axis was exactly in the midline of the posterior pharyngeal wall, all the ulcers were situated to the right of the midline and were scattered on the posterior pharyngeal wall, right tonsillar fossa, faucial pillars, and soft palate.

Next day other spots were noted: one on the nose in the midline, most of them on the right side of the chest and right arm, but a few to the left of the midline. One of these I saw in the vesicular stage; the others had already formed superficial raw areas.

The ulcers in the throat were extremely painful, and nausea persisted. Taste was not tested. The right ear had ceased to be painful, and the tympanum was not re-examined.

No lesions were seen on the protruded tongue, but patient said the back of the tongue felt sore but that the remainder of the tongue felt normal and appreciated taste normally. There were no lesions on the hard palate, buccal mucosa, or right pinna.

The preceding pain, the pyrexia, and the character and distribution of the lesions led me to diagnose glossopharyngeal zoster with some scattered aberrant lesions on the trunk, nose, and limbs. The remaining cranial nerves (with the probable exception of the vagus) were unaffected; no motor changes or other physical abnormalities were detected. The larynx was not examined.

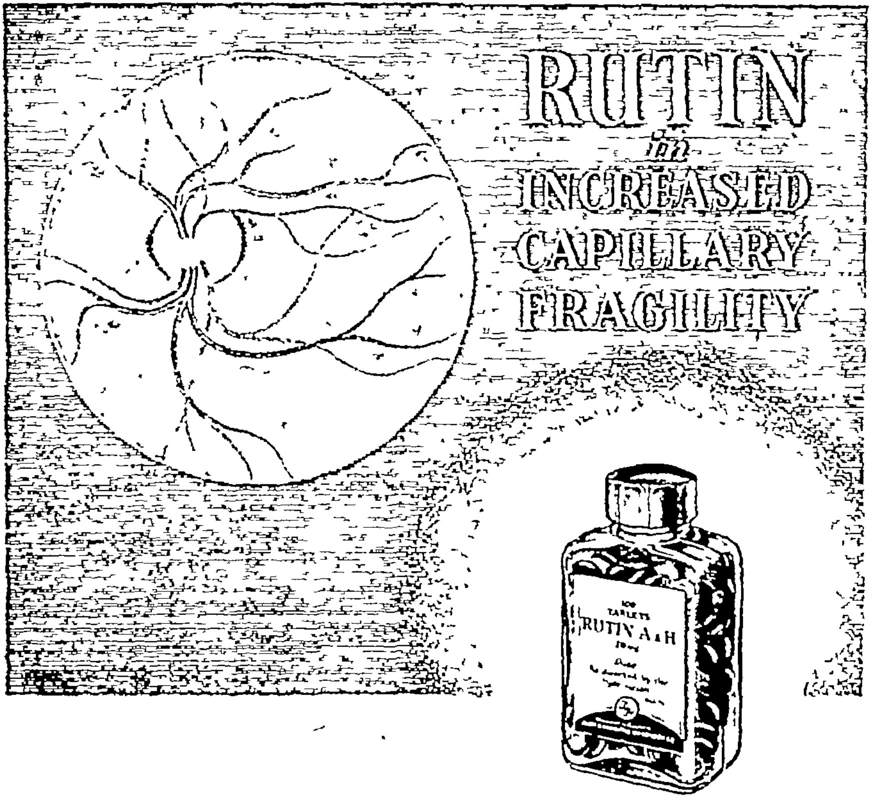
Temperature was 100°F at night on the 21st and 22nd, 99·2°F on the 23rd, and normal on the mornings of the 23rd and 24th. On the 21st there were 9100 leucocytes per c.mm. (neutrophils 77%, lymphocytes 20%, mononuclears 3%).

After patient's admission to hospital no more sulphonamides were administered, but he was given aspirin gargles, nicotinic acid, and phenobarbitone, and the ulcers were swabbed with 1% cocaine, without much relief being obtained. I regret that I did not administer pituitrin.

On the 24th patient felt somewhat improved and went home for Christmas. Nausea and frequent vomiting persisted.

I re-examined him on the 29th and found the pharynx practically normal, only a few injected spots being discernible. The bowels were open normally, but nausea and vomiting continued. These symptoms suggested involvement of the right vagus nerve. Radiography after a barium meal on Jan. 7, 1946, gave no evidence of an organic lesion in the stomach or duodenum.

Nausea, with occasional vomiting, persisted a further ten days, since when patient has been in normal health.



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of the colonies are completely different. In doubtful cases, however, it is advisable to inoculate the material from the cultures into animals to test their pathogenicity.

In cases where genital tuberculosis is clinically suspected the culture of menstrual discharge is the only safe method of establishing the diagnosis. Further, it is advisable to examine menstrual discharge at least thrice in cases of primary sterility before engaging in intra-uterine intervention (insufflation, salpingography, endometrial biopsy).

The presence of *M. tuberculosis* in the menstrual blood is, in all probability, not due to a bacteræmia. In all those cases in which the peripheral blood was examined no *M. tuberculosis* were found, though the menstrual blood was positive.

It is not yet known how far these women are dangerous to their environment owing to the discharge of *M. tuberculosis* in the menstrual blood. Though the husbands of these women do not show any inoculation of tuberculosis on their genitalia, such women are advised to take precautions against the possibility of disseminating *M. tuberculosis* in their menstrual blood.

SUMMARY

The menstrual discharges of 80 women with primary sterility were examined by means of specific culture media for the presence of *M. tuberculosis*.

Out of 140 tests there were 9 positive findings in 6 patients.

In 19 cultures only non-pathogenic acid-fast bacilli grew.

I wish to thank Dr. E. L. Bregman, director of the laboratories, and his collaborators, Miss Miriam Porechodnik and Mr. N. Vigodsky, for their inestimable help; and Professor Klopstock for valuable suggestions, and providing facilities for the animal tests.

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Reviews of Books

Obstetrics and Gynæcology

A Revision Course for Practitioners. C. SCOTT RUSSELL, M.A., M.B., F.R.C.S.E., M.R.C.O.G., assistant director, department of obstetrics and gynæcology, University of Manchester. London: Oxford University Press. 1947. Pp. 211. 13*s.* 6*d.*

THIS is a book of truly remarkable brevity, which within its small compass manages to say a great deal, all of it orthodox and sound. It cannot, however, be regarded as more than a refresher. The subject of gynæcology is literally written off in under 50 pages, whereas X-ray pelvimetry in disproportion is given disproportionate prominence, considering that this is a luxury which the average practitioner must usually do without. It is hinted, however, that this book is for the doctor whose life in the Armed Forces has sheltered him, for a while, from the wrath of the P.P.H. to come; and its avowed purpose is to stimulate him to renew his acquaintance with the subject. Within these limitations it is admirable.

The Doctor and the Difficult Adult

WILLIAM MOODIE, M.D., F.R.C.P., D.P.M., physician, department of psychiatry, University College Hospital. London: Cassell. 1947. Pp. 296. 15*s.*

Dr. Moodie has exceptional knowledge of the "difficult" of all ages. Here he deals with those who have the years but not the discretion of the fully grown. As might be expected, his book is simply written, wise, and full of common sense.

The writer of a non-technical book dealing largely with the neuroses is, however, beset by a special difficulty: any simplified account of psychotherapy is apt to leave the reader asking "Is that all there is to it?" Even Dr. Moodie, with all his skill, tends to leave the impression that good will and common sense are not only necessary but also sufficient.

He may be said to belong to the English eclectic school. Eclectic, because he acknowledges no allegiance to any one predecessor; English, because of his empiricism, his freedom from general principles or a-priori concepts. English, too, in the convention that normality implies understatement—indeed, denial—of emotion, feeling, æsthetic sensibility, or intellectual probing. His philistine values sometimes shock in several ways at once:

> "The law in English-speaking countries still looks upon homosexual acts as illegal and punishable. . . . There can be no doubt that the law in England is right."
>
> "The usual religious teaching which means Bible study by children who cannot understand it and learning the Catechism by memory under the supervision of uninterested teachers . . . would usually be better left alone, and the same applies to sex teaching."

It is all the more impressive that he comes out as an uncompromising opponent of corporal punishment. And here he takes the trouble to present us with evidence, not prejudice.

The chapter on the approach to the difficult patient is particularly good, giving some of the details and fine points which are the harvest of psychiatric experience, and which form no part of the equipment of the well-intentioned but untrained.

Cancer: Diagnosis, Treatment and Prognosis

LAUREN V. ACKERMAN, M.D., pathologist to the Ellis Fischel State Cancer Hospital; JUAN A. DEL REGATO, M.D., radiotherapist to the hospital. London: H Kimpton. 1947. Pp. 1115. £5.

THE authors have provided a satisfactory guide, though they have not altogether overcome the difficulty of giving an adequate outline of treatment without entering into detail. Special efforts are being made in the United States to ensure early diagnosis. Michael B. Shimkin summarises cancer research, the histological studies of the early oncologists, animal tumours, carcinogenesis, the rôle of heredity, and the effects of œstrogens and other hormones, rounding off with a section on cancer theories. Biopsy methods are discussed, and there is a short general chapter on surgery. The account of radiotherapy wastes space on elementary radiation physics and technical aspects of X-ray therapy which have had to be so condensed as to have little value. Cancer of the skin is well described and illustrated, and there are useful notes on ætiology and on the lesions which simulate skin cancer. The section on treatment of cancer of the mouth and tongue is poor, the diagram of radium implantation of the tongue showing an old-fashioned type of implant. The discussion of cancer of the larynx shows the influence of the French school, and the descriptions of the various cancers found in the alimentary tract, from œsophagus to rectum, should be very useful to senior students. The authors insist on the curability of cancer of the female generative organs. The book is completed by sections on tumours of bone, sarcoma of the soft tissues, and Hodgkin's disease and the leukæmias.

Well planned and readable, the book will be serviceable to all cancer students, though radium is not given its true place as the most effective weapon we have at present against many of the accessible cancers. The important work of the British school on radium dosage, and the results obtained, are almost ignored, which must inevitably bias the choice of treatment in America.

Manual of Physical Diagnosis (3rd ed. Chicago: Year Book Publishers; London: H. K. Lewis. 1947. Pp. 351. 27*s.* 6*d.*).—It is only meet that a steady stream of books on physical diagnosis should be issuing from the home of laboratory medicine. The special feature of this one is that it is concerned mainly with the respiratory and circulatory systems, although there are also brief sections dealing with the abdomen, the genitalia, and the central nervous system. Dr. Ellis B. Freilich, Dr. George C. Coe, and Dr. Joseph Freilich have made a laudable attempt to correlate physical signs and pathology, and the book can be safely recommended to the student as an introduction to clinical medicine.

THE LANCET

LONDON: SATURDAY, DEC. 27, 1947

Health at the University

A CONFERENCE held last summer[1] at the Institute of Social Medicine in Oxford, and attended by delegates from 15 universities, 11 medical schools, and various other important bodies, gave the academic world a signal for action. It has long been recognised that welfare provisions in British universities are in many ways inadequate, and that the health and sickness of students have had too little attention. Abroad, organised health examinations, including radiography of the chest, were instituted in Munich as early as 1927 and later extended through the German universities; in the United States the leading universities have set an example in the same way; and in 1938 an international university conference devoted five days to a discussion in which 50 representatives from 15 nations advocated compulsory health examination Both the Goodenough Committee and the Royal College of Physicians committee on social and preventive medicine have strongly recommended the universities to establish student health services, and the students themselves—through the National Union of Students, the British Medical Students Association, and other groups—have sent out questionaries and published thoughtful memoranda on their own needs Of recent years a few British universities and several medical schools have started partial services; but a fully operative service, making proper provision for periodic health examination and care in sickness, has yet to be announced. While memoranda have accumulated, and a few pioneer undertakings have been launched, the governing bodies of all but a few universities have remained largely inactive: they have had other pressing responsibilities, accentuated by war and its sequelæ. Now, however, there are signs of awakening interest, and the inauguration of the National Health Service (though in its early phases it will be more concerned with sickness than with health) should provide an occasion for new thought and concerted enterprise.

With the costs of illness covered, those who have to provide for the young will increasingly concentrate on earlier detection of defects and on the prevention of any form of disability; and the success of child-welfare centres and school medical services fully justifies extension of interest to the next age-group. The university student is, after all, still in a stage of growth and development: like the youthful entrant to industry, for whom special welfare measures are now required, he is exposed to new hazards on leaving home and school, and for medical students in particular these include exposure to tuberculosis and other infections Furthermore, the undergraduate is at a stage of his educational career when the contribution of health to the evolution of the "whole man" can be usefully emphasised and related to the general academic culture. Nowadays too many of those admitted to universities on the score of scholarship are found to be of poor physique and liable to break down under the stress of a curriculum ill adjusted in its mental and physical demands. Surely the time has come to recognise that the health of this large body of young and partially selected adults, from whose ranks will be drawn a high proportion of the leaders and teachers of the future, matters at least as much as the health of recruits to the Armed Forces

This week we publish papers by physicians concerned in various ways with student health at universities of widely differing character and tradition. Dr. PARNELL, of Oxford, describes the findings in a group of students presenting themselves voluntarily for a health examination, and refers to the need of many of them for simple psychological help. Dr. MACKLIN, of Aberdeen, presents the case for a comprehensive service and reviews organisation, staffing, and costs. He thinks that the same doctor should be responsible for health and sickness, and that he should have beds for investigation and for the treatment of minor illness. Dr. BOLTON, of Birmingham, develops the interesting theme of compulsory physical education during the first undergraduate year, claiming a place for it in the curriculum and emphasising the social as well as the physiological benefits of a well-organised system allowing the student plenty of choice. No doubt he is right in saying that "the native resentment of compulsion is, after all, something of a bogy." At British universities compulsory medical examination has never been suggested as a means of selection or exclusion; it takes place after entry and is intended to give the student a better prospect of enjoying and profiting by his scholastic course and of avoiding interruptions by sickness Again, in favour of making physical education compulsory Dr. BOLTON can fairly plead that mental education is already based on compulsion; attendance at lectures has long been obligatory, and compulsory attendance on the field or in the gymnasium he regards as a corollary, designed to bring physiological and social balance into a system which has put too much emphasis on midnight oil and competitive examinations. If it is really true, as preliminary surveys suggest, that some 80% of university students take no regular part in games or other health-giving outdoor activity, it is certainly time that the conditions and purposes of a modern university training were reviewed. In the hands of some of its Continental exponents the cult of physical fitness has shown an unattractive side; and most of us like to think of a university as a place where undergraduates enjoy a great deal of freedom—especially perhaps, to make mistakes. There must, however, be many remedies besides compulsion applicable to institutions where a majority of young people do not follow their natural bent towards athletic pursuits, and undoubtedly a great deal more could usefully be done for the average student—even if the aim is simply to make him healthy enough to be unaware of his health. There will be warm support for our colleagues who take up this important new work.

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[1] *Lancet*, 1947, ii, 318.

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and an amount sufficient to cause toxic reactions (particularly those related to thecal or meningeal irritation); and the possible significance of the lymphocyte-count of the cerebrospinal fluid in prognosis Streptomycin is clearly of short-term radical benefit in some cases of tuberculous meningitis, though the various factors involved and the best schedule of administration have yet to be worked out. Much will be expected on these points from the current Medical Research Council trials

The discovery that tuberculosis can after all be affected by systemic drugs may lead enthusiasts to disregard the strict criteria for assessing the efficacy of treatment ably set out by HINSHAW and FELDMAN.[10] There are already signs that the improvement noted in a hotch-potch of cases, without untreated controls, will be ascribed to some new drug, without regard to the possibility of spontaneous remission If this happens the pre-streptomycin story of faded hopes will be repeated It took but a few months of enterprise to introduce tuberculin and 'Sanocrysin' into treatment on a world scale, but more than a decade of scientific slogging to evict them. With streptomycin we have the impressive results in meningitis and miliary tuberculosis to justify the setting up of a limited public service by the Ministry of Health on the advice of the Medical Research Council. But the indiscriminate use of the drug in every type of tuberculosis, which commercial vigour has stimulated in the U.S.A., must be guarded against. Apart from risk to the patient of his tubercle bacilli becoming streptomycin-resistant, there is the wider public-health danger of new cases arising in which the strain is primarily resistant—for example, in infants infected by mothers treated with streptomycin. So the M.R.C. has the unenviable responsibility, not only of assessing the value of the antibiotic and deciding on the best schemes of dosage in various forms of tuberculosis, but also of advising how it should be distributed for public use in appropriate conditions only. While British production is in the pilot stage the council is unlikely to be hustled.

Fibrocystic Disease of the Pancreas

INFANTS who fail to thrive and eventually succumb from a combination of diarrhœa and respiratory infection are sadly familiar in practice. The necropsy usually discloses no convincing cause of death, and doubt remains as to which of the two main symptoms was primary or whether both were secondary to some other fundamental disturbance of nutrition. It now appears that in at least a considerable proportion of these cases there are widespread pathological changes in the pancreas which interfere with the secretion of pancreatic juice and thus impair digestion. Other changes in the body may be secondary to malabsorption of essential foods and vitamins. The principal necropsy finding in the pancreas is dilatation of the acini and ductules from blockage of the lumen with tenacious inspissated material; and the surrounding tissue undergoes pressure atrophy and progressive fibrosis The condition has been named "fibrocystic disease of the pancreas," but there is no true cyst formation, and the fibrous tissue which develops is not prominent in early cases and must be considered secondary. These changes are present at birth and are progressive. There is no evidence of infection and the islet tissue is intact. The main pancreatic duct is normal, and the few cases in which atresia has been reported probably represent a separate condition with somewhat similar clinical effects. According to HOWARD[1] there is a fairly high familial incidence. Chronic suppurative inflammatory changes in the lungs are constantly found in those infants who survive for more than a few weeks; these consist of varying degrees of purulent bronchitis, bronchiectasis, or bronchiolectasis. The respiratory passages are obstructed with tenacious mucoid or mucopurulent material, and the walls are infiltrated with inflammatory cells. Fibrosis follows in those who survive. Keratinising squamous metaplasia is sometimes present in the trachea and bronchi, and occasionally in other organs. Fatty changes in the liver are a common finding.

Isolated instances of this pancreatic disorder, encountered post mortem, have been reported for some years; but its association with symptoms and signs during life was not appreciated and its frequency was quite unsuspected until ANDERSEN[2] drew attention to it in 1938. Her paper was closely followed by three others,[3] each reporting a considerable series of cases, and there have since been numerous reports. There are several reasons for this delay in identifying what now seems to be a definite clinical and pathological entity. In the first place, pathologists did not recognise the condition because, despite the striking microscopical changes, there is usually little to be seen with the naked eye; and they had not been accustomed to making routine sections of the pancreas in infants or young children who had apparently died of respiratory disease. However, with increasing awareness and suspicion, the incidence has been established at about 3% of all infants who come to necropsy[4]; though in one series[5] the incidence was as high as 12%. Clinically, the condition was not recognised because of its similarity to other disorders, particularly respiratory and gastro-intestinal infections in infants and cœliac disease in older children. Symptoms usually appear soon after birth, and infants may die within a few days with intestinal obstruction due to meconium ileus, which is believed to result from the lack of pancreatic enzymes. In other cases symptoms do not develop until later in childhood. Manifestations may be divided into three main groups: gastro-intestinal, respiratory, and nutritional. Digestion is impaired through lack of trypsin, amylase, and lipase; the stools, which are at first loose, become pale and bulky when solid foods are given. Cough develops early and becomes increasingly troublesome; scattered physical signs may be found in the chest, but there is no evidence of frank consolidation. In infancy, X-ray examination is not likely to show more than increased hilar shadows and basal markings; but later on, if the child survives, there will be patchy areas of opacity from consolidation, collapse, and emphysema. The general picture

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[10] Hinshaw, H. C., Feldman, W. H. *Amer. Rev. Tuberc.* 1944, 50, 202.

1. Howard, P. J. *Amer. J. Dis. Child.* 1944, 68, 330.
2. Andersen, D. H. *Ibid*, 1938, 56, 344.
3. Harper, M. *Arch. Dis. Childh.* 1938, 13, 45. Thomas, J., Schultz, F. W. *Amer. J. Dis. Child.* 1938, 56, 336. Blackfan, K. D., May, C. D. *J. Pediat.* 1938, 13, 627.
4. Menten, M. L., Middleton, T. O. *Amer. J. Dis. Child.* 1944, 67, 355.
5. Farber, S *Ibid*, 1942, 64, 953.

Three Drugs against Tuberculosis

AMONG the bacterial infections which have hitherto proved resistant to chemotherapy, pulmonary tuberculosis stands out as the main killing disease affecting the productive groups of the population. Hence the keen public interest taken in any agent found to be active against *Mycobacterium tuberculosis*. In his Mitchell lecture last year, HART [1] divided these agents into purely synthetic substances with no known counterpart in nature; synthetic compounds related to some natural substance which has served as starting-point of the series; and substances of biological origin. Clinical trials of a representative of each of these three categories have been reported within the past few weeks.

'Sulphetrone,' a promin-like substance, was synthetically prepared in 1936, but its antituberculous properties were not recognised until 1941. It is more soluble in water and considerably less toxic than many other sulphones. It exerts a moderately suppressive effect on experimental tuberculosis in guineapigs, and this effect is enhanced by synergistic action when the drug is used in conjunction with streptomycin. Last week MADIGAN and his colleagues [2] reported 6 cases treated with sulphetrone by mouth and streptomycin parenterally, and 11 cases given streptomycin alone. Owing to the small numbers, the variety of clinical types, and the absence of controls, the results are difficult to assess and comparison between the two groups is open to doubt. In both, temporary regression seems to have been produced, particularly in miliary tuberculosis, but relapses have tended to follow later, sometimes associated with the development of streptomycin-resistant strains of the tubercle bacillus. Nevertheless, the experimental evidence of synergism between sulphetrone and streptomycin, coupled with the possibility of maintaining reasonable blood-levels of sulphetrone in man safely for long periods, suggests that this combination should be tried in larger and more homogeneous series of selected types of disease, especially acute miliary and meningeal tuberculosis. This preliminary trial makes it unlikely that the onset of streptomycin-resistance can be retarded or prevented by the coincident use of sulphetrone, for increased resistance was found in strains isolated from patients after three months' treatment with both drugs together.

The introduction of *para*-aminosalicylic acid (P.A.S.) by LEHMANN [3] arose from BERNHEIM's observations that the addition of benzoic and salicylic acids increased the oxygen uptake of washed suspensions of tubercle bacilli; this suggested that substituted similar compounds might interfere with the normal oxidations of the bacilli and so inhibit growth. The Swedish workers found P.A.S. strongly toxic to guineapigs, but FELDMAN and others [4] at the Mayo Clinic demonstrated considerable suppression of experimental tuberculosis in these animals. Owing to the difficulties of manufacture and the large doses required, P.A.S. has been scarce, but about 100 cases of various types of clinical tuberculosis have been treated with it in Sweden.[5] The drug was given mainly by mouth and no serious toxic effects were noted. The reasons for crediting the drug with the improvements noted were not strong, and acute miliary and meningeal tuberculosis were unaffected. The 19 pulmonary cases, 13 of them complicated by other lesions, treated with this drug at Grove Park Hospital and lately reported by DEMPSEY and LOGG,[6] also showed a suggestive though not convincing response.

Recent reports on streptomycin confirm its clinical promise in some tuberculous conditions. The preliminary review [7] of the investigation on which the United States Veterans Administration and Army and Navy have been engaged since June, 1946, covers 543 patients, including 245 pulmonary and 84 miliary and meningeal cases who had finished treatment or died. This account should be taken in conjunction with the recommendations of the American Trudeau Society,[8] published simultaneously. Outstanding findings are the regressive effects of streptomycin in acute miliary tuberculosis and tuberculous meningitis, already demonstrated by the Medical Research Council trial in this country. Striking benefit was also noted in laryngeal and *tracheobronchial ulcerations, and in cutaneous sinuses*, conditions which can be directly observed. Regarding pulmonary tuberculosis the provisional verdict is much more cautious. As would be expected, chronic fibrocaseous disease is little affected and chronic cavities rarely close. The exudative elements of pulmonary tuberculosis, including bronchopneumonia, seemed to run a more favourable course, compared with past clinical experience—not a very reliable guide—but the improvement was most definite during the first three months of therapy; relapses sometimes occurred during the latter part of the course and were noted in a fifth of the cases after the cessation of treatment; seldom, moreover, did all exudative lesions resolve in a given patient. The two bugbears of streptomycin are acquired resistance and chronic toxicity (particularly affecting the labyrinth), and on account of these the American workers advise against its use in minimal or early pulmonary tuberculosis with favourable prognosis, or where conventional therapy seems likely to be effective. Thus in pulmonary tuberculosis streptomycin must be looked on as an adjunct to the well-established methods of treatment. In genito-urinary and bone and joint tuberculosis the limited trials have so far yielded inconclusive results. The broad conclusions of these American reports are reinforced by the preliminary results in tuberculous meningitis treated at the Sick Children's Hospital, Paris.[9] Of the 118 children receiving streptomycin, 46 who have been treated for from two to ten months are "behaving like normal beings," though their ultimate fate is, of course, an open question and the number given in the detailed table (of later date than the text) as "well" or "condition good" is only 25. The experience in Paris emphasises the vital factor of early diagnosis (and the value of retinal examination); the importance of steering between inadequate dosage took the swabs, the conditions were the same. This time, the immunised yielded 2 carriers and the non-immunised none. With the exception of one avirulent mitis strain, all the *C. diphtheriæ* recovered were of the *intermedius* type (the cause of the few cases of clinical diphtheria in the city hospital). Soothill points out that, though still not statistically significant, these figures are comparable with those reported by the L.C.C. Public Health Department.[4] A parallel investigation in June, 1944, among 200 adults, mainly factory workers, drawn from widely separated parts of Norwich produced completely negative results.

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[1] Hart, P. D'Arcy *Brit. med. J.* 1946, ii, 805, 849.

[2] Madigan, D. G., Swift, P. N., Brownlee, G., Payling Wright, G. *Lancet*, Dec. 20, p. 897.

[3] Lehmann, J. *Ibid*, 1946, i, 15.

[4] Feldman, W. H., Karlson, A. G., Hinshaw, H. C. *Proc. Mayo Clin.* 1947, 22, 473.

[5] Vallentin, G. *Svenska Läkartidn.* 1946, 43, 2047. Alin, K., Difs, H. *Nord. Med.* 1947, 33, 151.

[6] Dempsey, T. G., Logg, M. H. *Lancet*, Dec. 13, p 871.

[7] *J. Amer. med. Ass.* 1947, 135, 634.

[8] *Ibid*, p. 641.

[9] Debré, R., St. Thieffry, Brissaud, E., Noufflard, H. *Brit. med. J.* Dec. 6, p. 897.

Though gratified as an epidemiologist, Soothill is still unsatisfied as a statistician, and he asks for more investigations of carrier-rates among immunes and non-immunes, account being taken not only of the state of immunity but also of the degree of exposure. It is useless, as he says, to compare closed with open communities. In the former immunisation may not prevent a temporary rise in the carrier-rate if diphtheria is endemic,[5] but in communities where immunisation is extended to the greater part of the most susceptible population—the pre-school and school children—McKinnon [6] points out that there is a fall in the incidence of clinical cases and carriers and that both classes in the end virtually disappear. Thus in Toronto (population 650,000) in 1926, a pre-immunisation year, there were 1098 cases of diphtheria with 90 deaths, and 13,231 swabs were examined of which 2564 were positive. In 1936, when 104,449 persons were known to have been immunised, there were 48 cases of diphtheria with 2 deaths, and 4307 swabs were examined of which 80 were positive. In 1937, surveys of 1774 school-children in Montreal yielded only 2 carriers. The figures for Canadian cities in 1947, ten years later, when they are published, should be conclusive enough to satisfy the most sceptical.

AMINO-ACIDS TO INCREASE PERIPHERAL BLOOD

PROTEINS by virtue of their specific dynamic action are well known to increase heat-production in the body, but there is some doubt whether this increase is accompanied by a rise in the skin temperature of the extremities.[7] The specific dynamic action of proteins mainly depends on the presence of a few amino-acids, particularly glycine, alanine, phenylalanine, and tyrosine. Gubner and his colleagues [8] have given glycine in doses of 20 g. by mouth, dissolved in 200–300 ml. of milk, to 25 subjects, some of whom had peripheral vascular disease. In 18 of these the average maximal rise in oxygen consumption above the basal level was 18·4%, but there was a considerable variation in the individual figures and in 4 subjects there was no significant rise in consumption. Skin temperatures were measured in 11 normal people and in 4 patients with peripheral vascular disease, and the glycine was found to raise the temperature of toes and fingers in 3 out of the 4 patients. The rise was greatest in the toes, and the normals showed a rise of 4°C, compared with 2·3°C in the patients. In 6 cases a posterior tibial nerve block was found to have much the same effect as glycine on skin temperature. Glycine produced a significantly greater rise of skin temperature than the ingestion of alcohol. Oscillometric pulsation in the calf was increased after the ingestion of glycine in 8 out of the 11 normal subjects, but in none of the patients with peripheral vascular disease, even though 2 of the patients had significant rises in skin temperature. Blood-flow to the extremities, as measured by venous occlusion plethysmography, was increased by glycine, the average rise being 62% in 4 normal subjects, and 30·5% in 4 patients with peripheral vascular disease. This increase is the result of peripheral vasodilatation and increased cardiac output.

Much of the early work on peripheral vascular diseases has had to be discarded because of faulty technique, so there is a natural tendency to be cautious in accepting new observations. This investigation, however, seems to have been well controlled, and if it is confirmed it will undoubtedly stimulate others to explore its practical applications.

RISKS OF LOCAL SULPHONAMIDES

THE Home Office has drawn the attention of trade and other organisations to the Poisons (Amendment) Rules, 1947, which were made by the Secretary of State on Nov. 28. Among other matters these rules allow some relaxation in the restrictions now imposed on the sale of ointments and dressings containing sulphonamides. On and after Jan. 1, 1948, it will be lawful to sell these preparations without a doctor's prescription; but, as the ointments are subject to the provisions of section 18 (2) of the Pharmacy and Poisons Act, 1933, their sale must still be entered in the poisons book and the purchaser's signature obtained.

Most dermatologists will regret this step, for it is they who see the disasters which occur from the injudicious use of sulphonamides when employed for topical therapy. The necessity for obtaining the customer's signature may check sales, but there is a risk that injudicious self-medication will lead to major and minor catastrophes. In his masterly survey of the use of sulphonamides in dermatology Barber [1] expressed doubt whether the use of drugs of this series as local applications in superficial infective dermatoses such as impetigo contagiosa possessed any advantages over rational treatment with older and safer remedies. A similar view was forcibly expressed in the *Army Medical Department Bulletin*[2] in 1943 when sick-wastage from sulphonamide dermatitis was causing much concern. MacKenna [3] has pointed out that local applications of sulphonamides may cause three types of sensitisation—local sensitisation, general sensitisation, and photosensitivity. When local sensitisation occurs, an eczematous reaction with erythema and vesicle formation develops at the site of application; often this is interpreted by the patient as indicating that the original malady is gaining ground, and more vigorous measures may be taken to cure the infection, with disastrous results. General sensitisation is usually accompanied by exacerbation of the local lesions, fever, facial œdema, severe pruritus, and a generalised rash which may be erythematomacular or vesicular or occasionally bullous. Photosensitivity leads to the development of severe sunburn effects on areas of skin exposed to minimal degrees of sunlight, and this photosensitivity may persist for many weeks.

Dermatological literature throughout the world is studded with reports and discussions concerning the hazards of local sulphonamide treatment, but it is agreed that the drugs are used in a large number of cases without ill effect. Hitherto the disasters have been few, though their percentage incidence is not known. Phillips [4] found that among 2430 dermatological patients who passed through the wards of several military hospitals there were 100 cases of sulphonamide dermatitis—an incidence of 4·11%—but we have no knowledge of the size of the population at risk. Manufacturers will no doubt arrange for the preparations sold to the *public to* be clearly labelled so that the user is warned never to resembles that of any chronic wasting illness with secondary bronchopneumonia. In spite of a good appetite, the infant becomes increasingly undernourished. Cœliac disease rarely develops before the age of nine months, and the association of chest symptoms with loose stools should suggest pancreatic disease. The diagnosis can be confirmed by examining the pancreatic juice. All the pancreatic enzymes are deficient, but it is only necessary to estimate the trypsin, which is not difficult. A duodenal tube is passed, preferably under X-ray control, and the power of the juice to digest gelatin is analysed by the methods of ANDERSEN and EARLY.[6] Chemical examination of the stools and other laboratory tests are not of diagnostic value, for they merely reveal the presence of malabsorption and malnutrition. The glucose-tolerance curve is usually normal; nitrogen excretion is increased; and changes in the fat content of the stools are similar to those in cœliac disease, the fat being partially split by a lipase in the succus entericus but too late for proper absorption. The vitamin-A absorption curve is low, and this was at one time suggested as a diagnostic finding; but it may be found in any condition associated with impaired fat-absorption. The condition resembles cœliac disease in the wasting, distension, and diminished fat-absorption, but cœliac disease can be distinguished by the later onset of symptoms, the poor appetite, the lack of constant respiratory infection, and the normal enzyme content of the duodenal juice.

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[4] *Lancet*, 1947, i, 667.

[5] Dudley, S. F., May, P. M., O'Flynn, J. A. *Spec. Rep. Ser. med. Res. Coun., Lond.* 1934, no. 195.

[6] McKinnon, N. E., in Control of Common Fevers, London, 1942, p. 47.

[7] Richards, R. L. Peripheral Circulation in Health and Disease, Edinburgh, 1946, p. 35.

[8] Gubner, R., Di Palma, J. R., Moore, E. *Amer. J. med. Sci.* 1947, 213, 46.

[1] Barber, H. W. *Practitioner*, 1944, 152, 281.

[2] 1943, 29, 226.

[3] MacKenna, R. M. B. *Med. Ann.* 1945, p. 307.

[4] Phillips, B. *Brit. J. Derm.* 1946, 58, 213.

The fundamental cause of fibrocystic disease of the pancreas remains a mystery. At one time it was suggested that the whole condition might arise from vitamin-A deficiency, but more probably this deficiency, when present, is a secondary manifestation. Other possibilities are congenital malformations or inflammation of the pancreas during fœtal life. FARBER [7] believes that the basic lesion is a physically altered secretion which obstructs the small pancreatic ducts; and with this disorder he has found evidence of similar changes in secretion elsewhere in the body, especially in the lungs, duodenum, and biliary tracts. He postulates that this results from disturbance of autonomic nervous control, and he claims to have produced similar lesions experimentally in kittens. There is no doubt, from clinical observations, that lack of pancreatic juice is responsible for the diarrhœa and malnutrition, and these can be greatly improved by treatment. The intake of food must not only be sufficient to cover the inevitable losses through imperfect digestion, but enough to satisfy the requirements of appetite, energy, and growth. Full use should be made of modern predigested foods; casein hydrolysates can now be obtained in palatable form, and if given in sufficient quantity will supply all the protein needed. To these may be added extra carbohydrate, in the form of glucose, minerals, and vitamins; and pancreatin can usefully be given with solid foods when these are begun. Chemotherapy and penicillin have materially improved the outlook as regards the respiratory infection; but suppurative changes in the lungs, once started, are likely to progress, and the pancreatic lesion itself is irreversible. While the ætiology remains obscure, therefore, the outlook for these cases is poor.

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[6] Andersen, D. H., Early, M. V. *Ibid*, 1942, 63, 891.

[7] Farber, S. *Arch. Path., Chicago*, 1944, 37, 238.

Annotations

CHLOROMYCETIN: AN ANTIBIOTIC EFFECTIVE BY MOUTH

THE latest antibiotic is derived from a streptomyces found in a sample of soil brought from Caracas, Venezuela.[1] From filtrates of submerged aerated cultures of this organism a crystalline substance, chloromycetin, has been obtained. This is probably a chemical entity, since it has a definite composition, melting-point, and optical rotation, and it is unique in containing both nitrogen and non-ionic chlorine. Unlike penicillin it is stable over a wide range of pH and will withstand boiling for five hours. Chloromycetin is active in vitro in dilutions of 1 in 3,000,000, against *Brucella abortus*, *Bact. coli*, *Friedländer's bacillus*, *Proteus vulgaris*, and *Staphylococcus aureus*, and in much higher concentrations (1 in 80,000) against the tubercle bacillus. Judging by tests on mice it should be possible to get a concentration of 1 in 80,000 in human tissues without producing toxic effects. Its discoverers have not yet performed in-vivo tests with chloromycetin in tuberculosis, but screening tests with the pure material showed a striking chemotherapeutic activity against *Rickettsia prowazeki*, using chick embryos, and against a number of other rickettsial agents when tested on embryonated eggs.[2] From 24 eggs infected with the Gilliam strain of *R. orientalis* and protected by chloromycetin 8 live chicks were eventually hatched. The chemotherapeutic effect of the drug in mice infected with scrub-typhus was equally satisfactory, even when it was administered as late as ten days after infecting the animals.

These preliminary observations suggest that chloromycetin is well worth a clinical trial in tuberculosis and rickettsial infections. It not only is of low toxicity but has the great merit of being active when given by mouth, and in rickettsial infections it is effective late in the disease. At the moment the only promising drug against the rickettsias is *p*-aminobenzoic acid, which is not free from toxic effects.

IMMUNISATION AND THE DIPHTHERIA CARRIER-RATE

DOES mass-immunisation against diphtheria increase the carrier-rate among immunised children? In the opinion of Dr. V. F. Soothill,[3] M.O.H. of Norwich, this question has still to be satisfactorily answered. During the spring of 1944, a period of low incidence of diphtheria in Norwich, he made a random selection from the immunisation records of 100 children of each sex in the age-groups 2–5, 5–10, and 10–14 years. Care was taken to choose children attending well-scattered schools or welfare centres, or living in appropriate districts. As controls, a random selection of "comparable" children was made among the non-immunised. Immunised children were further divided into those whose post-Schick tests were known to be negative and those who had not been Schick tested. The checked counts of immunised Schick-immunes were 1333 immunised and 1061 non-immunised. Allowing for the immunised with and without negative post-Schick tests, these totals became: immunised 1377, non-immunised 1017. Swabbings from nose and throat obtained from all children in the latter two groups were examined for *C. diphtheriæ* and yielded 2 positive results in each group.

Unsatisfied with this statistically insignificant result, Soothill arranged for the experiment to be repeated, using the same groups of children, in the winter of 1944–45 when it was thought that *C. diphtheriæ* was more abundant. Except that a different school nurse

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[1] *Science*, 1947, 106, 417.

[2] *Ibid*, p. 418.

[3] *Med. Offr*, 1947, 78, 101.

Special Articles

MASS RADIOGRAPHY IN THE EARLY DIAGNOSIS OF CHEST DISEASE

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ASSISTANT PHYSICIAN, HOLYWOOD HALL SANATORIUM, WALSINGHAM, DURHAM

The early diagnosis of pulmonary tuberculosis and other important chest diseases still leaves much to be desired. Routine mass radiography of certain groups of the population was recommended by the Medical Research Council (1942) to detect unsuspected cases in the early asymptomatic stage. An ambitious programme was initiated during the war by the then Minister of Health, and the results of three surveys made by the Medical Research Council (1945) gave impetus to the scheme, which has since gained the enthusiastic support of many able and experienced workers in the field, particularly those who have witnessed the spectacular success of mass radiography in the Armed Forces.

Mass-radiography surveys of the civilian population, however, are a vastly different proposition from the screening or sifting of military personnel under Service conditions. Brailsford (1943) was one of the first to cast doubt on the wisdom and practicability of the official scheme; and Toussaint and Pritchard (1945) developed instead, with outstanding success, what has since been known as the Bermondsey scheme, in which practitioners are encouraged to send all their suspicious cases for X-ray examination.

It is perfectly true that "one type of case will be detected only by mass radiography: the person with unsuspected, possibly infective, chronic disease whose symptoms are insufficient to take him to a doctor" (Medical Research Council 1945). Active tuberculosis, however, has been found in only 0·4% of all the cases so far examined by mass radiography, and not nearly all of these have been symptom-free. Though Kahan and Close (1944) report that in none of their 138 cases of pulmonary tuberculosis picked up in a mass survey of naval ratings had the men ever reported sick or had symptoms such as to cause them to seek medical advice, in the surveys of the Medical Research Council (1945) of 79 "treatment cases" (out of 21,280 persons radiographed) only 29 were symptomless, and of the 50 patients with symptoms, 17 had already consulted a doctor. In other words, in rather more than a fifth of the "unsuspected" cases the patients had had symptoms for which they had sought medical advice, but in all of them the diagnosis had been missed because radiography was not used in time.

No information is given about the incidence of symptoms of non-tuberculous chest diseases found by mass radiography. The incidence of chest abnormalities other than tuberculosis discovered by mass radiography is 1–1·3%, but only a small proportion of these conditions, which include cervical ribs, pleural thickening, and calcified glands, need treatment. There will hardly be many asymptomatic cases of bronchial carcinoma, bronchiectasis, pneumoconiosis, or cardiovascular diseases which show definite radiological abnormalities.

The facts (1) that only by mass radiography can pulmonary tuberculosis and certain other chest abnormalities be detected in the presymptomatic stage (which is not necessarily an early stage); (2) that even the presence of certain symptoms, such as cough or lassitude, often does not lead the patient to the doctor; and (3) that in spite of definite radiological appearances physical signs are sometimes absent and tubercle bacilli not found in the sputum, have wrongly led to the conclusion that mass radiography is the method of choice in diagnosing early cases for treatment and thus in preventing the spread of pulmonary tuberculosis. It was hoped that nation-wide periodical mass radiography would soon become a reality, and the method was regarded as the answer to the question of diagnosis.

THE CLINICAL ASPECT

The clinician, be he tuberculosis officer or sanatorium physician, who has to deal with the cases as they arise sees the grave problem of early diagnosis of chest diseases from a somewhat different aspect. The impression gained in dispensary and sanatorium work has not borne out the claims made by the supporters of the official scheme. I have previously drawn attention to the fallacies inherent in the scheme and suggested more practical and economical ways of using mass-radiography units (Hoffstaedt 1944). I review here the histories of 40 out of 145 adult male inmates of Holywood Hall Sanatorium, co. Durham. In the table these 40 cases are divided into two groups—23 patients who had undergone mass radiography before admission to the sanatorium; and 20 cases where the diagnosis of pulmonary tuberculosis had been missed or had been established much too late because radiography had not been used early enough. Group II contains 3 cases which appear also in group I.

DIAGNOSTIC HISTORY OF 40 PATIENTS

I—23 *cases examined once or more by mass radiography*

A. Inactive clinically insignificant lesions	3	10
Pulmonary tuberculosis not yet developed at time of examination	7	
B. Active pulmonary tuberculosis already in advanced stage		7
Symptomless	2	
Ex-prisoner-of-war, mass-radiographed on repatriation	1	
Symptoms for 3 months	1	
Under medical treatment for 2 years with "bronchitis"	2	
Misdiagnosed on discharge from Army in spite of suggestive radiogram and rectal fistula	1	
C. Relatively "early" pick-ups		6
Total		23

II—*Original diagnosis in 20 cases of delayed action*

Pleurodynia	2	Neglect of family history	5
Pleurisy (no action taken)	4	Neglect of history or/and presence of:	
Influenza	4	Pleurisy	3
Bronchitis, cold, catarrh, &c.	6	Hæmoptysis	3
Fibrosis of lung due to asthma-bronchitis in presence of fistula ani	1	Radiography only on request	3
Anxiety neurosis (after 6 months' hospital "observation")	1		
Muscular rheumatism	1		
Bleeding from throat	1		
Total	20		

Group I (A) consists of 10 cases where mass radiography did not help in picking up unsuspected cases of early clinical pulmonary tuberculosis. In 3 of these men there was probably no active pulmonary tuberculosis when they were radiographed. Tubercle bacilli were never found in their sputum, and after three months' sanatorium observation, and six months or more after detection of the X-ray shadow, there was no spread or activation of the supposed lesion. These 3 "patients" represent the now well-known type of mass-radiography pick-ups who are a headache for the tuberculosis officer and would be at least as well off if never discovered and if left alone. The remaining 7 patients in group I (A) developed pulmonary tuberculosis from five months to more than two years after mass radiography had given a negative result. In their case mass radiography was futile, because the men were well at the time, the only indication for radiography being routine.

Group I (B) consists of 7 cases where active pulmonary tuberculosis was discovered by mass radiography to the apply the remedy for longer than seven to ten days, for sensitisation seldom develops if this rule is obeyed when local treatment with sulphonamides is first adopted. It will be interesting to see how they overcome the hazard of sensitisation from repeated applications of the remedies for short periods at irregular intervals. Meanwhile doctors in general practice should bear in mind the possible dangers.

THE PRACTITIONER'S INCOME

IN spite of (or maybe because of) the wealth of alternative calculations offered in the Minister's reply, many general practitioners have found a new and a puzzling pastime in figuring out what their individual incomes would be. The results, like those of other Christmas games, have depended a good deal on the psychological make-up of the participants. For a general practitioner in a mixed panel and private practice it may in fact be very difficult to determine just what his prospects are. It is of course easy to take the global sum of £40,826,250, which is to be paid for the general-practitioner service, and divide it by the likely number of practitioners (Mr. Bevan's estimate is 17,900), and so get an average income of £2280. But this is cold comfort. Few doctors will take much interest in this calculation: what they want to know is not the average income but their own expectations, and the truth must remain that there are so many variable factors that no simple formula can be of any real help. All we can do is to consider probabilities.

The first and most stable factor is the doctor's present panel list. Those patients already on this list will automatically remain with him if he joins the service—subject of course to their continued right to change their doctor whenever they choose. The patients on the panel list, if any, provide a firm and calculable nucleus, and one may confidently add to them their dependants. It is usually held that on the average the ratio of dependants to panel patients is 1·2 to 1. So for every 100 patients on his present list the doctor might reasonably count on some 220 in the future. After this, exactitude can hardly be pursued; for, except in closed communities served only by a single doctor or partnership, it is virtually impossible for any doctor to say with confidence at any given moment just how many private patients he cares for. Ledgers help very little. They seldom show the size of families, or keep a tally changing as some members of the family reach insurable age and others are born or die. In urban practice it is not always easy to know whether a particular family, not seen over a long period, is enjoying exceptionally good health or has transferred allegiance to another doctor. Again, few can be sure what proportion of the residents in their area will use the new service; which makes it difficult to guess the likely number of capitation fees, and even harder to estimate how much income may still accrue from private practice. Nor do we yet know how many doctors will be allowed to augment their incomes (and to what extent) by taking part in the maternity service.

On expenses some saving may be expected. The doctor will still (pending health centres) have to maintain his own surgery and his paid (and unpaid) staff, his car, his telephones, and his correspondence; but there should be a considerable saving for drugs, and dispensing, accountancy should cost less, and bad debts and the "free list" should disappear. The sources of occasional, or regular, additional income now enjoyed by general practitioners (such as insurance examinations, factory or other part-time appointments, pensions or recruiting boards) will not run dry, and some new springs are likely to appear; for the Minister speaks of "allowances for training assistants," and it seems certain, too, that in some areas graded specialist service in hospitals or clinics (paid on a sessional basis) will fall to the lot of those practitioners who are recognised by their colleagues as acceptable for this work. Add to this the hidden asset of superannuation rights, and the range of remuneration seems, as we said last week, reasonable though not lavish. It is true that the cost of living has risen steeply; but it will be recalled that Prof. Bradford Hill calculated for the Spens Committee that the gross income *from all sources* of general practitioners in 1939 was in the neighbourhood of £28,285,000. He assumed a similar total of practitioners to that now estimated by the Minister; so we can justifiably contrast his global figure with that now offered by the Treasury. The £40,826,250 offered does therefore represent a substantial increase, particularly when one remembers that in addition to it the gross total future income of doctors will include private fees for general practice; the remuneration received from industry, insurance societies, the hospital boards, and the Ministries of War, Pensions, Education, &c.; the fees received for public and private maternity work; the allowances for training assistants; and the State's share of the superannuation contribution.

Just how it will all work out remains to be seen. Inequalities of opportunity in the early days seem inevitable, though they need not amount to injustice if the time remaining before the appointed day is wisely used. In any service paid preponderantly by capitation fee it seems obvious that opportunity should be provided, well before the commencement of operation of the service, both for the doctors to express their willingness to serve, and for patients hitherto uninsured to state their intention of using the service and their choice of doctor. Any curtailing of this preliminary preparatory period, which should last at least three months, would mean that an inordinately large share of the pool would go to those doctors fortunate enough to have already a very large panel; or skilful enough to be able to collect quickly the maximum of signatures of their newly arriving State patients. Once we recognise this, and are agreed on the undesirability of any unfair and undignified last-minute scramble, it becomes obvious that the time for decision is short—probably no more than half of the six months that separate us from July 5. It is later than we think. It is all the more urgent, therefore, for practitioners to relate the Minister's proposals to their own practices and lives, and to decide whether his offer is one which they can accept.

B.M.A. AND PLEBISCITE

ON Dec. 17 the council of the British Medical Association met to consider the Minister's reply to the Negotiating Committee. In a statement to the press it says:

> ". . . for nearly a year we have worked at the conference table to no purpose. There remains one final question and one central issue. Does the service as described by the Minister conflict with the traditions and standards of a great profession? There is only one answer the council of the association can give to this question. It does so conflict."

On Jan. 31 a plebiscite of the whole profession will be taken.

THE gift of over £1 million which South Africa made last year to the British people included £106,025 from Durban and Natal. *Of this sum* £106,888 is to go to the Institute of Child Health of the University of London, for a new separate building near Great Ormond Street Hospital. This will house a model welfare clinic and other services developed with the local authority. The institute's director is Prof. Alan Moncrieff.

(4) The insignificance of negative sputum results, particularly of one single direct smear, both for the diagnosis of pulmonary tuberculosis and for differential diagnosis, does not seem to be common knowledge. In fact "routine sputum examination," as suggested by Brailsford (1944), would do more harm than good if any reliance were to be placed on negative returns.

(5) Let us be frank about another psychological phenomenon. There is undoubtedly also a certain, mostly unconscious, reluctance among doctors to accept and to pronounce so serious a verdict as pulmonary tuberculosis or carcinoma. And from this very reason, though few will be prepared to admit it, any negative findings on either physical or bacteriological examination will be accepted with a sigh of relief; and, hoping for the best, the doctor dismisses his original suspicion much to the detriment of the patient.

(6) Another unpalatable fact has to be faced: doctors are not always so tuberculosis-minded as they should be. This is due to the inadequate training of medical students in tuberculosis, a deficiency of the curriculum which has already been acknowledged by various authorities.

(7) Harassed and overburdened general practitioners have not always an opportunity to take detailed case-histories of patients with minor symptoms—and it is usually with minor complaints that the trouble starts—who want a bottle of medicine rather than being questioned, stripped and tapped, and sent from one place to another, and all the rest of it.

(8) The most important factor leading to missed diagnosis and to serious delay in diagnosis and treatment is the omission of chest radiography as part and parcel of a routine chest examination—the failure to grasp that "examination of the chest is incomplete unless it includes a roentgenographic study" (Goorwitch 1944). One of the main factors contributing to this fateful omission is the lack of sufficient facilities for radiography available to the general practitioner and within easy reach of the patients, particularly in small towns and rural districts. Moreover in many areas tuberculosis dispensaries are not equipped with an X-ray plant, which means many journeys and fares and great loss of time for the patient. It must also be remembered that there are patients who dislike attending a tuberculosis clinic.

IMPRACTICABILITY OF NATION-WIDE ROUTINE MASS RADIOGRAPHY

The supporters of the official mass-radiography scheme believe, and want to make us believe, that faithful application of the official medicine is the real thing. I wonder whether these enthusiasts still believe, as they did five years ago, that "the X-ray manufacturers will shortly be ready to provide apparatus as soon as they receive orders" (*Tubercle* 1942). How are they going to turn out the teams of skilled personnel, technical and medical, to man the units which apparently were to come off the endless belt like cannon shells in munition factories? The bitter truth is that up to the end of June, 1946, only 19 units altogether were operating in England and Wales (*Lancet* 1946), which to that date had examined 1,111,000 people with the rather meagre result of picking up 4200 cases (0·4%) of active pulmonary tuberculosis. Even supposing it were possible to provide another 19 or 20 units together with skilled personnel within the next three years or so, we should still not have made much headway on the road to Utopia.

Toussaint and Pritchard (1943) said that "to deal with even 50% of the London population 20 units will be required," and Brailsford (1943) estimated that "for the Birmingham area of 2,000,000 inhabitants we should need 80 units for 3-monthly examinations." Even if Brailsford's figures are cut by half, it is obvious that, with the machines and the personnel now at our disposal, it will be impossible for many years to come to survey the working population of this country even once, let alone periodically every six months.

Apart from the futility of the scheme, the expenses in material and working hours, the amount of energy and skill employed, are utterly out of proportion to the poor return—an average of 0·4% of active pulmonary tuberculosis and a very small percentage of other chest diseases, a good deal of which could and should be discovered by ordinary routine examination under an adequate and up-to-date diagnostic service.

A wave of positive criticism against the official scheme is rising. Heaf (1946) and Jessel (1945) state frankly the impracticability of surveys of a whole population. Jessel (1945) and Hoyle (1945) emphasise the potential danger of one normal radiological report in creating a sense of security which may delay diagnosis later. I have already drawn attention to this point (Hoffstaedt 1944). Hoyle concludes: "We have yet to learn how best it may be used and what the unavoidable limitations are of a method capable at once of revealing pulmonary tuberculosis at its most amenable phase and yet of failing to do so in practice, except for a fortunate few who happen to be in this phase at the precise moment of the examination."

Brailsford (1945) lucidly demonstrates the limitations of mass radiography and suggests the use of this method for limited, selected, and essential services. He, like England (1946), sees the danger of straining the dispensary system by overflooding it with insignificant cases to the detriment of those in need of attention and treatment. England's main criticism deals with the 25–50% leakage of the "drag-net" resulting from the voluntary character of the scheme, because it is the very fraction of the population most likely to show a high incidence of disease which will most probably escape the wide mesh of the net.

The wastefulness of routine mass radiography, if it ever attains its object of periodical surveys of stable population groups, is shown by Reid's (1943) revelation that the incidence of new cases of active pulmonary tuberculosis among the employees of the Metropolitan Life Insurance Co. dropped in ten years from 0·4% to 0·07%. This observation is supported by the report of the Medical Research Council (1945) that the incidence of newly discovered cases of active pulmonary tuberculosis dropped from 0·3% to 0·1% in a year when the same group was re-examined.

THE REMEDY

The diagnosis of disease is in the first instance the business of the family doctor. The general practitioner is not only just a clearing-station, but far more—the first line of defence. Before the practitioner can play his most important part in any health service which deserves the attribute "comprehensive and efficient," several basic conditions must be fulfilled.

The first essential condition is that "for diagnosis, doctor and patient must meet" (Trail 1942). As this cannot be taken for granted, something has to be done about it. It has been shown over and over again that too much time is lost before the patient sees the doctor (Mann 1943, 1946). Health education on a nation-wide scale, starting at school, must create and foster a sense of health responsibility, and at the same time the masses must be educated to look after themselves and to seek proper medical advice (not a bottle of medicine or pink tablets) in time. The modern tendency to spoon-feed the people weakens and eventually destroys the sense of self-responsibility and of independence which is the very essence of civic liberty. A wrong notion of what is meant by "guaranteed security" makes the people too much dependent on some sort of State assistance or public services which will take all the trouble and will benefit of the patient; but in all of them the disease was already advanced, and mass radiography therefore did not provide early diagnosis. Of these 7 patients 2 had no symptoms, though one of the two had already developed bilateral disease with a cavity and positive sputum. Of the remaining 5 in this group 1, an ex-prisoner-of-war, had far-advanced tuberculosis when he underwent mass radiography on repatriation; 1 had had symptoms for three months when examined; and the remaining 3 were cases of "missed diagnosis" which should really have been found out without being left to chance discovery by mass radiography. These 3 cases are discussed below.

Group I (C) consists of 6 cases where a relatively early diagnosis of pulmonary tuberculosis was established by mass radiography.

Group II consists of 20 cases where the diagnosis of pulmonary tuberculosis had been missed, leading to delay in treatment; they include 3 cases from Group I (B). Among the original diagnoses "pleurodynia" figures twice; this is no diagnosis but merely a symptom.

In 4 cases the patients were treated for "influenza"; it would be grossly unfair to blame any doctor for such a diagnostic error, particularly during seasonal outbreaks of genuine influenza; but the subsequent history and, if present, a family history of pulmonary tuberculosis should arouse suspicion and lead to investigation of sputum and by radiography.

Bronchitis, catarrh, cough, and cold were the original diagnoses in 6 cases. One of the worst had been treated for "smoker's catarrh" by an Army doctor. Two of these patients, who were eventually discovered by mass radiography, had attended their doctor on and off for two years.

In 4 cases even the original diagnosis of pleurisy did not lead to further action until after most valuable time, from six months to two years, had been lost. To diagnose a pleurisy and to leave it at that without further radiography is a very serious omission.

One patient had been discharged from the Army in 1943, after six months' "observation" without ever having been radiographed, with the diagnosis of anxiety neurosis and nervous disability. When he was eventually radiographed three years later, widespread bilateral pulmonary tuberculosis with a big cavity had developed.

Another ex-Army patient had had an ischiorectal fistula since 1941 and had been discharged from the Army in 1942 with the diagnosis of lung fibrosis due to asthma-bronchitis, based on the radiogram without any regard to the presence of the fistula. In February, 1946, hæmoptysis, huskiness, and listlessness had developed. No tubercle bacilli being found in the sputum, no further action had been taken. (This shows clearly the fallacy and actual danger of negative sputum results.) In April, 1946, he had been mass-radiographed; but no report had been received. Only after inquiry in June, 1946, had he been referred to a dispensary, where tubercle bacilli had been found in his sputum, and tuberculous lesions in the upper and middle zones of the left lung.

One patient, in spite of a history of pleurisy in 1944, had been treated for six months in 1945 for muscular rheumatism until a hæmoptysis led to the diagnosis of pulmonary tuberculosis. It is strange that his family doctor had apparently not taken into consideration the highly suspicious and significant fact that both the mother and the sister of the patient had died of pulmonary tuberculosis.

Failure to take the family history into account was significant in 4 other cases. One case had been diagnosed as "bleeding from the throat." The history or the presence of hæmoptysis had been neglected in 3 cases. The omission of chest radiography in a case of hæmoptysis, however small, must be considered grave neglect. Though there are several non-tuberculous conditions which may cause a hæmoptysis, the spitting or coughing up of blood, however little, usually spells serious disease.

Finally one rather exceptional case of "missed diagnosis" is worth mentioning. A miner, aged 22, whose two sisters had died of pulmonary tuberculosis, had had pleurisy in August, 1945, and pleurisy and hæmoptysis in December, 1945, and June, 1946. After that the patient had insisted on being radiographed, with the result that he was admitted to sanatorium in September, 1946, with extensive tuberculous lesions all over the right lung and the left middle zone.

In 3 cases of this group radiography, which had at once clinched the diagnosis, had only been done on either the patient's or his mother's request.

In these 20 cases there was a time-lag, from three months to three years, between first reporting to the doctor and the establishing of the diagnosis by radiography. In most cases the delay exceeded six months.

DISCUSSION OF RESULTS

If in 20 out of 145 sanatorium patients—i.e., in 14% of the sanatorium population—pulmonary tuberculosis was not diagnosed in time, in spite of suggestive symptoms and/or suggestive history, we have no reason for complacency. If, on the other hand, the expensive machinery of mass radiography used in 23 cases was a complete waste in 10 of them, and if only 6 of the 13 pick-ups were early cases whereas 3 cases had been previously missed in spite of suspicious symptoms because they had not been radiographed in time, then there seems to be room for improvement in the use and organisation of radiography as an aid to early diagnosis of chest disease.

It is perhaps fair to assume that the experience in this sanatorium, as illustrated by the analysis of the present 40 cases, is similar to that of other clinicians; and what is true of pulmonary tuberculosis will most probably be true of other chest diseases. Mann (1943) found an average delay of $3^{2}/_{3}$ months from onset of suggestive symptoms till the patient consulted the doctor, and a nearly equal delay from the first attendance until reference to the dispensary. For obvious psychological reasons general practitioners are sometimes reluctant on mere suspicion to send a patient to a tuberculosis dispensary. Some patients refuse to attend a tuberculosis clinic for fear of publicity.

As regards early diagnosis, Fraenkel (1947) found, in five years' sanatorium admissions, only 2 cases of the earliest recognisable form of post-primary pulmonary tuberculosis. The failure in practice to diagnose tuberculosis at a reasonably early stage cannot be more impressively demonstrated than by the most alarming and disquieting statement that about half of all deaths from pulmonary tuberculosis take place within a year of notification. What, then, are the reasons for this sorry state of affairs, and what is the remedy?

CAUSES OF DELAY IN DIAGNOSIS

(1) As Jessel (1941) and Trail (1942) point out, there are reasons inherent in lung disease. The onset of the disease—e.g., pulmonary tuberculosis, pneumoconiosis, bronchial carcinoma—is usually so insidious that the patient does not seek medical advice in the early stage. It is this initial paucity, or even absence, of symptoms that forms one of the strong points in favour of routine mass radiography.

(2) Varied and deeply rooted psychological reasons on the part of the patient which have not yet been appreciated sufficiently and must be properly understood: ignorance, indolence, carelessness, and ill-developed sense of health responsibility, on the one hand, and inability to face and to accept a serious disabling disease, fear of insecurity due to loss of work, and other sources of anxiety, on the other hand, prevent many a patient from appreciating such symptoms as may be, and very often are, present.

(3) The well-established fact that chest disease of considerable extent may often present to the examining physician only inconclusive physical signs or no signs at all do not yet command due attention.

LOCAL EXECUTIVE COUNCILS

WE publish this week a further list of the chairmen and medical members of these councils. A council has still to be set up for the Scilly Isles. Earlier lists appeared in our issues of Sept. 6 (p. 364) and Sept. 27 (p. 485).

Anglesey
Colonel R. D. Briercliffe (chairman); Drs. T. A. Griffiths, Leslie Jones, R. O. Jones, J. Lloyd Lewis, W. Parry-Jones, N. B. Thomas, G. P. Williams.

Barnsley
Alderman E. Sheerien (chairman); Drs. L. V. Broadhead, S. Curry, J. P. J. McMahon, Norris Pick, J. Helen Ritchie, A. Birtles Slack, E. J. Williams.

Bradford
Alderman Kathleen Chambers (chairman); Drs. D. Black, R. Chester, R. Craig-Hanson, J. Douglas, G. Priestman, M. B. Gathorne Sinnette, R. H. Sunderland, W. N. West-Watson, J. Wright.

Breconshire
Mr. Tudor Watkins, M.P. (chairman); Drs. S. N. Chopra, T. L. Davies, D. L. Lees, R. G. B. Lusk, S. H. Pugh, T. R. Sutherland, W. W. Wilson.

Buckinghamshire
Mrs. O. H. Paterson (chairman); Drs. F. C. Haward, J. M. L. Love, R. W. McConnel, R. V. F. Mercer, G. W. H. Townsend, H. Vickers, D. J. B. Wilson, W. Young.

Coventry
Councillor J. Latham (chairman); Drs. K. E. Barlow, W. D. Coghill, H. N. Gregg, R. Laverty, H. P. McNamara, N. J. L. Rollason, C. F. Turner.

Cumberland
Captain J. M. Gatheral (chairman); Drs. E. Braithwaite, W. Fraser, V. C. J. Harris, R. A. Quinn, A. K. Rankin, J. Sachs, G. H. Thomson.

Doncaster
Lieut.-Colonel W. F. Bracewell (chairman); Drs. J. Ashforth, Bessie E. Cook, J. M. Hain, A. E. Huckett, B. Lyons, J. L. McEwen, H. F. Renton.

Gloucester County and City
Mr. A. B. Cooke (chairman); Drs. C. C. Carson, H. K. Cowan, T. A. Fyfe, J. H. Grove-White, M. M. St. G. Johnstone, J. R. Miles, W. G. Murray-Browne, T. E. N. Simpson.

Grimsby
Mr. A. G. Pearson (chairman); Drs. J. Cottrell, W. N. Hood, J. D. Horsburgh, J. A. Kerr, F. Martyn, P. R. Riggall, E. A. Robertson, H. J. Thomson.

Halifax
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Hastings
Alderman F. W. Chambers (chairman); Drs. E. D. Blunt, R. Carpenter, F. J. Cutler, E. J. Glynn, A. F. Hall, W. Magowan, G. N. Wood.

Lincoln County Borough
Miss B. M. Sharpley (chairman); Drs. T. W. Chapman, P. S. Cheshire, T. O'Brien, W. V. Semple, G. D. Summers, M. M. Tannahill, Constance Vallange.

Lincolnshire (Kesteven)
Mr. W. K. Carter (chairman); Drs. D. S. Buchanan, K. M. Foster, C. Frier, J. A. Galletly, F. J. Jauch, E. C. Till, E. D. M. Wright.

Lincolnshire (Lindsey)
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Captain Harri Williams (chairman); Drs. G. H. H. Booth, F. J. H. Crawford, J. G. Garman, J. E. Jenkins, R. H. Jobson, J. D. O'M. Poole, R. J. Walker, W. W. Wilson.

Rotherham
Alderman A. Buxton (chairman); Drs. D. W. Barr, E. A. Coldrey, D. P. K. Jockal, C. W. A. Lister, J. J. Morgan, G. H. Sedgwick, A. Taylor.

St. Helens
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Mr. F. Woolley (chairman); Drs. G. H. Barendt, B. Bourke, A. McD. Grimston, A. Morrice, J. B. A. Reynolds, E. Sakoschansky, J. E. A. Simpson, H. C. M. Williams.

Surrey
Alderman Mrs. Amy Woodgate (chairman); Drs. D. Dunlop, R. V. Goodliffe, T. W. Morgan, E. L. K. Sargent, N. E. Waterfield, K. Watson, D. F. Whitaker.

Wakefield
Alderman A. Carr (chairman); Drs. C. S. Broadbent, A. M. R. Heron, H. T. Knowles, P. J. Rafferty, J. J. Reynolds, S. P. Sloan, T. Walker.

Medicine and the Law

In the Wrong Carton

LAST week the Hammersmith coroner considered the case of a man of 42 who died suddenly after an injection for varicose veins.[1] The doctor who had been treating him said that the patient had previously had two injections. When he returned for a third injection the doctor drew off 2 ml. of 'Etalate' from an almost empty bottle. In order to make up the amount to 5 ml. he then took down from his cabinet a second bottle in a container labelled 'Etalate,' and withdrew from it a further 3 ml. In so doing, he saw only the rubber cap of the bottle, which remained in the container. The 5 ml. of fluid thus obtained was injected into the thigh of the patient, who collapsed and died two minutes later. Afterwards the doctor found that the second bottle contained adrenaline solution, not etalate. A fortnight earlier he had mislaid a bottle of adrenaline which he usually carried in his bag, and despite search it had not been found. Workmen were decorating his ground-floor room, and on the night before he saw the patient he had moved most of his equipment into a room on the first floor, where the injection was given. He concluded that the lost bottle of adrenaline must have found its way into the etalate carton.

A verdict of death by misadventure was returned.

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[1] *Evening Standard*, Dec. 15.

readily come in whenever required—though then often too late.

It therefore seems that, except for certain hazardous industries where routine mass-radiography surveys are essential, it is a psychologically wrong approach, and not without danger, to bring the X-ray machine to the factory and to the office. The better plan would be to see that the really deserving people, the suspected cases, are sent to the X-ray department through the agency of their own doctor.

The widespread indolence and complacency of so many irresponsible and ignorant people must gradually but systematically be overcome. The raising of the school-leaving age is perhaps a unique opportunity for health education. The cinema should produce an equivalent to the B.B.C. talks of the Radio Doctor. There is plenty of scope for effective health propaganda. To maintain the proper doctor-patient relationship, which is the foundation of any satisfactory health service, people must be encouraged to see first of all their own doctor.

It is certainly commendable that mass-radiography units direct their activities towards people in whom the presence of a chest disease may be suspected; but it is definitely wrong for them to organise so-called open sessions and invite the public, by advertisements in local papers and transport, to attend these sessions. This is contrary to professional usage and does not fit in with the generally accepted practice of outpatient clinics and public-health clinics.

It is the general practitioner that must be encouraged, nay urged, to send patients for radiography. In the National Health Service the health centres, as they gradually come into being, will provide facilities for radiography. It is here that mobile mass-radiography units could be employed with the greatest benefit to the public (Hoffstaedt 1947). Adequately equipped health centres for group practice, taking the place of the often poorly equipped one-man shop called the surgery, will eventually give the practitioner the chance of examining patients properly. Here also basic laboratory facilities must be provided. Last but not least, the help of a trained nurse or of a receptionist will enable the practitioner to take proper case-histories, preferably on standard case-sheets with relevant anamnestic and symptomatic items, including family and occupational history. After all, history-taking is one of the most important and revealing parts of an adequate examination.

A much better training of the medical student in tuberculosis and chest diseases and in the appraisal of X-ray photographs is an urgent necessity. It must be understood by doctors that arguments about stethoscope versus X rays are pointless, because physical chest examination and radiography are not alternative but complementary methods, each of them indispensable and essential, supplementing, never substituting, each other. Maxwell (1946) rightly postulates: "A practitioner who did not insist on an X-ray examination of a suspicious chest case, especially after hæmoptysis, might be sued for negligence." And Toussaint and Pritchard (1944) logically visualise the same legal consequences for omission of a chest radiogram as those already existing under the present law for neglect to radiograph a bone injury in time. Even "the man in the street is coming to know that a chest examination without a film is of comparatively little value" (Tattersall 1946).

THE PLACE OF ROUTINE MASS RADIOGRAPHY

In existing circumstances the pursuance of the official scheme of indiscriminate routine mass radiography is utopian. The Medical Research Council (1942) rightly said that "owing to the limitation of apparatus likely to be available in this country concentration at the present time should be upon those groups where through the nature of employment (e.g., silicosis producing industries) or the composition of the population at risk a relatively high incidence of unsuspected pulmonary tuberculosis is likely to be found." Dick (1946), also recognising the continuing scarcity of machinery, allocates at least one afternoon each week to the examination of contacts and referred cases. Heaf (1946) and Brailsford (1944) recommend the use of the available units for those sections of the population where there is the highest risk: hazardous industries, contacts, and suspicious cases with symptoms. In hazardous industries mass radiography should also be used for pre-employment examination (Gooding 1946, Heaf 1946).

Routine periodical mass radiography of contacts would greatly contribute to the early diagnosis of pulmonary tuberculosis and at the same time help greatly the routine work of the chest clinics or dispensaries (Hoffstaedt 1944, England 1946). That the examination of contacts by mass radiography deserves first priority is clearly shown by the results published by Dick and Thompson (1946), who found the incidence of active pulmonary tuberculosis among contacts five times as high as in the general population; by Hahn (1943), who found similar figures among consorts of persons with pulmonary tuberculosis; and by Couts (1947), who found an incidence of 5·5% and 6·3% respectively among contacts examined in 1944 and 1945.

In short, it is the suspected rather than the unsuspected section of the population on which we have to concentrate our efforts to make radiography the most powerful weapon in our fight against the white plague.

SUMMARY

Of 23 adult male sanatorium patients who had been examined in the course of routine mass radiography, this procedure had been valueless in 10. Of the other 13. only 6 were diagnosed in an early stage.

Another group of 20 cases illustrates the need for much better training of medical students in tuberculosis and chest radiography.

The impracticability and undesirability of nation-wide routine periodical mass radiography are shown.

It is suggested that mobile mass-radiography units should be employed at health centres and should concentrate their attention on workers in hazardous industries, on contacts of known patients, and on suspicious cases with symptoms—i.e., the suspected rather than the unsuspected section of the population.

My thanks are due to Dr. J. W. Gray, medical superintendent, Holywood Hall Sanatorium, for permission to publish and for his kind and helpful advice.

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LOCAL EXECUTIVE COUNCILS

We publish this week a further list of the chairmen and medical members of these councils. A council has still to be set up for the Scilly Isles. Earlier lists appeared in our issues of Sept. 6 (p. 364) and Sept. 27 (p. 485).

Anglesey

Colonel R. D. Briercliffe (chairman); Drs. T. A. Griffiths. Leslie Jones. R. O. Jones. J. Lloyd Lewis, W. Parry-Jones, N. B. Thomas, G. P. Williams.

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Grimsby

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Alderman Mrs. Amy Woodgate (chairman); Drs. D. Dunlop, R. V. Goodliffe, T. W. Morgan. E. L. K. Sargent, N. E. Waterfield. K. Watson, D. F. Whitaker.

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Medicine and the Law

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A verdict of death by misadventure was returned.

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[1] *Evening Standard*, Dec. 15.

In England Now

A Running Commentary by Peripatetic Correspondents

As soon as Siva appears on the scene, at the Indian Exhibition,[1] stone and bronze begin to dance; they can hardly do less, for he is the Lord of the Dance, the emblem of cosmic rhythm. Symbolic additional arms, weaving into the light-hearted pattern, astound the unaccustomed eye only for a moment; and gods and godlings crowd together, supple as van Gogh's fir tree, until every group seems rustling with movement, or rushing up in flame. How strangely quiet, after this, are the rooms of little brilliant pictures, where flowers enamel the ground and a blue Krishna sports with the milkmaids. They are as bright and vivid as pictures in a missal—

> . . . "Where all is smaller than a wren,
> But has high towers, meteors, and men,
> And suns and spouting whales."

Whales, indeed, are not to be seen, but there are fawns and hounds and horses, and a Persian richness of flowers and trees and shining silks.

* * *

An exhumation I attended a few weeks ago was almost a jolly occasion. Our proceedings started with an excellent cup of coffee and a welcoming smile from a Sister of Charity dressed in flowing black except for her white wimple and a large dangling wooden rosary at her waist. Two of my colleagues were also present—the local medical officer of health, bearing a Home Office exhumation order, and a physician from a neighbouring town, who, like myself, had consented to act as an official medical witness. The morning sun shone into the anteroom while we speculated quietly about our part in the coming ceremony, which had just begun with the chanting of the *Veni Creator* in the adjacent chapel.

Fifty years ago the foundress of the Order, after a saintly life, had died and been interred in a lead coffin in a deep vault beneath the wooden floor of the little church. Convinced of her outstanding sanctity, the community had applied to the Holy See for official inquiries to be made, hoping that these would lead to her beatification. I don't know much about the details except that these inquiries are thorough beyond belief.

First you dig up the body. This had just been done by a small group of blue-overalled workmen, who had torn up the floor, opened the vault, and raised a grimy leaden shell up to floor level and left it by the side of the hole. Seated on a chair in the middle of the little nave was the Reverend Abbot of an adjacent monastery with three or four monks in Benedictine habits, one of whom was the postulator, pressing the cause and acting as master of ceremonies for the occasion. Along one side of the chapel sat a line of nuns of the Order, all Reverend Mothers of branches of the community, some of whom had come half-way across the world to be present. We were given seats opposite the sisters, about three feet from the coffin, around which stood the six workmen. A long trestle table with a heap of rosaries and sacred emblems at one end took up much of the space, and in the background the good nuns had thoughtfully provided several hand basins, hot water, and a large bottle of 'Dettol.'

The Abbot rose and held up a document from the ecclesiastical authorities, the large stone of his finger ring making a touch of colour against the sombre black of his companions. The paper was read, authorising the exhumation and examination of the body, provided that no other bodies were disturbed and that all the process should conform with the laws of the civil authority. Here he turned to the M.O.H. and asked if all was in order to proceed. Receiving an affirmative answer Holy Church got down to serious business. One by one, with their right hands touching a large copy of the Gospels placed in the foreground, the small group of priests bound themselves by a formidable and comprehensive oath to give nothing but true and honest testimony of all that should be seen or found. Then two sisters from the end of the line came forward to be sworn and questioned by the Abbot. They agreed that they had witnessed the interment and that to the best of their knowledge the body had lain there undisturbed for fifty years. Then the chaplain pronounced the solemn curse of excommunication on any person who should, from whatever pious motive, disturb, add to, or remove anything from the coffin about to be opened. Lastly every one of the workmen and we ourselves were sworn in like manner. By this time I felt rather like the Jackdaw of Rheims; and we all know what happened to him.

The foreman of the attendants began work on the shell, introducing the point of a clasp knife into the edge of the lead lid and gently tapping the blade along the whole length of the side to work his way round to the starting-point. He was followed by two of his mates with screwdrivers who gently levered up the small nails securing the lead edges to the wood. The air of expectancy throughout the assembly could almost be felt.

The Roman Catholic Church is not easily persuaded to make new Saints, and first demands overwhelming evidence of their sanctity. I believe that among other things at least two major miracles connected with the Saint must be cited, and the evidence must be faultless and convincing. Later a very sceptical gentleman is briefed as Devil's Advocate and instructed to tear the evidence to shreds. Complete absence of corruption many years after death (embalming and the like being excluded) is a good start, and no doubt many hopeful hearts awaited something of the kind here. It has apparently occurred a good many times in the past. Still we, as doctors and medical sceptics (not to mention our oaths), had no intention of being deceived in any matters to come.

At last the outer lid was prized up and the inner wooden shell revealed with a damp white mould streaking its outer surface. The workmen gently lifted the heavy lid and laid it aside while the foreman easily levered up the light covering of the inner shell lying in a set of grooves. As witnesses we then rose to examine the contents.

Clothed in her black habit and scapular, a small body lay supine, the hands clasping a rosary and a withered spray of flowers, with a faded piece of paper, almost completely decomposed but bearing the faint handwriting of her solemn vows made a hundred years before, between her fingers. From some fault in sealing at the time of burial the coffin was not entirely airtight, and we found the body and outer clothes sodden with moisture. The lining of the shell, the outer clothing, and even the black felt slippers were intact, but the stockings and body covering had almost entirely rotted away. As a whole the body and limbs had retained their normal shape, but the tissues covered by clothes had become converted into adipocere of a white and almost granular consistency. The uncovered face and hands were shrunken and mummified to a brown colour, with the features unrecognisable but the finger-nails intact, though they became detached at a gentle touch.

The quiet voice of the postulator adjured us to make as thorough an examination as possible and to give an exact account of the condition of the body and all the limbs. I called to two of the sisters to free the heavy leather girdle and expose the rest of the body so that I could examine it while my physician colleague took notes. Then we adjourned to the trestle table to wash our hands. A nun found us a typewriter and carbon papers, and my colleague and I composed a joint report under the scrutiny of the M.O.H.

Meanwhile, the long file of nuns passed round the shell to take a last look at their foundress and to touch the exposed body with rosaries and crucifixes. The Abbot and his attendant clergy sat and watched the opened coffin till, after a formal question as to whether we wished to make any further examination, the order was given to reseal the leaden lid. We read, checked, and signed four copies of our detailed report and handed them to the postulator, who thanked us heartily for our help and then casually asked us if we had noticed anything unusual about the body, having regard to all the circumstances. We could only find him one sentence in our report which said: "There was a remarkable absence of odour when the coffin lid was raised." And that, with the body a mass of adipocere, dripping wet clothes, and obvious access to moulds, we both thought at least slightly unusual.

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[1] The "Exhibition of Art, chiefly from the Dominions of India and Pakistan" at the Royal Academy of Arts is open until Feb. 29, 1948; weekdays 10 A.M. to 7 P.M., Sundays 2–7 P.M.

* * *

It was somewhat of a shock, though a pleasant one, to change from our austere British food to the full, nay surplus, diet of America. At first I ate freely and put on 7 lb., but I soon found that I had to limit my intake if I wished to feel at my best. One's constitution undoubtedly accommodates itself to austerity.

Two points about the meals struck me as noteworthy —the constant presence of iced water and the usual absence of wine at table. The glass of iced water is served to each guest at every meal—breakfast, lunch, tea, dinner—before anything else is brought. After a time one gets to like it, though it does seem out of place when brought with a pot of hot tea. Once when I asked my hostess why it was always served she answered, "Well, we should not consider the table properly laid unless each person had it." Whether it is a good or bad thing for the stomach is not for me to say; an experienced physician thought it was harmful, but this may have been a case of sour grapes. It is the custom to drink cocktails—definitely in the plural—before the meal; but as a rule water, iced of course, was the only drink during the meal. Since I happen to be a teetotaller this was quite convenient.

* * *

Once upon a time, as you will remember, there was a princess who had stepmother trouble. Her eleven brothers were turned into swans and she got carried off and married to a king. She used to leave his bed (it says that in the book) to collect nettles from the churchyard and to weave them into coats of mail, specific cures for those who are swans by day. She was about to be burned as a witch when it all came right, all but the eleventh brother's arm which remained a wing. You remember? Hans Andersen assures us that the diagnosis of being a witch rested on her refusal to speak and her going to the churchyard; but I doubt if he got the case-history right. How was he to know about Feldberg, Anrep, and their colleagues?[1] It is only too obvious now. The woman was pregnant, the nettles planned to do their stuff with acetylcholine, histamine, and something, but she had a high histaminolytic index and so although she felt the pain she didn't get nettle-rash. That's why they thought she was a witch; probably Andersen thought the churchyard story had better sales-value.

It has taken me forty years to make the diagnosis of pregnancy in this case. Is that in time for those who live happily ever after?

* * *

She was one of the cases in which the formidable battery of psycho- and physico-therapies of modern psychiatry had failed. Over the weekend at home she smashed all her crockery and put most of her clothes into the fire. Then somebody remembered that a gynæcologist had suspected gland trouble because of the faun-like hirsutes she had from the belt downwards. The big gun of endocrinology was to come up all the way from London and matron was told to get the patient prepared for examination. After the experts had put their heads together and the gynæcologist had pleaded his case for virilism, we stood around the bed to see the evidence. I wish I could describe his face (and ours) when it was found completely removed, shaved off by our well-trained and zealous matron.

* * *

My peripatetic friend has suggested (Dec. 13) that the surest way to avoid seasickness is to put one eye into retirement. My family has strong Nelsonian traditions, and we have always understood that that great sailor suffered all his life from this distressing disturbance. Does anyone know whether it was less prominent after he lost an eye off Corsica in 1794? But I don't suppose he thought of blocking the contralateral ear, as my colleague recommends. Talking of Nelson, your readers might like to know my personal preference in remedies: I take three grains of phenobarbitone, wrap myself in a blanket, lie down, block both ears, close both eyes, and will the vessel to founder.

Letters to the Editor

PATHOLOGY IN THE NATIONAL HEALTH SERVICE

SIR,—Since its foundation twenty-one years ago the Association of Clinical Pathologists has kept a close watch on the development of the nation's service in clinical pathology, and it may claim to have played some part in shaping it. As officers of the association we should like to assure Dr. Coghill, Dr. Spence, and Mr. Stern that there is no project on the part of anyone to organise "hospital pathology separately from the rest of the professional hospital services." Such a step would, as they rightly point out, inevitably divorce clinical medicine from pathology; and it would be directly contrary to the policy of our association which would have offered to it the most vigorous opposition: fortunately we know that no separation of clinical (which includes hospital) pathology from clinical medicine is in contemplation. We are satisfied that the service in clinical pathology will be developed "as an integral part" of the national hospital service, and further that it will be so developed in close consultation with the pathologists concerned.

So far as hospital pathology is concerned Dr. Coghill and his associates are barking up the wrong tree.

S. C. DYKE
Chairman of Council.
W. H. MCMENEMEY
Secretary, Association of Clinical Pathologists.

HYPERTENSION AND HEREDITY

SIR,—Your interesting annotation of Dec. 6 prompts me to add a few historical facts. The conception of hypertension as a hereditary disease is old. Seventy years ago—that is in the decade preceding von Basch's (1887) introduction of his sphygmomanometer into clinical use—Broadbent, and later Huchard,[1] who was the first to differentiate between two distinct types of hypertension which he termed *artérioscléreux blancs* and *artérioscléreux rouges*, mentioned heredity as the most important ætiological factor. J. Pal (1905) in his *Gefässkrisen* considered hypertension as a "family disease." Alvarez[2] and Vaquez and Leconte[3] took the same view, and Volhard who stressed the point in a paper published by his co-worker John (1913) used—as I well remember from the time I was his assistant in the early 'twenties—to teach his students that it is up to the family doctor to fill the gap in our knowledge about the ætiology of essential hypertension.

Genealogical charts can be traced back to 1899, when Pel[4] published a table of four generations with "chronic nephritis"; this was reproduced in Volhard's monograph[5] which contains family trees covering four generations and gives blood-pressure readings for the last two. Statistical data were given by O'Hare, Walker, and Vickers,[6] who examined the family history of 300 cases of hypertension, with a positive history of vascular disease in 68%, and by Wiechmann and Paal,[7] who in 500 cases found such a history in 38%. But these and other statistics based on circumstantial evidence are not conclusive, since cerebral hæmorrhage and coronary thrombosis are not necessarily connected with high blood-pressure.

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[1] See *J Physiol.* Oct 15.

1. Huchard, H. Traité clinique des maladies du cœur, Paris, 1899, vol. I, p. 51.
2. Alvarez, W. C. *Arch. intern. Med.* 1920, 26, 381.
3. Cited by L. Pellissier, L'hypertension artérielle solitaire, Paris, 1927, p. 97.
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6. O'Hare, J. P., Walker, W. G., Vickers, M. C. *J. Amer. med. Ass.* 1924, 83, 27.
7. Wiechmann, E., Paal, H. *Dtsch. Arch. klin. Med.* 1927, 154, 287.
8. Hahn, L. *Zbl. inn. Med.* 1924, no. 46, p. 946; *Ibid*, 1925, no. 1, p. 1; no. 32, p. 738.

In England Now

A Running Commentary by Peripatetic Correspondents

As soon as Siva appears on the scene, at the Indian Exhibition,[1] stone and bronze begin to dance; they can hardly do less, for he is the Lord of the Dance, the emblem of cosmic rhythm. Symbolic additional arms, weaving into the light-hearted pattern, astound the unaccustomed eye only for a moment; and gods and godlings crowd together, supple as van Gogh's fir tree, until every group seems rustling with movement, or rushing up in flame. How strangely quiet, after this, are the rooms of little brilliant pictures, where flowers enamel the ground and a blue Krishna sports with the milkmaids. They are as bright and vivid as pictures in a missal—

> . . . "Where all is smaller than a wren,
> But has high towers, meteors, and men,
> And suns and spouting whales."

Whales, indeed, are not to be seen, but there are fawns and hounds and horses, and a Persian richness of flowers and trees and shining silks.

* * *

An exhumation I attended a few weeks ago was almost a jolly occasion. Our proceedings started with an excellent cup of coffee and a welcoming smile from a Sister of Charity dressed in flowing black except for her white wimple and a large dangling wooden rosary at her waist. Two of my colleagues were also present—the local medical officer of health, bearing a Home Office exhumation order, and a physician from a neighbouring town, who, like myself, had consented to act as an official medical witness. The morning sun shone into the anteroom while we speculated quietly about our part in the coming ceremony, which had just begun with the chanting of the *Veni Creator* in the adjacent chapel.

Fifty years ago the foundress of the Order, after a saintly life, had died and been interred in a lead coffin in a deep vault beneath the wooden floor of the little church. Convinced of her outstanding sanctity, the community had applied to the Holy See for official inquiries to be made, hoping that these would lead to her beatification. I don't know much about the details except that these inquiries are thorough beyond belief.

First you dig up the body. This had just been done by a small group of blue-overalled workmen, who had torn up the floor, opened the vault, and raised a grimy leaden shell up to floor level and left it by the side of the hole. Seated on a chair in the middle of the little nave was the Reverend Abbot of an adjacent monastery with three or four monks in Benedictine habits, one of whom was the postulator, pressing the cause and acting as master of ceremonies for the occasion. Along one side of the chapel sat a line of nuns of the Order, all Reverend Mothers of branches of the community, some of whom had come half-way across the world to be present. We were given seats opposite the sisters, about three feet from the coffin, around which stood the six workmen. A long trestle table with a heap of rosaries and sacred emblems at one end took up much of the space, and in the background the good nuns had thoughtfully provided several hand basins, hot water, and a large bottle of 'Dettol.'

The Abbot rose and held up a document from the ecclesiastical authorities, the large stone of his finger ring making a touch of colour against the sombre black of his companions. The paper was read, authorising the exhumation and examination of the body, provided that no other bodies were disturbed and that all the process should conform with the laws of the civil authority. Here he turned to the M.O.H. and asked if all was in order to proceed. Receiving an affirmative answer Holy Church got down to serious business. One by one, with their right hands touching a large copy of the Gospels placed in the foreground, the small group of priests bound themselves by a formidable and comprehensive oath to give nothing but true and honest testimony of all that should be seen or found. Then two sisters from the end of the line came forward to be sworn and questioned by the Abbot. They agreed that they had witnessed the interment and that to the best of their knowledge the body had lain there undisturbed for fifty years. Then the chaplain pronounced the solemn curse of excommunication on any person who should, from whatever pious motive, disturb, add to, or remove anything from the coffin about to be opened. Lastly every one of the workmen and we ourselves were sworn in like manner. By this time I felt rather like the Jackdaw of Rheims; and we all know what happened to him.

The foreman of the attendants began work on the shell, introducing the point of a clasp knife into the edge of the lead lid and gently tapping the blade along the whole length of the side to work his way round to the starting-point. He was followed by two of his mates with screwdrivers who gently levered up the small nails securing the lead edges to the wood. The air of expectancy throughout the assembly could almost be felt.

The Roman Catholic Church is not easily persuaded to make new Saints, and first demands overwhelming evidence of their sanctity. I believe that among other things at least two major miracles connected with the Saint must be cited, and the evidence must be faultless and convincing. Later a very sceptical gentleman is briefed as Devil's Advocate and instructed to tear the evidence to shreds. Complete absence of corruption many years after death (embalming and the like being excluded) is a good start, and no doubt many hopeful hearts awaited something of the kind here. It has apparently occurred a good many times in the past. Still we, as doctors and medical sceptics (not to mention our oaths), had no intention of being deceived in any matters to come.

At last the outer lid was prized up and the inner wooden shell revealed with a damp white mould streaking its outer surface. The workmen gently lifted the heavy lid and laid it aside while the foreman easily levered up the light covering of the inner shell lying in a set of grooves. As witnesses we then rose to examine the contents.

Clothed in her black habit and scapular, a small body lay supine, the hands clasping a rosary and a withered spray of flowers, with a faded piece of paper, almost completely decomposed but bearing the faint handwriting of her solemn vows made a hundred years before, between her fingers. From some fault in sealing at the time of burial the coffin was not entirely airtight, and we found the body and outer clothes sodden with moisture. The lining of the shell, the outer clothing, and even the black felt slippers were intact, but the stockings and body covering had almost entirely rotted away. As a whole the body and limbs had retained their normal shape, but the tissues covered by clothes had become converted into adipocere of a white and almost granular consistency. The uncovered face and hands were shrunken and mummified to a brown colour, with the features unrecognisable but the finger-nails intact, though they became detached at a gentle touch.

The quiet voice of the postulator adjured us to make as thorough an examination as possible and to give an exact account of the condition of the body and all the limbs. I called to two of the sisters to free the heavy leather girdle and expose the rest of the body so that I could examine it while my physician colleague took notes. Then we adjourned to the trestle table to wash our hands. A nun found us a typewriter and carbon papers, and my colleague and I composed a joint report under the scrutiny of the M.O.H.

Meanwhile, the long file of nuns passed round the shell to take a last look at their foundress and to touch the exposed body with rosaries and crucifixes. The Abbot and his attendant clergy sat and watched the opened coffin till, after a formal question as to whether we wished to make any further examination, the order was given to reseal the leaden lid. We read, checked, and signed four copies of our detailed report and handed them to the postulator, who thanked us heartily for our help and then casually asked us if we had noticed anything unusual about the body, having regard to all the circumstances. We could only find him one sentence in our report which said: "There was a remarkable absence of odour when the coffin lid was raised." And that, with the body a mass of adipocere, dripping wet clothes, and obvious access to moulds, we both thought at least slightly unusual.

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[1] The "Exhibition of Art, chiefly from the Dominions of India and Pakistan" at the Royal Academy of Arts is open until Feb. 29, 1948; weekdays 10 A.M. to 7 P.M., Sundays 2–7 P.M.

* * *

It was somewhat of a shock, though a pleasant one, to change from our austere British food to the full, nay surplus, diet of America. At first I ate freely and put on 7 lb., but I soon found that I had to limit my intake if I wished to feel at my best. One's constitution undoubtedly accommodates itself to austerity.

Two points about the meals struck me as noteworthy—the constant presence of iced water and the usual absence of wine at table. The glass of iced water is served to each guest at every meal—breakfast, lunch, tea, dinner—before anything else is brought. After a time one gets to like it, though it does seem out of place when brought with a pot of hot tea. Once when I asked my hostess why it was always served she answered, "Well, we should not consider the table properly laid unless each person had it." Whether it is a good or bad thing for the stomach is not for me to say; an experienced physician thought it was harmful, but this may have been a case of sour grapes. It is the custom to drink cocktails—definitely in the plural—before the meal; but as a rule water, iced of course, was the only drink during the meal. Since I happen to be a teetotaller this was quite convenient.

* * *

Once upon a time, as you will remember, there was a princess who had stepmother trouble. Her eleven brothers were turned into swans and she got carried off and married to a king. She used to leave his bed (it says that in the book) to collect nettles from the churchyard and to weave them into coats of mail, specific cures for those who are swans by day. She was about to be burned as a witch when it all came right, all but the eleventh brother's arm which remained a wing. You remember? Hans Andersen assures us that the diagnosis of being a witch rested on her refusal to speak and her going to the churchyard; but I doubt if he got the case-history right. How was he to know about Feldberg, Anrep, and their colleagues?[1] It is only too obvious now. The woman was pregnant, the nettles planned to do their stuff with acetylcholine, histamine, and something, but she had a high histaminolytic index and so although she felt the pain she didn't get nettle-rash. That's why they thought she was a witch; probably Andersen thought the churchyard story had better sales-value.

It has taken me forty years to make the diagnosis of pregnancy in this case. Is that in time for those who live happily ever after?

* * *

She was one of the cases in which the formidable battery of psycho- and physico-therapies of modern psychiatry had failed. Over the weekend at home she smashed all her crockery and put most of her clothes into the fire. Then somebody remembered that a gynæcologist had suspected gland trouble because of the faun-like hirsutes she had from the belt downwards. The big gun of endocrinology was to come up all the way from London and matron was told to get the patient prepared for examination. After the experts had put their heads together and the gynæcologist had pleaded his case for virilism, we stood around the bed to see the evidence. I wish I could describe his face (and ours) when it was found completely removed, shaved off by our well-trained and zealous matron.

* * *

My peripatetic friend has suggested (Dec. 13) that the surest way to avoid seasickness is to put one eye into retirement. My family has strong Nelsonian traditions, and we have always understood that that great sailor suffered all his life from this distressing disturbance. Does anyone know whether it was less prominent after he lost an eye off Corsica in 1794? But I don't suppose he thought of blocking the contralateral ear, as my colleague recommends. Talking of Nelson, your readers might like to know my personal preference in remedies: I take three grains of phenobarbitone, wrap myself in a blanket, lie down, block both ears, close both eyes, and will the vessel to founder.

Letters to the Editor

PATHOLOGY IN THE NATIONAL HEALTH SERVICE

SIR,—Since its foundation twenty-one years ago the Association of Clinical Pathologists has kept a close watch on the development of the nation's service in clinical pathology, and it may claim to have played some part in shaping it. As officers of the association we should like to assure Dr. Coghill, Dr. Spence, and Mr. Stern that there is no project on the part of anyone to organise "hospital pathology separately from the rest of the professional hospital services." Such a step would, as they rightly point out, inevitably divorce clinical medicine from pathology; and it would be directly contrary to the policy of our association which would have offered to it the most vigorous opposition: fortunately we know that no separation of clinical (which includes hospital) pathology from clinical medicine is in contemplation. We are satisfied that the service in clinical pathology will be developed "as an integral part" of the national hospital service, and further that it will be so developed in close consultation with the pathologists concerned.

So far as hospital pathology is concerned Dr. Coghill and his associates are barking up the wrong tree.

S. C. DYKE
Chairman of Council.
W. H. MCMENEMEY
Secretary, Association of Clinical Pathologists.

HYPERTENSION AND HEREDITY

SIR,—Your interesting annotation of Dec. 6 prompts me to add a few historical facts. The conception of hypertension as a hereditary disease is old. Seventy years ago—that is in the decade preceding von Basch's (1887) introduction of his sphygmomanometer into clinical use—Broadbent, and later Huchard,[1] who was the first to differentiate between two distinct types of hypertension which he termed *artériosclércux blancs* and *artério-sclércux rouges*, mentioned heredity as the most important ætiological factor. J. Pal (1905) in his *Gefässkrisen* considered hypertension as a "family disease." Alvarez[2] and Vaquez and Leconte[3] took the same view, and Volhard who stressed the point in a paper published by his co-worker John (1913) used—as I well remember from the time I was his assistant in the early 'twenties—to teach his students that it is up to the family doctor to fill the gap in our knowledge about the ætiology of essential hypertension.

Genealogical charts can be traced back to 1899, when Pel[4] published a table of four generations with "chronic nephritis"; this was reproduced in Volhard's monograph[5] which contains family trees covering four generations and gives blood-pressure readings for the last two. Statistical data were given by O'Hare, Walker, and Vickers,[6] who examined the family history of 300 cases of hypertension, with a positive history of vascular disease in 68%, and by Wiechmann and Paal,[7] who in 500 cases found such a history in 38%. But these and other statistics based on circumstantial evidence are not conclusive, since cerebral hæmorrhage and coronary thrombosis are not necessarily connected with high blood-pressure.

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[1] See J. Physiol. Oct. 15.

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[1] Huchard, H. Traité clinique des maladies du cœur, Paris, 1899, vol. I, p. 51.
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[7] Wiechmann, E., Paal, H. *Dtsch. Arch. klin. Med.* 1927, 154, 287.
[8] Hahn, L. *Zbl. inn. Med.* 1924, no. 46, p. 946; *Ibid.* 1925, no. 1, p. 1; no. 32, p. 738.

characteristic of the first stage of essential hypertension, then termed by me "chronic intermittent hypertension." These oscillations occur quite independently of the absolute height of the systolic blood-pressure and are present even if symptoms of angioneurosis—the equivalent of essential hypertension in the young—are slight or absent.

Nuneaton. L. HAHN.

TEACHING APPOINTMENTS

SIR,—Dr. Black (Dec. 6) has completely missed the main point of my letter on Nov. 22. I had no desire to belittle the contribution to medicine of laboratory research-workers. The issue is an entirely different one. It is that people who have achieved success as laboratory workers, but who have had extremely little clinical experience, are being given appointments as teachers of clinical medicine. In my opinion—and I am supported by many others—this is wrong, because it is unfair both to clinicians, who have spent years improving their clinical knowledge, and to the great bulk of students.

The position has arisen in large measure from the fact that in the past research-workers were underpaid. With more money, but not enough to employ as teachers both trained clinicians and laboratory research-workers, many of the universities have appointed the latter as more likely to bring fame and honour to the schools; so we may see a university appoint a biochemist as a professor of clinical medicine, and a bacteriologist as the senior lecturer. I feel sure that if that great teacher and clinician, William Osler, were alive and were to apply for the post of senior lecturer in clinical medicine, he would at many schools be turned down in favour of a young fellow who has published some papers on the aluminium content of fluids removed from the nuciform sac.

I am not asking, as Dr. Black suggests, university authorities "to dismiss research ability from their consideration in appointing senior staff." What I am asking is that when they appoint professors and senior lecturers in clinical medicine, clinical experience and ability and an aptitude for teaching, should be the major considerations.

That distinguished teacher and clinician, Dr. F. M. R. Walshe, in his recent address to medical students (*Lancet*, Dec. 6, p. 817), has answered the points raised by Dr. Black. The objects of a teaching hospital are, says Walshe, "to advance knowledge, to train doctors, and to set an example of practice." Further, he points out, clinicians as well as laboratory workers have contributed to this advancement. Doctors cannot "set an example of practice" if they themselves are not good clinicians; and good clinicians are not made in the laboratory. M.R.C.P.

COAGULATION FACTORS

SIR,—I cannot quite agree with Professor Seegers (Nov. 1), who, holding "your leading article on Sept. 13 to be misleading and inaccurate," says: "The account given above records who established these facts."

As I pointed out in my letter earlier this year (June 7), it was Dr. Owren who first proved definitely the existence of at least one more coagulation factor. This factor V, as Owren calls it, is different from prothrombin but absolutely necessary for the conversion of this substance to thrombin by thromboplastin and calcium. This discovery was made in 1943, and a preliminary report of the isolation and properties of the new factor was read before the meeting of the Norwegian Academy of Science in Oslo on Nov. 10, 1944.[1] In this connexion I would recall that Norway at that time was still under German occupation, and that Dr. Owren therefore had no opportunity to publish his findings in an international journal to which other workers in this field had access. Conditions in Norway during and immediately after the war are also to be blamed for the delayed publication of Owren's monograph on the subject, which appeared in 1947.[2] On the other hand, many of the British and American journals were not available in Norway for a long time. Thus, the paper of Professor Quick on prothrombin A and B, published in 1943,[3] did not reach Norway until last year.

What I want to make clear is that the work of Owren has been carried out quite independently, and that it is not, as one might believe on reading Professor Seegers's letter, a mere confirmation of the findings of other investigators. The paper of Fantl and Nance[4] was published at a time when Dr. Owren had given a series of lectures about his factor V in Norway,[5] Denmark,[6] and Sweden[7]; and a few days after its appearance he also lectured in London[8] and Oxford.[9]

The work of Owren brings for the first time into harmony several of the earlier contradictory observations, by showing that the "pure" preparations of coagulation factors used by previous investigators were all contaminated with factor V to a greater or less extent. Factor V is not an accelerator in the strict sense of the word, but a true coagulation factor, for no coagulation takes place (in vitro) in the absence of factor V. Whether factor V itself is able to bring about the transformation of prothrombin into thrombin through the action of thromboplastin and calcium, or whether, as Owren thinks, it first has to be converted into factor VI, which then would be the real coagulation factor, remains an open question. As far as I can see, the prothrombin B of Quick[3] is identical with what Seegers and Owren more correctly call prothrombin, while prothrombin A and the accelerator substance of Fantl and Nance and of Ware, Guest, and Seegers[10] is identical with factor V.

I hope that these remarks may help to remove some of the mist that seems to make it difficult to discover "who established these facts."

Central Laboratory, Aker Municipal
Hospital, Oslo, Norway. KARL CLOSS.

BREACH OF CONFIDENCE?

SIR,—I cannot help thinking that the profession is unaware in how many ways breach of medical traditions is occasioned by the procedure adopted by the Ministry of Food in enlisting the support of their so-called "medical advisers" to override medical certificates which medical practitioners are required to send to the Ministry of Food when requesting allowance of special invalid diets. The procedure was described very fully in an important debate (*Hansard*, Jan. 22, 1947), and it was condemned from all parts of the House.

The doctor is required to submit a medical certificate, describing in great detail the character and prognosis of the illness for which concession is asked. Unless the illness fits into a schedule of diseases furnished by the medical advisors as automatically deserving priorities—in which case the concession is automatically made—the Minister of Food's clerks, on their own responsibility, select that one of the medical advisers whom they consider proper to approach in the case. If such a position arises, a bunch of civil servants, with no medical knowledge or experience, presume to sit in judgment upon certificates furnished by registered medical practitioners in actual charge of the patients concerned, and these certificates may be overruled by some unnamed medical practitioner who has had no contact with the patient, who may have had no experience of the specific illness, and who certainly has no knowledge whatever of the individual circumstances of the case.

I submit, Sir, that this procedure involves the negation of well-established rules of professional conduct, some based on immemorial sanctions.

1. A medical certificate, which should enjoy the fullest protection of professional secrecy, is submitted without the authority of the patient to lay inspection, which may in certain circumstances involve publication even more wide than that of the Ministry's clerks. I have before me a letter from a distinguished medical practitioner, who found that

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[1] Owren, P. A. Aarbok for Det Norske Videnskapsakademi, 1944, p. 21.

[2] Owren, P. A. Coagulation of Blood: Investigations on a New Clotting Factor. *Acta med. scand.* 1947, suppl. 194.

[3] Quick, A. J. *Amer. J. Physiol.* 1943, 140, 212.

[4] Fantl, P., Nance, M. *Nature, Lond.* 1946, 158, 708.

[5] Meeting of Norw. Acad. Sci., Oslo, Nov. 10, 1944; Norw. Med. Soc., Oslo, June 6, 1945; Med. Physiol. Ass., Oslo, Nov. 1, 1946.

[6] Meeting of Jutland Med. Soc., Aarhus, April 26, 1946.

[7] Scand. Congr. Int. Med., Gothenburg, June 28, 1946.

[8] London Univ., Nov. 22, 1946.

[9] Radcliffe Infirmary, Oxford, Nov. 28, 1946.

[10] Ware, A. G., Guest, M. M., Seegers, W. H. *J. biol. Chem.* 1947, 169, 231; *Science*, 1947, 106, 41.

his certificate, sent to the Minister. in which he had expressed the opinion that the patient would probably die had been communicated to a food office in the district where the practitioner practised, and he learned that certain district nurses were discussing the probability of this patient's death, having obtained this information via the local food office. At the recent session of the General Medical Council the chief medical officer to an Irish insurance company was adjudged "guilty of infamous conduct in a professional respect" for having sought from a registered medical practitioner information regarding his patient, who had not authorised such disclosure. The chairman, in giving judgment, said that the Council "took a very serious view of any action which might impair the patient's trust in the confidential nature of any information obtained by a medical attendant about his patient."

2 The medical advisers, or some of them. are offending against the salutary rule that a medical certificate should not be given without proper medical examination of the patient immediately prior to the issue of the certificate. When the General Medical Council met last month a medical practitioner was severely censured, and narrowly escaped removal of his name from the Register, because he had given certificates which sought out of compassion to prolong for a short time the leave of a serving soldier whose father had been under the practitioner's medical care two or three weeks previously, but not immediately before the certificates were issued. These certificates declared that the father was ill enough to require his son's aid.

3. Modern medicine deprecates a philosophy which regards diseases as entities. The wiser conception is surely that of a sick person who shows symptoms which, for convenience, may be grouped as a syndrome, but exhibiting individual differences which require individual treatment. It is the flouting of such a conception which fosters the wicked racketeering by the patent-medicine trade, with its lists of diseases, each calling for such-and-such a nostrum.

I submit that it is in the highest degree regrettable that the "medical advisers" who enjoy the prestige of membership of the Medical Research Council should lend their support to practices so repugnant to medical science and to medical ethics.

House of Commons. E. GRAHAM-LITTLE.

A SIMPLIFIED ANATOMICAL NOMENCLATURE

SIR,—Some day within the next decade or two the medical course will have to be extended considerably unless the annual growth of the syllabus is curtailed. There is one sphere in which this could be done without loss and even with profit—namely, anatomy. For instance, the index of *Gray's Anatomy* lists about 380 named arteries and a corresponding number of veins. I wish to put forward a scheme for reducing this number considerably while at the same time making it easier to picture the course of a vessel in relation to the whole body.

The adult arterial system consists essentially of a dorsal aorta with a bifurcation at each end. Let us term the two cranial branches *directly* the right and left subclavians, and let us say that they extend down to the elbow, having passed through the axillary fossa and curved round to the front of the arm when the palm is uppermost. At the lower border of the elbow-joint they bifurcate to give us the anterior and posterior subclavian branches, while from the posterior branch just after its origin there arises the anterior interosseous which in turn gives off the posterior interosseous. The anterior subclavian continues down to supply the thumb and by the palmar ramification an anastomosis is formed between anterior and posterior subclavians. That is a comprehensive and easily retained picture: the subclavian arising from the aortic arch and reaching to the finger tips.

Similarly the caudal fork can be dealt with. To correspond as closely as possible with the upper part of the body let us call the single vessel that reaches from the fourth lumbar vertebra to the back of the knee the femoral artery. Then the aorta divides into the right and left femoral arteries from which are given off the right and left iliacs. The femorals pass down through the femoral triangle and run down in an elongated spiral, medially directed, to reach the popliteal fossa at the back of the knee-joint, after which they divide into anterior and posterior branches, the posterior in turn giving off the peroneal. At the foot the posterior branch divides into lateral and medial plantar, ramifying round the toes where an anastomosis is effected with the arcuate ramification of the anterior femoral artery.

Admittedly this is only the barest outline, and an extensive filling-in is needed; but, even so, a person with no special knowledge of anatomy could draw an accurate diagram of the major vessels as the description was read to him. The same treatment can be applied to many of the branch arteries. Why, for instance, complicate the internal iliac by naming its divisions anterior and posterior rami which become the inferior and superior gluteal? Why not call them by the name gluteal at once?

Surely the very naming of an artery "innominate" shows that the nomenclature had defeat within itself, even while developing towards its present complexity.

Trinity College, Dublin. MICHAEL DILLON.

⁂ Anatomical nomenclature badly needs simplifying, and our correspondent's proposals are attractive. But extending names to cover such long tracts of vessels and nerves would make it difficult to specify particular parts of the tracts. It would also create confusion for comparative anatomists unless it were applied throughout the vertebrate phylum.—ED. L.

DIABETIC ARTHROPATHY

SIR,—In his letter of Nov. 15 Dr. Shore described a Charcot knee-joint in a diabetic. Several similar cases have recently been reported, but in most of these the ankle-joint was affected. Rundles [1] describes one case with extensive disruption of the tarsometatarsal joint, with loss of joint surfaces and many loose bodies. Fourteen diabetic cases seen at the New England Deaconess Hospital had suffered painless destruction of joints of the tarsus during the previous few years [2]; and Jordan [3] gives details of a woman with diabetes of 14 years' duration who developed a typical painless Charcot joint of the ankle; in addition to chronic osteomyelitis of the foot of an unusual type and without obvious ætiology. Later he [4] reported two further cases of diabetes—one with a neuropathic ankle-joint, and the other with changes in the lumbar vertebræ. As Dr. Shore mentioned, Foster and Bassett [5] have published the histories of two cases of severe, poorly regulated diabetes in young men, complicated by a Charcot ankle-joint.

The following case at present under observation in our diabetic clinic seems worth describing.

A clerk, aged 62, was first seen in January, 1939, with a four weeks' history of thirst, polyuria, and loss of weight. At that time no abnormal signs were discovered in the central nervous system; he was treated by diet alone, and his symptoms rapidly subsided. When complaining of chronic pains in his limbs in June, 1942, the knee and ankle jerks were found to be absent, and treatment with insulin was started. About a year later, because of diarrhœa the dose of insulin had to be reduced. In November, 1943, he developed acute iridocyclitis, and in 1944 he was treated for trophic ulcerations on the right leg; there were then signs of peripheral neuritis: the Wassermann reaction (W.R.) was negative. During 1945 he complained of giddiness and deafness and was found at times to have a fine nystagmus which, it was suggested after full examination, was due to toxic neuritis of the right auditory nerve. The blood W.R. was again negative. The cerebrospinal fluid (C.S.F.) contained no cells and 50 mg. of protein per 100 ml.; the test for excess globulin was negative as was the W.R.

In October, 1946, without antecedent trauma, the patient suddenly began to have severe pain in his left knee which was swollen and hot, though only osteoarthritis with some osteoporosis was revealed by radiography. Two months later, however, further X-ray films showed a pathological fracture at the upper and inner border of the left tibia, with marked bone sclerosis and new bone formation. Although then

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1. Rundles, R. W. *Medicine, Baltimore*, 1945, 24, 111.
2. Bailey, C. C., Root, H. F. *J. clin. Invest.* 1942, 21, 649.
3. Jordan, W. R. *Arch. intern. Med.* 1936, 57, 307.
4. Jordan, W. R. *Sth. med. J.* 1943, 36, 45.
5. Foster, D. B., Bassett, R. C. *Arch. Neurol. Psychiat.* 1947, 57, 173.

tender, the joint has since become painless, but has remained grossly swollen; and it is now completely disorganised. Full examination at that time revealed small irregular pupils irresponsive to light and convergence; almost complete loss of vision due to bilateral cataracts; loss of all tendon-reflexes but brisk abdominal reflexes; and diminished cutaneous sensibility in "glove-and-stocking" areas. Ataxia and incoördination were not pronounced; there was generalised muscular wasting of the legs with loss of power, but no gross hypotonia or muscle tenderness. The C.S.F. examination was repeated with a similar result except that the globulin reaction was positive; but the colloidal-gold curve was 0000000000. The W.R. was again negative in both blood and C.S.F.

It has been suggested that this in fact is a case of tabes dorsalis complicated by diabetes; but the loss of pupil reaction can be explained on the history of diabetic iritis and keratitis, and in the absence of historical, clinical, or serological evidence of syphilis, a diagnosis of diabetic arthropathy appears justifiable.

My thanks are due to Dr. H. K. Goadby, who is in charge of St. Thomas's Hospital diabetic clinic, for permission to publish the above case.

St. Thomas's Hospital, London, S.E.1. G. E. SPEAR
Medical Registrar.

PENICILLIN BY MOUTH

SIR,—I read with great interest the excellent article by Dr. Stewart and Dr. May in the issue of Dec. 13. This investigation has been wanted ever since the introduction of penicillin therapy. I wish to add a rather modest contribution to their findings.

I have used penicillin by mouth for the last twelve months in chronic wards. I was prompted to oral administration of penicillin by: (1) the natural aversion of elderly patients to needling; (2) the effectiveness of this route in children: and (3) American publications. I have used it in various conditions such as urinary infections, respiratory infections, bedsores, and skin infections; at first I was surprised by its beneficial effect but later was surprised if it failed. I ascribed the failures to penicillin-insensitive organisms and to the feeble circulation in greatly debilitated chronically ill or very old people. No doubt some of my failures must have been "poor absorbers"; and possibly the dosage was inadequate.

I gave 500,000 units twice daily: the first dose approximately two hours after breakfast, and the second two hours after tea. I used both yellow and white penicillin diluted in 10 ml. of distilled water. The complications I met were stomatitis during penicillin treatment in 2 cases, and in 1 case an urticarial rash with giant weals ten days after cessation of treatment. However, this last patient was treated concurrently with sulphadiazine, and one and three days before the appearance of the rash he had two sittings of ultraviolet-light treatment. Thus, I rather hesitate to blame the penicillin for the rash.

Joyce Green Hospital, Dartford. E. GANCZ.

VIABILITY OF TREPONEMA PALLIDUM

SIR,—Readers of Dr. Lumsden's article on the above subject, in your issue of Dec. 6, may be interested in an experiment which I carried out in 1933, in collaboration with Dr. McNabb, Dr. Matthews, and Dr. McClure of the Toronto Public Health Laboratory. This was reported in the *Bulletin of Hygiene* [1] (in reviewing a paper by these authors [2] on a combined outfit for collection, in capillary tubes, of specimens in the field); it was also mentioned in a letter to THE LANCET.[3] Briefly, the Canadian workers sent me six outfits for collection of specimens for dark-ground examination, and these were filled in the V.D. department, St. Thomas's Hospital. On arrival in Toronto, the contained specimens of *Treponema pallidum* were found to be still motile. Three of the tubes were returned to me with another collected in Toronto. The contained *T. pallida* were still motile, and the preparations of them, each now between slide and cover-slip luted with wax, were returned to Toronto. They were reported to be still motile there and were returned to me. In London motility continued for four days after receipt. Thus three of the specimens crossed the Atlantic four times and the fourth three times; the intervals from the taking of the specimens to final disappearance of motility were, 84, 75, 72, and 50 days. The persistence of motility after the third journey was confirmed by the Toronto workers and after the fourth by those in my clinic.

London, S.W.1. L. W. HARRISON.

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[1] 1934, 9, 125.

[2] McNabb, A. L., Matthews, G., McClure, A. D. *Canad. Publ. Hlth J.* 1933, 24, 405.

[3] Harrison, L. W. *Lancet*, 1934, i, 156.

BLOOD SAMPLES FROM INFANTS

SIR,—Blood may be collected from infants under 12–18 months of age from the anterior fontanelle, the heel, the jugular vein, or the great toe. To obtain 5–10 c.cm for serological tests is not always as easy as in an adult. Recently I had occasion to take samples from a series of 150 infants and found the great toe a convenient site to use.

The patient's right leg (if the doctor is right-handed) is bathed for ten minutes in warm water; it is dried and a crêpe bandage firmly applied from the ankle to above the knee. The nurse then holds the baby so that its right foot rests between the operator's knees, while the foot, after sterilisation with methylated ether, is firmly grasped in the left hand and the great toe steadied. Using a Graefe's cataract knife, an incision about $^1/_8$ in. long and $^1/_{10}$ in. deep is made on the internal aspect of the toe parallel with its long axis. The crêpe bandage is relaxed and the toe slowly rotated clockwise through an angle of 45° with a firm grip. The grip is then relaxed and the toe released. As this movement is repeated, the incision automatically opens and a wave of blood flows down the inside of the foot and can be collected to the desired amount.

If the foot is held firmly and the incision made rapidly it is surprising how little evidence of pain is registered by the patient—little girls especially being apparently more curious than hurt by the whole procedure. When sufficient blood has been collected the flow is stopped by firm pressure with cotton wool for 30 sec. and a small elastic adhesive dressing applied immediately. This, in all cases, was sufficient to arrest the bleeding and secure healing by first intention.

Manchester. ANDREW V. MAGEE.

Parliament

FROM THE PRESS GALLERY

Medical Practitioners and Pharmacists Bill

ON Dec. 16 the House of Lords agreed to the Commons amendments to this Bill.

QUESTION TIME

Fowl Pest

SIR J. BARLOW asked the *Minister of Agriculture* how many cases of fowl pest there had been in each of the last six months; and what precautions were being taken to combat this disease.—Mr. T. WILLIAMS replied: The figures for June to November are 209, 112, 62, 145, 539, and 665 respectively. I have made an order prohibiting in certain circumstances the sale, movement, and gathering of live poultry in England and Wales. The importation of dead poultry from countries in which the disease exists is prohibited, and the importation of dead poultry from Europe is limited to eviscerated carcases. There has been some diminution in the spread of the disease since the beginning of this month—98 outbreaks were reported from Dec. 1 to 11, compared with 276 for the corresponding period in November.

Sir J. BARLOW: Is the Minister aware that certain expert opinion is that this disease is transmitted to poultry in the marrow of bones so that the importation of drawn poultry does not entirely meet the case?—Mr. WILLIAMS: We got all our advice from our experts and we act accordingly.

THE title and status of emeritus professor of medicine of the University of Athens has been awarded to Dr. A. P. Cawadias by royal Hellenic decree.

THE Royal Society has appointed Dr. G. S. Dawes, of Worcester College, Oxford, to a Foulerton research fellowship in medicine.

Obituary

BERNARD SPILSBURY

KT., M.A., B.M. OXFD, F.R.C.P.

ENGLISH forensic medicine has lost a commanding figure in the death of Sir Bernard Spilsbury on Dec. 17 at the age of 70. For thirty years he had stood alone and unchallenged as our outstanding medicolegal expert, achieving both public and academic distinction and earning by his conscientious application and integrity the high regard of his own critical profession.

Educated at University College School, Manchester Grammar School, Magdalen College, Oxford, and St. Mary's Hospital, he was trained in bacteriological work as a member of Sir Almroth Wright's team at St. Mary's, but towards the end of King Edward VII's reign he set out on his career as a morbid anatomist and histologist, holding posts in these branches of medicine for many years at both St. Mary's and St. Bartholomew's Hospitals, and relinquishing them only because of increasingly heavy calls on his services as a forensic expert. He had a flair for simple exposition, and his painstaking search for evidence, together with his gift for evaluation and reasonable inference, quickly proved their usefulness to the police. To these basic qualities he added an honesty of purpose and a personal integrity that was never questioned: he provided a pillar of security in the medical evidence for Crown prosecutions in crime. Once Spilsbury had made up his mind he adhered to his views inflexibly, immune alike to assault and to the blandishments of flattery. He was indeed a master of the art of plain unvarnished reasoning; and both time and the circumstantial evidence bore out his soundness in case after case from the time of Crippen to that of the bandit murdering of Antiquis.

Topical Press Agency

He achieved in turn acknowledged leadership in his profession, academic lectureships, examinerships at Oxford and London, Home Office approval, a knighthood (in 1923), fellowship of the Royal College of Physicians, and presidency of the Medico-Legal Society—all with the same apparent imperturbability and the same secret pride, unaffected yet aware of his qualities of leadership in a previously unled profession. His natural reserve was never overcome and he remained humble with his own conscience, strange and unacceptable as this may seem to those who merely saw but did not know him. His assurance in the witness-box misled the public into the belief that he had become a witness for the prosecution; but there were occasions when his prescience dissipated suspicion and freed an innocent prisoner.

Spilsbury spent many hours and much tedious work in making up his mind: he wrote elaborate notes and longhand reports. But, despite his stubborn resistance to any effort to shake his belief in what he had determined was the truth, he remained impartial and scientifically reasonable, difficult to tilt, aloof and a little cold, but prepared to accept challenge even if he did not welcome it. No practitioner worked harder; he never failed to visit the scene of a crime, town or country, day or night, and never failed to be at hand at the trial, ready to accept reason or rebut the unacceptable. Fees were of no great importance to him, and indeed his disinterest in money limited both his leisure and his material relaxations. As a lecturer he shone less brilliantly, disliking routine teaching, writing but little and lecturing even less outside his three London school appointments—St. Thomas's, University College, and the Royal Free. Retiring and outwardly frigid, he disliked visits from strangers and seemed somewhat distant to casual professional acquaintances. In reality he was a lonely man, an idealist in plan, compromising in practice, relaxing little. He overtaxed his failing health and was sadly stricken by the loss of two of his three sons, fading finally to a figure which, though it never lost respect, became too frail for this hard world. He will remain a revered figure in medicine.

HAMISH FALCONER MASSON

M.A., M.B. EDIN., F.R.C.S.E.

Dr. H. F. Masson, who died on Dec. 7 at the age of 45, was the third son of the late George Masson, J.P., of Kingussie. He was educated at Fettes College and Edinburgh University, where he took a classical M.A. in 1932, and three years later his M.B. After holding house-appointments at Preston Royal Infirmary and Kettering General Hospital he took his F.R.C.S.E. in 1930. For a time he was in practice in Dingwall before settling in South Woodford, where he had practised for the last ten years.

"Hamish Masson," writes J. B. Y., "had intellectual gifts that could have carried him to a high place amongst consultants, but he preferred general practice with its more personal human contacts. His handsome appearance and attractive personality made him a conspicuous figure in any company, but no man so gifted was ever more unassuming, or more tolerant towards his fellow men. His work made great demands upon him, and he never spared himself. In the last year his health gave some grounds for anxiety, but the end, when it came, was unexpected."

Dr. Masson, who married only eighteen months ago, leaves his widow with a young son.

DOUGLAS ARTHUR CLOUSTON McRAE

M.B. EDIN., M.R.C.P.E.

Dr. D. A. C. McRae, director of the blood-transfusion services for South-east Scotland, who died recently in Edinburgh, graduated M.B. at Edinburgh in 1938. After qualifying he held house-appointments at the Edinburgh Royal Infirmary, where he later became clinical tutor. McRae was a former president of the Royal Medical Society, and one of his contemporaries writes: "He was the most brilliant man of his year, although no academic honours came his way as an undergraduate, for his intellectual energies were spent in many and diverse channels—the Bach Society and Palestrina Club were only two of his cultural activities. A man of infinite charm, he leaves nothing but pleasant memories for those who knew him well."

HENRY COOPER

D.S.O., M.A. CAMB., M.R.C.S.

Group-Captain Henry Cooper, who died on Dec. 13, was one of the pioneers who, at the end of the 1914–18 war, were responsible for the formation of the medical service of the Royal Air-Force.

Born in 1877, the second son of John Spyvee Cooper, of Hull and Windermere, he was educated at Denstone College and Emmanuel College, Cambridge, where he took the natural sciences tripos in 1899. From Cambridge he went to the London Hospital, and after qualifying in 1904 he entered the Royal Navy. During his service in the Mediterranean he was present at the fall of Salonika, and he was in Constantinople during the Balkan war. In 1914–18 he served ashore in France and Belgium with the R.N.A.S. and armoured cars, receiving the D.S.O. and being appointed an officer of the Crown of Belgium for his distinguished and gallant conduct. With the formation of the Royal Air Force in 1918 he transferred to the new Service, and he was one of the small company under Sir Matthew Fell who started its medical branch. As may be imagined, this was a period bristling with difficulties, which provided wide opportunities for Cooper's organising abilities, inexhaustible tact, patience, and kindliness. On leaving the Air Ministry in the early days of the new Service he went to India as principal medical officer, R.A.F., whence he was posted to Iraq in a similar capacity, where he dealt competently with an epidemic of cholera. On his return to this country he was appointed P.M.O., Air Defences of Great Britain. From 1930 to 1932 he was honorary surgeon to the King.

After he retired in 1932, Cooper became clerk and registrar to the Society of Apothecaries, and the ancient hall of the society and its contents were a never-ending delight to his sense of history. When war broke out in 1939, though long past the age of recall, he volunteered for service and became P.M.O., Balloon Command, and from 1942 to 1945 he served at the Ministry of Health as assistant director of personnel in the E.M.S.

In 1906 he married Miss Grace Shone, who survives him with one daughter.

HERBERT THOMAS HERRING

O.B.E., M.B. DURH.

Dr. H. T. Herring, who died in London on Nov. 22, received his medical education at University College, London, and at Newcastle-on-Tyne. He took the Conjoint qualification and his M.B. Durh. in 1887 and he held a house-appointment at University College Hospital. Setting up in practice in Weymouth Street and later in Harley Street he followed Buckston Browne as assistant to Henry Thompson. At that time, before the advent of prostatectomy, the only method of relieving obstruction was by catheterisation, and as this had to be carried on indefinitely, asepsis was of vital importance. Herring devoted all his ingenuity to perfecting his technique, and was so successful that he was able to catheterise patients for years without producing cystitis. He published in both English and German his method of sterilising catheters, besides a considerable number of other communications based on a large urological experience. He was probably the last surgeon in this country to pass a catheter with the patient standing erect, his back pressed firmly against a velvet-covered area on the wall of the consulting-room. It is a method now forgotten, which is much simpler to use than one would imagine. The late Sir Peter Freyer once demonstrated it to an interested group at St. Peter's Hospital, and in his hands it seemed easy.

Through Sir Henry Thompson, Dr. Herring became interested in cremation, and served as honorary secretary of the Cremation Society, medical referee to the Woking crematorium, managing director of the Woking and Golders Green Crematoria, and honorary treasurer of the International Cremation Federation. In the later years of his life he set out daily from his home in Harley Street to the Cremation Society's offices in Baker Street, and in name and person he became well known to a large circle of doctors who sought the society's help.

THE LATE DR. BOLTON

Mr. F. J. M. Barrington writes: Though known best to most of his acquaintances as a physician of unusually sound judgment, the most remarkable feature of Charles Bolton's life was probably that he continued doing experimental research not only after he had a busy practice but even after he had retired from his hospital's staff. In fact he only stopped this when prevented by ill health. When he was director of the Graham research laboratories of University College Hospital medical school from 1908 to 1914, the people working there were nearly all trying to do something different, according to their interests, with the result that the possibility of any "direction" was slight. In spite of this he generally seemed to know what everyone was doing, and whether it was likely to lead to any good or not. A result of this circumstance was that he had more time for his own experiments, and in these years he probably did more than at any other time, chiefly on the production and absorption of lymph and on the healing of acute gastric ulcers. He was an exceptionally dextrous operator.

JAN MAZURKIEWICZ

Dr. J. Leyberg writes: Professor Mazurkiewicz, director of the psychiatric clinic at Warsaw University, died in Warsaw on Oct. 31. For many years president of the Polish Psychiatric Association, he was the most outstanding psychiatrist in the country. His organic approach to psychiatry was profoundly influenced by the writings of Pavlov, Sherrington, Adrian, and Hughlings Jackson, and his lectures enabled many Polish graduates to become acquainted with the British school of neurophysiology. During the German occupation he wrote a book on Evolution and Dissociation in the Central Nervous System, which is to appear shortly. His death will be sadly felt in Poland, particularly by those who had the privilege of working under his wise and friendly guidance.

Diary of the Week

DEC. 28 TO JAN. 3

Monday, 29th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
5 P.M. Mr. F. A. Williamson-Noble: Contact Lens.

Tuesday, 30th

ROYAL COLLEGE OF SURGEONS
5 P.M. Mr. A. G. Cross: Ocular Sequelæ of Head Injuries

Wednesday, 31st

ROYAL COLLEGE OF SURGEONS
5 P.M. Mr. J. D. M. Cardell: Orthoptics.

Thursday, 1st

ROYAL COLLEGE OF SURGEONS
5 P.M. Dr. John Marshall: Ophthalmology in Relation to the Throat and Nose.

Friday, 2nd

ROYAL COLLEGE OF SURGEONS
5 P.M. Mr. L. H. Savin: Ptosis.

Births, Marriages, and Deaths

BIRTHS

BUKY.—On Dec. 15, in London, the wife of Dr. W. W. Buky—a son.

CORMAC.—On Dec. 6, at Stockport, the wife of Dr. C. D. Cormac—a daughter.

DORNHORST.—On Dec. 15, in London, the wife of Dr. A. C. Dornhorst—a daughter.

DOWLING.—On Dec. 15, in London, the wife of Dr. M. A. C. Dowling—a son.

GAULD.—On Dec. 14, in London, the wife of Dr. G. O. Gauld—a son.

KENIG.—On Dec. 11, in London, the wife of Dr. M. Kenig—a son.

KING.—On Nov. 10, at Klagenfurt, Austria, the wife of Lieut. Colonel Cecil King, R.A.M.C.—a daughter.

LONGRIDGE.—On Dec. 12, at Salisbury, the wife of Dr. R. G. M Longridge—a son.

MACKAY-DICK.—On Dec. 4, at Wuppertal, Germany, the wife of Lieut.-Colonel John Mackay-Dick, R.A.M.C.—a daughter.

MACKENZIE.—On Dec. 12, in London, the wife of Dr. A. G. Mackenzie—a daughter.

NIBLOCK.—On Dec. 7, at Peshawar, Pakistan, the wife of Major W. McN. Niblock, F.R.C.S.—a son.

PRICE.—On Dec. 10, to Dr. Celia Westropp and Francis Price—twin sons.

PRITCHARD.—On Dec. 14, at Chobham, Surrey, the wife of Dr. P. M. M. Pritchard—a daughter.

WATSON.—On Dec. 10, at Devizes, the wife of Dr. R. W. Watson—a son.

WHEATE.—On Dec. 10, in London, the wife of Dr. H. W. Wheate—a son.

MARRIAGES

MURPHIE—LINDOW.—On Nov. 29, in London, Charles Ian Murphie B.M., to Elizabeth Anne Lindow.

STONE—SIMPSON.—On Dec. 13, in London, Patrick Stone, M.B., to Elisabeth Moone Simpson.

WOODYATT—PARBERY.—On Dec. 10, in London, Peter Bruce Woodyatt, M.R.C.S., to *Elaine Joan Parbery.*

DEATHS

COOPER.—On Dec. 13, in London, Henry Cooper, D.S.O., M.A. Camb., M.R.C.S., group-captain, R.A.F.

CURPHEY.—On Dec. 12, at Bath, Elizabeth Curphey, B.SC. Lond., M.R.C.S.

DOWLING.—On Dec. 15, at Preston, Lancs, Edward Dowling, B.A., M.D. R.U.I.

FINDLAY.—On Dec. 13, in Edinburgh, James Findlay, M.A., M.B. Glasg., lieut.-colonel, I.M.S. retd.,

FREETH.—On Dec. 16, Arthur Causton Freeth, M.B. Durh., aged 57.

JOHNSTON.—On Dec. 15, at Prestatyn, Francis Johnston, M.B. Glasg., aged 89.

MILLIGAN.—On Dec. 11, at Guildford, James Knowles Milligan, M.R.C.S., aged 65.

SPILSBURY.—On Dec. 17, in London, Bernard Henry Spilsbury, Kt. M.A., B.M. Oxfd, F.R.C.P.

STEWART.—On Dec. 8, at Gerrards Cross, Bucks, Rothesay Charles Stewart, M.R.C.S.

WOOLLEY.—On Dec. 16, at Hove, Jasper Maxwell Woolley, M.D. Camb., D.P.H., lieut.-colonel, I.M.S. retd.

Notes and News

THE TAVISTOCK CLINIC

LAST year the professional committee appointed to consider the rôle of the Tavistock Clinic in the post-war world, and the ways in which its work in social psychiatry might be extended, made two important decisions [1]—that the assets of the clinic should be spent on anticipated costs up to the day when it will be handed over to the Ministry under the National Health Service, and that the Institute of Human Relations should be legally separated from the clinic so that it may continue its independent work in fields not covered by the N.H.S.

The clinic and institute are organised on a practical plan: all members of the staff belong to work-groups known as units, with the coördination unit acting as a secretariat to the others. A senior member of the full-time staff, who is also on the professional committee, is responsible for one or more of these units, and these members also form the management committee of both clinic and institute. Each unit carries out projects in its own field but also contributes to training and research. At present, besides the coördination unit, there are an adult unit and a child-guidance unit. The adult unit offers to patients a consultation and counselling service, and a treatment service. Some patients require individual therapy for longer or shorter periods, but others can be helped considerably in group discussions.

The Institute of Human Relations, in a statement of aims and policy, is described as an attempt to develop a scientific institution equipped to respond to practical social demands such as problems of industrial morale, in new communities and in many aspects of education and family life. It undertakes work arising out of specific requests for help, and gives full technical collaboration to all concerned with a particular problem—assuming joint responsibility in working things out to a satisfactory finish, rather than giving an "expert opinion" and retiring from the field. Like the clinic, the institute is a federation of units, and these cover industrial projects, social and cultural projects, and educational projects: a fourth unit is responsible for publications, among which is a quarterly journal, *Human Relations*. The research programme includes accurate assessment of work done, and the development of new methods, especially with group technique and the study of "group dynamics." Group treatment of psychiatric patients, group discussion methods for education and training, and group techniques for such special purposes as leadership training and personnel selection are being studied. It is also hoped to develop new means of appraising personality and intelligence, and of treating speech disorders, and to study the causes, prevention, and treatment of delinquency.

WORK FOR THE BLIND

THE wide scope of the work of the National Institute for the Blind shows how much generous sympathy blindness excites, and to what practical use it can be put. The report for 1946–47 says that, besides an educational programme for children from birth to school-leaving age, the institute has two schools for adults—a school of physiotherapy and a school of telephony. At the school of physiotherapy, Great Portland Street, 40 students are in training, both blind civilians and ex-Service men and women, and there are increasing numbers of applications for places from the Dominions. During the year, 21 new trainees entered the school of telephony at Bridgnorth.

The Queen Elizabeth Homes of Recovery—America Lodge, Torquay, and Long Meadow at Goring-on-Thames—are centres for the training and reinstatement of the newly blind. Newcomers, removed from the fussy commiseration of relatives, find themselves among others who have mastered their disability. Their seemingly casual welcome is carefully planned, and they quickly find themselves sharing in a full and active life—learning Braille, Moon, and typing; trying their hands at woodwork and pottery; visiting cinema and theatre; taking part in dances and concerts; playing cards, draughts, chess, dominoes, and darts; bathing, rowing, and riding horses—and learning all the time to observe and judge distance by sound.

Since 1943 the placement section has found work in industry for over 700 blind men and women; and though some of these lost their work during the change over to peace conditions, over 600 kept their jobs, and a further 178 have been found work in the past year. A subcommittee on professional placement looks after the interests of blind professional people; and a permanent subcommittee does its best to help blind men with a strong sense of vocation to join the clergy and to carry out their duties effectively. Much of the work of the institute itself is done by blind people, and this is greatly encouraging to those newly blind who come to discuss their problems. "When a newly blind person finds that his phone call for an appointment is answered by a blind operator, that he is interviewed by a blind adviser with a blind stenographer at his elbow, that a blind guide conducts him round the building and shows him blind secretaries, blind transcribers, blind proof-readers, blind writers, blind typists, blind lecturers, blind musicians, blind physiotherapists, blind students at work, and that, to crown it all, a blind man, without a guide, puts him on the right bus for home, then he must feel encouraged. . . ."

The publication of Braille and Moon books, newspapers, and other periodicals is up to the pre-war level, but any increase in scope must depend on better supplies of paper. New premises have been found for the sound-recording studio for talking books, and new talking-book machines are being steadily acquired and supplied to users; but like all other equipment and appliances needed by the blind, they are still scarce.

GROWTH OF PART-TIME NURSING

ON Sept. 30 there were 17,257 part-time members of the nursing and midwifery staffs in our hospitals and other services. According to a report recently presented to the National Advisory Council on Nursing and Midwifery, this shows an increase of about 12,200 on the numbers of part-timers employed nine months before. The growing numbers have meant that waiting-lists for hospital beds, especially for chronic patients, have been greatly reduced, and in some areas have even disappeared. Many regions are now following the successful lead of Gloucestershire and Wiltshire, and the council consider that part-time schemes could be even more widely and thoroughly developed.

FAILURE AS A FAMILY

THE British Social Hygiene Council [1] is now publishing "occasional papers," of which the second is "Problem Families," [2] by Dr. C. Fraser Brockington. The common denominator of these families is that they are "unable by their own efforts to raise themselves from the state into which they have fallen." Dr. Brockington feels that existing social measures do not meet their needs, for the laws protecting children require that they should be removed from the family and placed in different surroundings, whereas the real need is for family regeneration. Moreover, in such problem families there are often strong ties of affection, and parents and children alike suffer when they are separated. He wishes to see a system of "family probation" introduced, problem families being registered as such and placed under the care of local authorities for rehabilitation. Arguments against registration will come readily to mind,[3] but all will agree with Dr. Brockington that it is more liberal to keep the family together (perhaps even at the cost of registration) and to attempt their regeneration as a group, than to compel them to separate. A possibility which he mentions—that of providing hostels where refractory or incompetent mothers can be given training—is already being tried by the Society of Friends.[4]

Dr. W. F. Roper, in "When the Family Fails," [5] discusses the process of socialisation, which, he says, calls for "the gradual interposing between the child and the gratification of his desires of the requirement that he shall secure what he wants by socially desirable means." This is what the family normally achieves, but when it fails the child may grow into the unsocial, the neurotic, or the criminal adult; and what is worse, will repeat his own faulty training in bringing up his family. Dr. Roper hazards a guess at the size of the problem: each year some 80,000 people in Great Britain

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[1] Annual report of the Tavistock Clinic and the Tavistock Institute of Human Relations, 1946. Obtainable from the secretary, 2, Beaumont Street, London, W.1.

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[1] Address: Tavistock House North, Tavistock Square, London, W.C.1.

[2] Pp. 11. 6d.

[3] See *Lancet*, 1946, i, 928.

[4] *Ibid*, 1947, i, 266.

[5] Pp. 10. 6d.

commit indictable offences, and a quarter of these are reconvicted within five years; there is evidence that some 5% of the adult population—and this is very likely an under-estimate—are adversely affected by neurotic symptoms; and he puts the proportion of the "ill-conditioned"—aggressive, acquisitive, selfish, and censorious people who work against the best interests of society—at about 10%. Thus, at least a quarter of the population would have benefited by being better brought up. He sees four main lines of prevention: improved economic status of families will remove one incentive towards selfish and acquisitive impulses; treatment of the ill-conditioned in prison, clinic, school, and institution may help to make better parents of them, and so benefit the new generation; family can help family in associations like the Peckham Health Centre; and propaganda will wake interest and spread knowledge. Finally, research alone can teach us more about the results of family failure and the remedies for it.

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[1] *Lancet*, 1947, i, 566.

[2] Hong-Kong Government: Annual Report of the Medical Department for 1946.

MEDICAL

Vitamin Therapy—its uses and limitations

DIET IN PREGNANCY

Reports indicating the effect of improved nutrition on the figures of maternal mortality and morbidity, as well as of infant and neo-natal mortality, have focussed attention on the importance of diet in pregnancy.

The lowering of the death rate of infants under one year from 50.6 per thousand in 1939 to 45.4 in 1944 was no doubt mainly due to the priority supply of essential nutrients to expectant mothers, since during this time environmental conditions were in many cases exerting an adverse influence.

It had already been shown in a survey involving 5,000 women in 10 London hospitals that the incidence of toxæmia was significantly lower among women receiving supplements of essential vitamins and minerals. Moreover, work in the U.S.A. had demonstrated that the average birth weight of children whose mothers were on a poor diet was over 2 lbs. less than that of the children of well-fed mothers.

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vitamin C	20 mg	iron	68 mg.		

References:—Shortage of space precludes list of references, but full documentation may be obtained on application to Clinical Research Dept. 36B

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commit indictable offences, and a quarter of these are reconvicted within five years; there is evidence that some 5% of the adult population—and this is very likely an under-estimate—are adversely affected by neurotic symptoms; and he puts the proportion of the "ill-conditioned"—aggressive, acquisitive, selfish, and censorious people who work against the best interests of society—at about 10%. Thus, at least a quarter of the population would have benefited by being better brought up. He sees four main lines of prevention: improved economic status of families will remove one incentive towards selfish and acquisitive impulses; treatment of the ill-conditioned in prison, clinic, school, and institution may help to make better parents of them, and so benefit the new generation; family can help family in associations like the Peckham Health Centre; and propaganda will wake interest and spread knowledge. Finally, research alone can teach us more about the results of family failure and the remedies for it.

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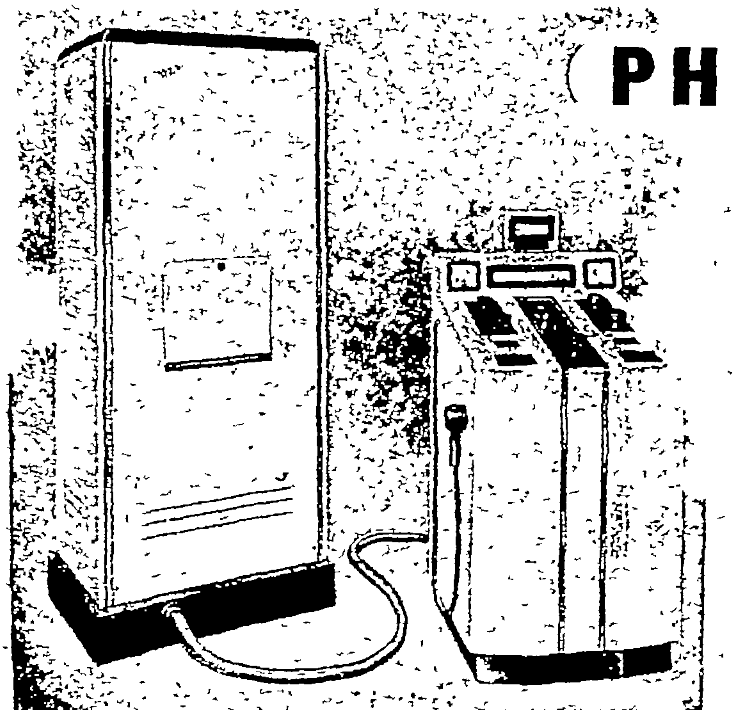

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